

# THE UNIVERSITY OF TENNESSEE HEALTH SCIENCE CENTER

## CATALOG 2008-2009



### Colleges and Schools

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#### **College of Allied Health Sciences**

930 Madison Avenue, 6th Floor • Memphis, TN 38163 • 901-448-5581

#### **College of Dentistry**

875 Union Avenue • Memphis, TN 38163 • 901-448-6200

#### **College of Graduate Health Sciences**

920 Madison, Suite 407 • Memphis, TN 38163 • 901-448-5538

#### **College of Medicine**

910 Madison Ave, Suite 1000 • Memphis, TN 38163 • Tel: (901) 448-5529

#### **College of Nursing**

877 Madison Avenue • Memphis, TN 38163 • 901-448-6128

#### **College of Pharmacy**

847 Monroe Avenue, Suite 226 • Memphis, TN 3816 • (901) 448-6036

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# Contents

A Guide to the Reader.....	4
Board of Trustees .....	5
Administration .....	7
General Information .....	9
Mission of the University of Tennessee Health Science Center .....	10
Instruction .....	10
Degrees, Majors and Concentrations .....	11
Research .....	12
Public Service .....	12
Chairs and Centers of Excellence .....	12
Continuing Education .....	16
Alumni Affairs .....	16
The Memphis Community .....	16
Physical Resources .....	17
General Education Building .....	17
The Health Sciences Library and Biocommunications Center .....	18
Admissions and Registration .....	19
Applying for Admission .....	20
Admission Guidelines .....	20
Admission with Advanced Standing .....	20
State of Residency .....	21
Records.....	21
Partners in Education (PIE).....	21
Registration .....	22
Changes in Registration .....	23
Withdrawal and Readmission.....	23
Fees and Expenses .....	23
Guaranteed Enrollment Deposit .....	23
Fees .....	23
Refunding of Fees .....	24
Enrollment Status (Full vs. Part-Time) .....	24
Unofficial Withdrawal.....	24
Grade Marking System .....	25
Reporting of Grades .....	26
Transcripts.....	26
Veterans' Affairs .....	26
Promotions .....	27
Appeal of Adverse Promotion and Graduation Decisions .....	27
Graduation .....	27
Requirements for Graduation .....	27
Attendance at Commencement .....	27
Honor Code .....	27
Student Affairs .....	28
Office of Student Affairs .....	28
Office of Student Life .....	28
Student Alumni Center .....	28

Campus Recreation .....	28
Health Career Programs .....	29
Student Financial Aid .....	31
Student Government Association .....	31
Student Housing .....	32
University Dining Services .....	32
University Health Services .....	33
Direct Educational Costs for 2008-2009 .....	34
Estimated Basic Monthly Living Expenses .....	34
Campus Map .....	35

### **College Catalog Sections**

College of Allied Health Sciences .....	37
Cytotechnology .....	48
Medical Technology .....	54
Clinical Laboratory Sciences .....	60
Dental Hygiene .....	72
Health Informatics & Information Management .....	81
Occupational Therapy .....	89
Physical Therapy .....	97
Graduate Program in Physical Therapy .....	110
College of Dentistry .....	125
College of Graduate Health Sciences .....	205
College of Medicine .....	281
College of Nursing .....	325
College of Pharmacy .....	385

## **A Guide to the Reader**

This catalog represents a summary of all the educational and training programs offered at The University of Tennessee Health Science Center. The publication is divided into sections, beginning with General Information and followed by sections on each of the colleges.

The reader is urged to examine first the General Information section, since much of the material contained herein is applicable to ALL of the colleges and in NOT repeated in the separate sections that follow.

No attempt is made to provide an exhaustive, page-by-page listing of contents. Since each section follows a fairly standardized format and is divided by various subheadings, the table of contents is designed only to provide a general reference guide.

This catalog is not to be construed as a contract. The University of Tennessee Health Science Center reserves the right to change fees, tuition, or other charges; add or delete courses; revise academic programs; or alter regulations and requirements as deemed necessary. For current information regarding fees, tuition, programs, deadlines, and requirements, please refer to the online catalog at [www.utmem.edu](http://www.utmem.edu).

The University of Tennessee Health Science Center does not discriminate on the basis of race, sex, color, religion, national origin, age, handicap, or veteran status in the provision of education opportunities or employment opportunities or benefits. The University does not on the basis of sex or handicap in the education programs and activities that it operates, pursuant to the requirements of Title IX of the Education Amendments of 1972, Pub. L. 92-318, Sec. 504 of the Rehabilitation Act of 1973, Pub. L. 93-122 and the Americans with Disabilities Act of 1990, Pub. L. 101-336, respectively. This policy extends to both employment by and admission to the University.

Inquiries concerning Title IX, Sec. 504 and the Americans With Disabilities Act should be directed to the Office of Equity and Diversity, 62 South Dunlap, Suite 200, Memphis, Tennessee 38163, 901-528-5558. Charges of violation of the above policy should also be directed to the Office of Equity and Diversity.

In accordance with the Tennessee College and University Security Information Act of 1989, The University of Tennessee Health Science Center has prepared a report containing campus security policies and procedures, data on campus crimes, and other related information. A free copy of this report may be obtained by any student, employee, or applicant for admission or employment from the Office of Campus Police, 45 North Manassas, Memphis, Tennessee 38163.

# THE UNIVERSITY OF TENNESSEE BOARD OF TRUSTEES

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# **THE UNIVERSITY OF TENNESSEE HEALTH SCIENCE CENTER**

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Executive Vice Chancellor and Chief of Staff, **KEN BROWN, J.D., M.P.A., Ph.D.**

Vice Chancellor, Health Affairs and Governmental Relations,

**MICHAEL CAUDLE, M.D.**

Vice Chancellor, Academic, Faculty and Student Affairs, **CHERYL SCHEID, Ph.D.**

Vice Chancellor, Finance and Operations, **ANTHONY FERRARA, MAS, CPA**

Vice Chancellor, Development and Alumni Affairs,

**LINDA GARCEAU-LUIS, MBA, MA**

Vice Chancellor, Research, **LEONARD JOHNSON, Ph.D.**

Interim Director, Human Resources, **JERRY HALL**

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## **COLLEGES & SCHOOLS**

College of Allied Health Sciences, **WILLIAM FREY, Ph.D., Dean**

College of Dentistry, **MARK PATTERS, D.D.S., Ph.D., Interim Dean**

College of Pharmacy, **DICK R. GOURLEY, Pharm. D., Dean**

College of Nursing, **DONNA K. HATHAWAY, Ph.D., Dean**

College of Medicine, **STEVE SCHWAB, M.D., Executive Dean**

College of Medicine, Knoxville Campus, **JIM NEUTENS, M.D., Dean**

College of Medicine, Chattanooga Campus, **DAVID C. SEABERG, M.D., CPE,  
FACEP, Dean**

College of Graduate Health Sciences, **EDWARD SCHNEIDER, Ph.D., Interim Dean**



# GENERAL INFORMATION

The University of Tennessee Health Science Center is part of the statewide, multicampus University of Tennessee. As a public, land grant university, the University of Tennessee provides a comprehensive postsecondary educational experience of the highest quality to a wide and varied constituency. As the University's academic health science center, the mission of The University of Tennessee Health Science Center is to improve human health through education, research and public service, with an emphasis on improving the health of Tennesseans.

Located on the campus of the UT Health Science Center are the College of Health Science Engineering and Colleges of Allied Health Sciences, Dentistry, Graduate Health Sciences, Medicine, Nursing, Pharmacy and Social Work. The UT Health Science Center includes the Graduate School of Medicine in Knoxville as well as graduate medical education programs in Knoxville, Chattanooga, and Nashville; Family Medicine Centers in Knoxville, Jackson, Covington, Memphis, and public and continuing education programs across the state. Methodist Healthcare-University Hospital, The Regional Medical Center, the V.A. Medical Center, The Le Bonheur Children's Medical Center, and the St. Jude Children's Research Hospital are the principal teaching hospitals for UT in the Shelby County area.

Because of its size and scope of activities, the UT Health Science Center has a significant impact on the economy of Memphis and the Mid-South region. It is one of the largest academic health science centers in the United States. The UT Health Science Center is the ninth largest employer in Memphis with approximately 4,000 faculty and staff employees. The UT Medical Group, the private practice arm of the College of Medicine faculty, is the Mid-South's largest multi-specialty physician group practice.

The UT Health Science Center is accredited by the Southern Association of Colleges and Schools to award baccalaureate, master and doctoral degrees. Each of the professional colleges or programs is accredited by the appropriate agency for the profession or program. The campus has 43 endowed Professorships of which 19 are Chairs of Excellence. The campus is home to seven Centers of Excellence: Neurosciences; Molecular Resources; Pediatric Pharmacokinetics and Therapeutics; Vascular Biology; Diseases of Connective Tissue; Neurobiology and Imaging of Brain Disease; and Genomics and Bioinformatics.

Approximately 2,000 students are enrolled in degree programs at the UT Health Science Center and admission is highly competitive. A broad range of post-graduate training opportunities are available for approximately 1,000 clinical residents and other postdoctoral trainees. The UT Health Science Center has formal affiliations with seven teaching hospitals in Memphis and nearly a score of other hospitals or clinical facilities across the state.

A twenty-four member Board of Trustees governs the University of Tennessee. The Board has delegated administrative authority to the president, who exercises this authority through a staff of chancellors and vice presidents. The Chancellor at the University of Tennessee Health Science Center serves in a dual role as chief executive

officer for the Memphis campus and its statewide programs and is responsible, as vice president for health affairs, for the university-wide coordination of education, training, research, and service in the health fields.

## **The University of Tennessee Health Science Center Mission**

The mission of The University of Tennessee Health Science Center is to improve human health through education, research and public service, with an emphasis on improving the health of Tennesseans. The University of Tennessee Health Science Center is committed to maintaining an environment that encourages honesty, trust and fairness and promotes personal growth, development, satisfaction and achievement for all students, faculty and staff. The University of Tennessee Health Science Center carries out its mission based upon this philosophy and several values and principles which include excellence in teaching, mentoring and advising students; a high quality educational experience for all students; excellence in research and scholarly accomplishment; health improvement; recruitment of high achievement students; and an attractive, functional and safe campus environment.

## **Instruction**

The University of Tennessee is authorized by the state of Tennessee to engage in the function of affording an education primarily to the youth and citizens of the State of Tennessee and also to be a leading research institution.

Programs leading to a degree require approval of the University's Board of Trustees and the Tennessee Higher Education Commission and are accredited by the agency appropriate to the professional program. Programs and degrees offered by The University of Tennessee Health Science Center are listed in the accompanying table.

The University of Tennessee Health Science Center is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award baccalaureate, master and doctoral degrees; and each of the professional colleges and programs is also accredited by an appropriate accrediting agency for the profession. Specific additional information on accreditation can be secured from the Vice Chancellor for Academic Affairs.

# University of Tennessee Health Science Center

## Degrees, Majors and Concentrations

DEGREE	MAJOR/CONCENTRATION	DESIGNATION	CONCENTRATION
<b>College of Allied Health Sciences</b>			
Bachelor of Science	Dental Hygiene	<b>BSDH</b>	
	Health Informatics & Information Management	<b>BSHIM</b>	
	Medical Technology	<b>BSMT</b>	
Master	Cytopathology Practice	<b>MCP</b>	
	Dental Hygiene	<b>MDH</b>	
	Health Informatics & Information Management	<b>MHIM</b>	
	Occupational Therapy	<b>MOT</b>	
Master of Science	Clinical Laboratory Sciences	<b>MSCLS</b>	
	Physical Therapy	<b>MSPT</b>	(Muscular Skeletal or Neurological)
Doctor	Doctor of Physical Therapy	<b>DPT</b>	
	Doctor of Physical Therapy, Transitional	<b>T-DPT</b>	
Doctor of Science	Physical Therapy	<b>SeDPT</b>	
<b>College of Dentistry</b>			
Doctor of Dental Surgery	Dentistry	<b>DDS</b>	
<b>College of Graduate Health Sciences</b>			
Master of Science (MS)	Biomedical Engineering and Imaging	<b>M.S.</b>	Biomechanics Cell and Tissue Engineering Electrophysiology Imaging
	Clinical Investigation	<i>(pending Tennessee Higher Education Commission approval)</i>	
	Epidemiology		
	Health Outcomes and Policy Research		Health Systems Pharmacy Mgmt.
	Health Systems Studies	<i>(pending Tennessee Higher Education Commission approval)</i>	
Master of Dental Science (MDS)		<b>M.D.S.</b>	Orthodontics Pediatric Dentistry Periodontology Prosthodontics
Doctor of Philosophy (PhD)	Biomedical Engineering and Imaging	<b>Ph.D.</b>	
	Clinical Investigation	<i>(pending Tennessee Higher Education Commission approval)</i>	
	Health Outcomes and Policy Research		Health Policy/Health Services Research Pharmacoeconomics Cancer and Developmental Biology Cell Biology and Biochemistry Genetics, Functional Genomics, and Proteomics Microbial Pathogenesis, Immunology, and Inflammation Molecular, Cellular, and System Physiology Molecular Therapeutics and Cell Signaling Neuroscience
	Integrated Program in Biomedical Sciences		
	Nursing		
	Pharmaceutical Sciences		Medicinal Chemistry Pharmaceutics
<b>College of Medicine</b>			
Doctor of Medicine	Medicine	<b>M.D.</b>	
<b>College of Nursing</b>			
Master of Science	Nursing	<b>MSN</b>	Critical/Acute NP/CNS Family Nurse Practitioner Neonatal Nurse Practitioner Nurse Anesthetist
Doctor of Nursing Practice	Nursing	<b>DNP</b>	Critical/Acute NP/CNS Family Nurse Practitioner Neonatal Nurse Practitioner Psychiatric Family Nurse Practitioner Public Health Nursing Administration Gerontology
<b>College of Pharmacy</b>			
Doctor of Pharmacy	Pharmacy	<b>Pharm.D</b>	

## **Research**

Research is a vital component of the University's programs and The University of Tennessee Health Science Center is committed to promoting its health science and biomedical research mission. Students have an opportunity to work in laboratories with faculty who are at the forefront of their disciplines.

The faculties of the colleges at The University of Tennessee Health Science Center work together to achieve common research objectives. The research effort provides the basis for solutions to health problems facing the community today and tomorrow, and, through proper direction, seeks to delineate approaches for the maintenance of health and prevention and treatment of disease. These broad objectives are being realized through the collaboration of scientists working in many disciplines encompassing various departments and research centers. These include the Neuroscience Center of Excellence, the Molecular Resource Center of Excellence, the Pediatric Pharmacokinetics and Therapeutics Center of Excellence, the Clinical Research Center, the Center for Health Services Research, the Newborn Center and the Cancer Center. Well established research programs in collagen diseases, geriatrics, and drug and alcohol abuse provide additional opportunities for the qualified student to gain experience in biomedical research, as do research programs at St. Jude Children's Research Hospital and the University of Memphis. The multidisciplinary approach utilized by The University of Tennessee Health Science Center provides research training rarely duplicated in comprehensive universities.

## **Public Service**

The University of Tennessee Health Science Center is actively helping to meet community and statewide needs with a number of programs that serve the dual purpose of furthering the education of students and providing valuable services. These programs include a regional newborn center; a rehabilitation-engineering program; the Center for Developmental Disabilities; the Drug Information Center; the Southern Poison Center; and low cost dental care offered through the College of Dentistry.

## **Chairs and Centers of Excellence**

The University of Tennessee Health Science Center has established 50 endowed Professorships and chairs, including 19 designated as Chairs of Excellence. Chairs of Excellence are established with an endowment derived from both state and private funding. Endowed Professorships are usually established with private gifts. The accompanying table shows current endowed Professorships and Chairs of Excellence.

The endowed Professorships and Chairs of Excellence are of fundamental importance in attracting world-renowned scientists and clinicians to The University of Tennessee Health Science Center. Thus, students have a unique opportunity to learn from individuals who are at the frontier of research in the biomedical and clinical sciences.

Serving a similar role are seven Centers of Excellence established at The University of Tennessee Health Science Center and funded by the State of Tennessee. These research

centers aid in attracting outstanding faculty and offer a superior research environment. The Centers of Excellence contain the most sophisticated research instruments and staff and serve as a vital hub for scientists from both Tennessee and the nation. Centers of Excellence are established in Neurosciences, Molecular Resources, and Pediatric Pharmacokinetics and Therapeutics, Genomics and Bioinformatics, Neurobiology and Brain Disease Imaging, Diseases of Connective Tissues, and Vascular Biology.

# Chairs of Excellence and Endowed Professorships at The University of Tennessee Health Science Center

## Chairs of Excellence

Harriet S. Van Vleet Chair of Excellence in Microbiology and Immunology .....	Terrance G. Cooper, Ph.D.
Harriet S. Van Vleet Chair of Excellence in Pharmacology .....	Burt M. Sharp, M.D.
Harriet S. Van Vleet Chair of Excellence in Biochemistry .....	John N. Fain, Ph.D.
Harriet S. Van Vleet Chair of Excellence in Virology .....	Martha M. Howe, Ph.D.
E. Eric Muirhead Chair of Excellence in Pathology .....	Lawrence Pfeffer, Ph.D.
Crippled Children's Hospital Foundation Chair of Excellence in Biomedical Engineering .....	Frank A. DiBianca, Ph.D.
UTMG Chair of Excellence in Obstetrics and Gynecology .....	(Vacant)
Le Bonheur Chair of Excellence in Pediatrics .....	(Vacant)
Plough Foundation Chair of Excellence in Pediatrics .....	Bruce S. Alpert, M.D.
J.R. Hyde Chair of Excellence in Rehabilitation Engineering .....	Joo Ong, Ph.D.
Thomas A. Gerwin Chair of Excellence in Physiology .....	Leonard R. Johnson, Ph.D.
First Tennessee Chair of Excellence in Clinical Pharmacy .	(Vacant)
William and Dorothy Dunavant Chair of Excellence in Pediatrics .....	Robert Williams, Ph.D.
Federal Express Chair of Excellence in Pediatrics .....	Mary Ellen Conley, M.D.
Semmes-Murphey Chair of Excellence in Neurology .....	William A. Pulsinelli, M.D., Ph.D.
Maury W. Bronstein Chair of Excellence in Cardiovascular Physiology .....	Aviv I. Hassid, Ph.D.
Goodman Chair of Excellence in Medicine .....	Andrew H. Kang, M.D.
Second Le Bonheur Chair of Excellence in Pediatrics .....	Russell W. Chesney, M.D.
Mark S. Soloway Chair of Excellence in Urology .....	Mitchell S. Steiner, M.D.

## Endowed Professorships

St. Jude Professorship in Pediatrics .....	William E. Evans, Pharm. D.
Herbert A. Shainberg Professorship in Developmental Pediatrics .....	Frederick B. Palmer, M. D.
Simon R. Bruesch Alumni Professorship in Anatomy .....	David V. Smith, Ph.D.
Harriet S. Van Vleet Professorship in Pharmacy .....	Duane D. Miller, Ph.D.
Methodist Hospitals Foundation Professorship in Neuroscience .....	Daniel Goldowitz, Ph.D.
Lemuel W. Diggs Alumni Professorship in Medicine .....	Howard R. Horn, M.D.
Harwell W. Wilson Alumni Professorship in Surgery .....	Timothy Fabian, M.D.
John Dustin Buckman Professorship in Pediatrics .....	Stephen A. Spooner, M.D.
George Thomas Wilhelm Professorship in Orthopaedics ....	Karen A. Hasty, Ph.D.
Baptist Memorial Health Care Foundation Professorship in Transplantation Surgery .....	A. Osama Gaber, M.D.
Sheldon Barnarr Korones Professorship in Neonatology ....	(Vacant)
Rex A. Amonette Professorship in Dermatology .....	E. William Rosenberg, M.D.
Robert H. Cole Professorship in Neurosciences (Graduate School of Medicine) .....	George W. Kabalka, Ph.D.
Harold B. Boyd Professorship in Orthopaedic Surgery .....	S. Terry Canale, M.D.
Neuton S. Stern Professorship in Cardiovascular Diseases .	Karl T. Weber, M.D.
Hamilton Professorship in Ophthalmology .....	Barrett G. Haik, M.D.

David B. Coleman Professorship in  
 Transplantation Research .....(Vacant)

Thomas K. Ballard-Oscar M. McCallum Professorship in  
 Family Medicine .....David E. Roberts, M.D.

James T. Robertson Professorship in Neurosurgery .....Jon H. Robertson, M.D.

Charles E. Eastridge Professorship in  
 Cardio-Thoracic Surgery .....(Vacant)

Paul Nemir, Jr. Professorship in International Child Health William Novik, M.D.

Plough Foundation Professorship in Retinal Diseases .....Edward Chaum, M.D.

Roger L. Hiatt Professorship in Ophthalmology .....Dianna A. Johnson, Ph.D.

Matson K. Callison Professorship in Medicine .....James E. Bailey, Jr., M.D.

UTMG Professorship in Nephrology .....(Vacant)

Gale S. and Richard D. Siegal Professorship  
 in Ophthalmology .....Peter A. Netland, M.D., Ph.D.

Methodist Healthcare Professorship in Women’s Health .....Nancy Hardt, M.D.

Harriet S. Van Vleet Professorship in Medical Oncology .....Mohammed Jahanzeb, M.D.

Harriet S. Van Vleet Professorship in Research Oncology ..(Vacant)

A.C. Mullins Professorship in Research .....Malak Y.S. Kotb, Ph.D.

Gene H. Stollerman Endowed Professorship  
 in Internal Medicine .....Dennis R. Schaberg, M.D.

## **Continuing Education**

It is well established that lifelong study is a fundamental responsibility of all health professionals. Because of the rapid rate of technological change resulting from research, innovation in the methods of health care delivery, and new clinical procedures and materials, the need to remain current in the health professions is acute. The colleges at The University of Tennessee Health Science Center respond to these needs by presenting a full range of courses yearly for practicing health professionals. Students at The University of Tennessee Health Science Center may also attend these courses, as their time permits. It is expected that all students, as they embark upon a career of service, will realize an obligation to continue their education, with that obligation becoming increasingly important the longer they practice.

## **Alumni Affairs**

Alumni programs cultivate the interest and involvement of more than 35,000 graduates of The University of Tennessee Health Science Center.

The Office of Alumni Affairs and Annual Giving at The University of Tennessee Health Science Center coordinates alumni programs for the individual colleges, sponsoring alumni weekends, class reunions, and alumni gatherings at local, state and national professional meetings. The office also coordinates meetings of alumni volunteer boards that serve as advisers to the deans in the Colleges of Dentistry, Medicine, Nursing and Pharmacy.

Within the Office of Development and Alumni Affairs, current address records for all University of Tennessee Health Science Center alumni are maintained. A variety of university and collegiate magazines, newsletters and tabloids are published and mailed to alumni on a regular basis.

Each year, the UT National Alumni Association, through the campus alumni office, supports a number of scholarships, an alumni public service award, alumni distinguished service Professorship awards, and outstanding teacher awards. A student from each campus serves as a representative to the National Alumni Association's Board of Governors.

Following graduation, The University of Tennessee Health Science Center students receive miniature diplomas from the UTNAA and become part of the 200,000 plus membership of the UT National Alumni Association, which has active alumni chapters across the U.S. The Office of Alumni Affairs can be reached by dialing 1-800-733-0482 (toll free), 901-448-5516 or via email at the following address: [utalumni@utmem.edu](mailto:utalumni@utmem.edu).

## **The Memphis Community**

Memphis and Shelby County have over 835,000 residents, with a trade area that encompasses west Tennessee, eastern Arkansas, and northern Mississippi, and contains more than 2.5 million residents. Memphis has rich cultural traditions — life along the Mississippi River; music, especially the blues; and cotton growing and shipping.



However, modern Memphis is also a center for health science education and research, agriculture and associated businesses, a burgeoning tourist industry, an internationally renowned music and recording center, and an important distribution and transportation hub. The area also offers a wide variety of cultural attractions: a major symphony orchestra, two ballet companies, three theater companies, two major art museums, and a regionally renowned nature center. In the tri-state region of Tennessee, Mississippi, and Arkansas, there are recreational opportunities to suit the most varied tastes — boating, swimming, fishing, hot air ballooning and team sports that include football, indoor soccer, basketball and baseball.

In addition to The University of Tennessee Health Science Center, several other institutions of higher education are located in Shelby county: these include one public four year comprehensive university, a four year college of art, two public technical and community colleges, and three private four year universities and colleges.

## **Physical Resources**

The University of Tennessee Health Science Center operates physical facilities that total over 2.6 million gross square feet, located on approximately 75 acres of land. The current value of this property and contents is approximately \$479 million.

## **General Education Building**

Classroom teaching at The University of Tennessee Health Science Center is largely housed in the Cecil C. Humphreys General Education Building (GEB). Lecture and laboratory courses for the colleges of Medicine, Dentistry, Nursing, Pharmacy, Allied Health Sciences, as well as some Graduate Health Sciences courses, are held in the GEB.

The GEB is the most comprehensive teaching facility of its kind in the region, and houses nine lecture halls, an instructional laboratories wing (consisting of 6 specialty labs and 12 multidisciplinary classrooms), audiovisual facilities and classroom support, student study areas, student microscope distribution, and a microcomputer laboratory. A variety of additional instructional support services are located in the basement of the GEB.

Student Academic Support Services (SASS), located in the basement of the GEB, provides students with comprehensive academic support services that recognize individual, cultural, and programmatic diversity.

Virtually all pre-clinical classes for students are held in the 209,000 sq. ft. GEB instructional complex built in 1977.

## **Health Sciences Library and Biocommunications Center**

The mission of the Health Sciences Library and Biocommunications Center is to provide an environment conducive to student learning and the biomedical information resources necessary for teaching, research, service, and patient care and to support efforts to improve the health of Tennesseans.

Consisting of the Health Sciences Library, Health Sciences Historical Collections, Library Multimedia Laboratory, Scientific Editing, and Computerized Test Scoring, the Center serves all colleges and programs. All units are located in the Lamar Alexander Building.

The Health Sciences Library supports the instructional and research programs of The University of Tennessee Health Science Center through a collection of journals, monographs, audiovisuals, online and CD-ROM databases, and multimedia. The library holds approximately 190 current print-only periodical titles, 3400 e-journal titles, 43,000 monograph titles, and 197,000 volumes.

The library maintains 38 Macintosh and 11 Windows computers for student, faculty, staff, and public use along with 20 laptops that can be checked out by students. Access to most of the library's electronic resources is gained through the library's web site (<http://library.utmem.edu>). Exceptions include Current Contents Life Sciences and Journal Citation Reports, which are on CD-ROM. A catalog link on the library's home page provides access to the library's web-based catalog, full-text journals, the user's library record, and other library catalogs. The E-Resources link on the library's home page provides access to citation databases such as MEDLINE, CINAHL, and PsycInfo and full-text databases such as MD Consult and EBSCOhost Nursing and Allied Health.

These resources can be accessed from any campus location equipped with a computer and a network connection. Most of them can be accessed remotely if the user holds a valid University of Tennessee Health Science Center ID and is a registered library user. Information about off-campus access can be found under FAQs on the library's web page.

Library users may request photocopies, interlibrary loans, and computer literature searches by accessing the library's home page. Photocopy machines are also available. Student study rooms are available and can be reserved for groups of three or more. Locked study carrels may be reserved for one month with renewal if there is not a waiting list.

The Library Multimedia Laboratory (LML) is a centralized, computer-based, media resources room designed to provide academic information and instructional technology to support student learning. The LML stores the library's videotapes, DVDs, slide shows, three-dimensional anatomical models, and multimedia programs. Scientific Editing provides scientific editing services for research and grant manuscripts and consulting on professional publishing. Courses and seminars on scientific communication are also available. Computerized Test Scoring scans answer sheets and provides scoring analysis and reporting to Health Science Center faculty.

Additional resources include regularly scheduled orientations, classes, seminars, and workshops for faculty, staff, and students. Many courses incorporate lectures within the curriculum on how to use library resources. A networked Electronic Classroom, containing student and instructor Macintosh workstations and seating for 20, is used primarily for library instruction. Information describing services, protocols for using computer-based and CD-ROM databases, short courses and seminars, and facilities is available on Fact Sheets in kiosks located in the main reading room and on the library's web site. Current information on the activities and services of the Center is published in INFOnews, a newsletter distributed electronically three times a year to everyone at the Health Science Center.

## **Admissions and Registration**

Failure to provide a professional credential evaluation will cause a delay in the application process. Falsification of any admissions application information or failure to disclose previous attendance at another college or university are grounds for immediate rejection and/or cancellation of an admissions application.

## **General Requirements**

Applicants for admission to the colleges at The University of Tennessee Health Science Center should refer to the Admissions Requirement Booklet for detailed information on admissions procedures, class sizes, required admissions tests, specific college requirements, acceptable prerequisites, and college policies on admissions. Additional information may also be found in the college sections of this catalog, or by visiting the website; [www.utmem.edu.catalog.php](http://www.utmem.edu.catalog.php). Applicants for admission should review closely the minimum admissions requirements for their college of choice and should understand that rarely are minimum qualifications adequate for admission to a particular program. Higher priority is given to those applicants who exceed the minimum requirements and who present above average academic records.

General criteria used in the student selection process by college admissions committees may include overall academic performance, overall grade point average, grade point average in required courses, standardized test scores, consistency in achievements, course load and course content, motivation and goals, evaluations by pre-professional advisors in the undergraduate colleges, interview results, and personal character. Remedial and Developmental coursework and coursework credit earned in physical education, military science, and health professions programs will neither be applied to the overall hour requirement nor computed in the overall grade point average. Admissions committees may require certain applicants to complete additional coursework and may refuse admission for general cause in the competitive process.

## **Applying for Admission**

At the time of filing an application, please have the Registrar of each college attended forward an official transcript of your work directly to The Office of Enrollment Services, 910 Madison Ave., Suite 525, Memphis, Tennessee, 38163. International applicants must have his/her transcripts evaluated by a professional credential evaluation service which includes the calculated grade point average (GPA). Failure to submit a professional evaluation may result in the delay of the application process. Failure to disclose previous college or university attendance may cause rejection or cancellation of admission.

An applicant may only have ONE ACTIVE APPLICATION in process per admission cycle. Applicant may not apply to any additional college or program until a final administrative decision has been made pertaining to the first application. The applicant may choose to withdraw an active application in process by providing a written statement to the Office of Enrollment Services, 910 Madison Ave., Suite 525, Memphis, Tennessee, 38163 or via email (utmemb.edu).

## **Admission Guidelines**

All colleges at The University of Tennessee Health Science Center give admissions priority to applications from qualified Tennessee residents. A principal mission of The University of Tennessee Health Science Center is to educate health professionals for Tennessee. The health professions colleges may consider applications from residents of other states. In most professional programs, a maximum of 10 percent of enrollees may be out-of-state residents, with priority consideration given to the sons and daughters of University of Tennessee alumni.

Through the Southern Regional Education Board (SREB) contract, students may be accepted to the College of Dentistry from the state of Arkansas.

The College of Graduate Health Sciences educates students for more global responsibilities. This college gives admission priority to applications from qualified Tennessee residents but may consider applications from residents of other states, as well as international students. The 10 percent enrollment limit does not apply to the graduate college. The Chancellor may grant exceptions to these guidelines.

## **Admission with Advanced Standing**

Students seeking admission with advanced standing to The University of Tennessee Health Science Center, from another accredited program, must submit the usual application form for the college of choice, the nonrefundable application fee, and all the supporting documents required of the beginning student in the program. Additionally, transfer students must present a statement of withdrawal in good standing and a recommendation from the dean or other responsible officer of the institution previously attended. Prospective transfer students must discuss their plans with the college admissions officer prior to submitting an application, because very few incoming transfers are possible.

## **State of Residency**

As a state assisted institution, The University of Tennessee Health Science Center gives priority consideration to residents of the State of Tennessee. In many programs restrictions apply to applicants from out-of state. Prospective students who are not classified as residents of Tennessee should discuss their residency status with the Office of Enrollment Services prior to application. Regulations for residency classification are published in the [Student Handbook](#) and may be obtained from:

The Office of Enrollment Services  
910 Madison Avenue, Suite 525  
Memphis, TN 38163  
or online at [www.utmem.edu/admiss/](http://www.utmem.edu/admiss/)

## **Records**

The Registrar's office in the Enrollment Services Department maintains the official permanent record on all students who attend The University of Tennessee Health Science Center. This record includes the student's name, social security number, address, birth date, sex, previous colleges attended, and credits transferred from other colleges. It includes all courses taken at The University of Tennessee Health Science Center with credit hours, grades, and cumulative grade point average. Academic suspension or dismissal is recorded as well as academic probation. For more information contact:

The Office of Enrollment Services (State of Residency/Records) Eunice Taylor,  
Registrar, 910 Madison Avenue, Suite 525 Memphis, TN 38163, 901-448-5560

## **Partners in Education (PIE)**

The Partners In Education program helps address the needs of students by creating just such a partnership, fostering communication between students, their families, and the university. Designated professional staff can help families to open communication lines and provide support services to improve the academic success of students. Through the Partners in Education program, families can seek answers to questions that arise throughout the year, and will receive information and suggestions to help them provide effective support for their student. Together, we can help create a competitive edge that will help each student succeed.

Services will be provided to members of Partners In Education after the student signs the waiver to release information. Members are entitled to the following exclusive benefits:

Academic Records – The Family Educational Rights and Privacy Act (FERPA) grants access to student academic records if specific conditions are met. As a member of the PIE program, you will have unrestricted access to your students’ academic records. Additionally, you will be contacted by the university if your student reports to the university that s/he is the victim of a crime of violence or a non-forcible sex offense, and/or if your student is under the age of 21 and is found responsible for alcohol and/or drug-related offenses. For specific questions regarding your student’s academic records contact the Office of the Registrar at 901.448.5560

Telephone Assistance - When questions, concerns, or problems arise, members may call the Office of the Registrar, at 901.448.5560, Monday through Friday, during the hours of 8:00 am to 5:00 pm

Joining Partners In Education - To become a member of Partners In Education, a student must sign and return the Student Release/Withdrawal of Confidential Information form. (the release does not apply to personal counseling, health, or financial information protected by FERPA; however, if students are experiencing problems in these areas, UTHSC staff will be happy to assist in identifying available resources). The student has the right to withdraw the release at any time.

\*\*\* Partners In Education is directed toward strengthening the relationship between the student, the family, and The University of Tennessee Health Science Center, with the goal of improving the academic success and retention of students.

<http://www.utmem.edu/admiss/forms/PIE%20-%20Student%20Information%20Release%20Waiver.PDF>

## **Registration**

All fees must be paid on the dates designated for this purpose. Registration and enrollment procedures are discussed in detail in the first orientation period. Questions concerning fees may be addressed to the Bursar Office, Room 103, Hyman Administration Building.

A student may register late without college approval during a period of three (3) working days following the close of the Final Day of Registration. Beyond this time period, authorization to register must be given by the appropriate college Academic Affairs officer.

A fifty (\$50.00) dollar fee will be assessed to any student registering during the first three days after the Final Day of Registration. A seventy-five (\$75.00) dollar fee will be assessed for registration that takes place more than three days after the Final Day.

A student may appeal a Late Registration Fee to the Vice Chancellor of Business and Finance. There will be a fifty (\$50.00) dollar late enrollment fee in addition to the University’s standard charges relative to returned checks, should the student’s bank return the registration payment check. Repayment of the fee and charges must be made by cashier’s check, cash, or money order.

## **Changes in Registration**

With permission of a student's advisor and approval of the course director, courses may be dropped, added, or changed from credit to audit (or vice versa) during the first two weeks of classes. Courses dropped during this period will not be shown on the student's permanent record.

The student's advisor, the dean of the college, and the course director, must approve changes in registration after this period. Such approvals will be given only in unusual circumstances. The grade of WP (withdrew passing) or WF (withdrew failing) will be posted to the permanent record and will reflect the student's status at the time of withdrawal.

## **Withdrawal and Readmission**

Students who wish to withdraw from the University must notify the dean of the college, in writing, and are required to process a change of status form permitting them to withdraw in good standing. This form is used to prorate permissible refunds in tuition and fees. It is the responsibility of the College to complete a change of status if a student withdraws from the institution without completing the above aforementioned process.

Students seeking readmission to the college should submit a written request to the dean of the college.

## **Fees and Expenses**

### **Guaranteed Enrollment Deposit**

Students who accept a place in one of the professional school classes are required to remit a nonrefundable enrollment deposit. Students accepting placement in the College of Graduate Health Sciences are not required to submit the deposit. The amount of this deposit is applied toward payment of the student's fees for the first enrollment period. In the event that the applicant fails to enroll, the deposit is nonrefundable, unless substantial extenuating circumstances can be shown.

### **Fees**

Fees at The University of Tennessee Health Science Center are established by the Board of Trustees and vary according to college program and state residency status. Fees may be changed at any time without prior notification to the student and must be paid at the time of registration. Individuals registering for audit courses will be assessed fees at the same rate as for credit courses. If you are a student in good financial standing with a definite anticipated source of funds, you may be offered the opportunity to participate in the installment payment plan. An installment plan service fee of \$20.00 is assessed to pay maintenance fees, out of state tuition and room charges over a specified time period. All prior charges must be paid before the student may enroll for the current term.

**Failure to receive a statement of the balance of their fees does not relieve students of their obligations to pay on or before the due date.**

## **Refunding of Fees**

Students who withdraw prior to the commencement of classes will receive a refund of all tuition and maintenance fees paid for the semester in which they were scheduled to enter. The University of Tennessee Health Science Center, in accordance with federal regulations, follows the policy and procedures below for calculating refunds. If a student withdraws or is dismissed on or before the 60% point of the term, a refund will be determined using a pro rata refund calculation. The 60% point of the term varies with each college program. After the 60% point in the payment period, no refund is due. After attending classes, the following fees are non-refundable: dental equipment rental, microscope rental, malpractice and disability insurance.

## **Enrollment Status**

### **Graduate & Professional Colleges: Enrollment Status**

The Colleges classify students who are registered for 9 hours or more to be full-time. Students who are registered for 8 hours or less are classified as part-time.

For financial aid purposes and for enrollment reporting to the National Clearinghouse students who are registered for 9 hours or more are classified as full-time. Students who are registered for 5, 6, 7, or 8 hours are classified as half-time and students who are registered for less than 5 hours are classified as less-than-half-time.

### **Undergraduate Colleges/Programs: Enrollment Status**

The Colleges classify students who are registered for 12 hours or more to be full-time. Students who are registered for 11 hours or less are classified as part-time.

For financial aid purposes and for enrollment reporting to the National Clearinghouse students who are registered for 12 hours or more are classified as full-time. Students who are registered for 9, 10, or 11 hours are classified as three-quarter time, students who are registered for 6, 7, or 8 hours are classified as half-time, and students who are registered for less than 6 hours are classified as less-than-half-time.

## **Unofficial Withdrawal**

Students are to be identified by the colleges if they are no longer attending the University. Once those students are identified, the college will proceed with initiating an electronic change of status form. The Financial Aid Office will generate a report of all Title IV Aid recipients with a grade point average of zero during a period of enrollment as a further verification of enrollment. Once the change of status form is completed, it is used to prorate permissible refunds in tuition and fees.



## Grade Marking System

The marks used in all official reports of students' grades are: A, B, C, D, F, W, WP, WF, G, I, IP, and Au.

\* The performance level and quality value assigned to that performance are as follows:

### Grade Performance Level/Quality Points per Semester

A..... Consistently Outstanding .....	4
B..... Exceeds Expectation for Satisfactory; Occasionally Outstanding .....	3
C..... Satisfactory .....	2
D..... Marginal .....	1
F..... Failure .....	0
P..... Pass/Progress .....	0
R..... Retake.....	0
Au..... Audit.....	0
IP..... In Progress .....	0

The designations 'WP' or 'WF' will be recorded to indicate passing or failure in those instances in which a student withdraws from a course before completing the work. The designation 'G' will be recorded in those instances in which a student completes all requirements in a course but his performance is at such a low level that further evaluation is necessary to determine if the student is performing at the minimum pass level (D). The letter 'G' can only be replaced by a permanent grade of 'D' or 'F'. The designation 'I' will be used in those instances in which a student is performing at a passing level but is unable to complete a course at the regular time because of an acceptable reason, necessitating arrangements by the instructor for the student to complete his work. The 'I' is to be replaced by whatever grade the student earns. The 'G' and 'I' designations cannot be permanent on a student's record and must be removed by the end of the semester following that in which it was received, or in the case of the graduating senior, no later than the day before commencement. Failure on the part of a student to remove a 'G' or 'I' within the time allowed will result in the grade of 'F' as a permanent grade.

The designation of 'R' will be recorded in those instances in which a student completes all requirements in a clerkship and passes the clinical portion but fails the written exam. The student will retake the written exam and the clerkship director will assign the appropriate grade no later than the end of that academic year. A second failing score on the exam, or failure to retake the exam on time, will result in the assignment of a failing grade for the clerkship.

The designation of 'IP' is used in the Colleges. This grade is entered for all courses for which a student is currently enrolled. The "IP" grade will be replaced upon completion of the course.

Certain marginally failing students, upon recommendation by appropriate progress and promotion committees, may record a passing score (in the previously failed course) by a

self-study review of the course and re-examination; re-examination in such instances requires payment of a \$50.00 fee. Students are required to register for the examination at the registrar's office and pay the fee prior to taking the re-examination. When courses are repeated or credit is earned through re-examination, both the original and the repeat grade are computed in the GPA.

\*The College of Dentistry utilizes a grading scale designating pluses. The Colleges of Graduate Health Sciences and Pharmacy utilize a grading scale designating pluses and minuses. These scales are depicted in the respective college sections of this catalog.

## **Reporting of Grades**

All grades must be received in the Registrar's Office within 72 hours (3 working days) after the course has ended. In accordance with the Family Educational Rights Privacy Act (FERPA), also known as the Buckley Amendment, students' grades must be reported as follows:

1. By the Professor on the official grade sheet issued by the Registrar's Office.
2. By the Professor on official University of Tennessee stationery.

Grade sheets are issued online to every Professor for any student who has registered for the course. Grade changes must be submitted by memorandum; or via email. In order to maintain the students' confidentiality, any memorandum sent to the Registrar's office should only contain grading information pertaining to one student. Information regarding an additional student must be sent on a separate piece of stationery.

## **Transcripts**

The permanent academic record of all students enrolled at The University of Tennessee Health Science Center, is maintained in the Office of the Registrar, and transcripts of such records are released only upon written authorization of the student. The Registrar will provide copies of transcripts to students and alumni at no charge. However, no transcripts will be provided for any student who has outstanding obligations to the University.

## **Veterans' Affairs**

Students entitled to Veterans Educational Assistance (G.I. Bill benefits) should contact the Registrar's Office for assistance. Students enrolled under VA programs are subject to all rules and regulations set forth by the Department of Veterans Affairs, as well as university regulations.

## **Promotions**

Promotion of students within each college results from positive action taken by the appropriate promotion committee. Grades are not necessarily the sole criterion used in determining whether or not the student is promoted. Other attributes of the student, primarily those concerned with the level of professionalism expected of a student in a particular discipline, are considered.

## **Appeal of Adverse Promotion and Graduation Decisions**

In those instances in which a student is not recommended for promotion or graduation by the appropriate promotion committee, he or she has the right to request a hearing before that committee. Such a request must be filed in writing with the committee within five (5) calendar days after receiving notice of the recommendation. At this hearing, the student shall have an opportunity to present evidence in his/her behalf. Attorneys will not be permitted to participate in these hearings to represent either the student or the University. Should the student be dissatisfied with the recommendation of the promotions committee, he/she may appeal to the Dean by filing a written appeal with the Dean's office within five (5) calendar days of receipt of notice of the recommendation. Action of the Dean may be appealed by filing a written appeal with the Chancellor within five days of receipt of the Dean's action.

## **Graduation**

### **Requirements for Graduation**

In order to be certified for graduation, each student must meet the degree requirements of the college in which they are enrolled and discharge all financial obligations to the university. Degree requirements will be found in the appropriate college section.

### **Attendance at Commencement**

Attendance at commencement is mandatory. Students who wish to receive the degree in absentia must file a written request with the dean of the college at least two weeks before commencement.

### **Honor Code**

All students enrolled in The University of Tennessee Health Science Center subscribe to The University of Tennessee Health Science Center Honor Code. Each college has established an Honor Council to function under the rules delineated in the Honor Code. Each student, before matriculation at The University of Tennessee Health Science Center, is required to sign a pledge indicating understanding and acceptance of the provisions of the Honor Code.

A full description and details of the Honor Code and the College Honor Councils and procedures may be found in the Center Scope.

## **Student Affairs**

### **Office of Student Affairs**

The Office of Student Affairs is responsible for the administration and coordination of student affairs and student services such as student life, student health insurance, new student orientation, professional fraternities, student parking appeals, commencement ceremonies, student government, spouse employment, the student judicial system, and student rights and responsibilities.

### **Office of Student Life**

The Office of Student Life is responsible for student activities that provide personal growth opportunities for students and student families and for coordinating social, cultural, and entertainment programs that will promote friendship and camaraderie among all students. The activities of this office are closely related to those of the Student Government Association Executive Council and the student government associations of the colleges. The Office of Student Life annually publishes the student handbook (The Center Scope), the student yearbook (The Asklepicion), the monthly newsletter (The Student Life Line), and other student publications. Other responsibilities include new student orientation, student leadership and development, advising of student organizations, professional fraternities, and spouse organizations; and various social, entertainment, and cultural events.

### **Student Alumni Center**

The Wassell Randolph Student Alumni Center commonly called the “SAC”, serves as a major focal point for campus activities. It houses an aerobic room, meeting rooms, and an auditorium.

### **Campus Recreation**

The Office of Campus Recreation, housed in the Student Recreation Center, is the main focal point for recreational opportunities on The University of Tennessee Health Science Center campus. The Campus Rec staff believes that physical activity plays a vital role in the development and maintenance of a “healthy, well-adjusted” individual. The many diverse activities and programs offered by Campus Recreation are a means to educate participants, provide opportunities for group and individual competition, provide opportunities for social and personal interaction between students of different classes and colleges, provide assessment and guidance in the area of health-related fitness, provide opportunities for spouse and dependent participation, and to provide student leadership opportunities.

Campus recreation programs include: Intramural Sports, Fitness and Wellness, Outdoor Recreation, Instructional Programs; i.e. scuba, golf, tennis, etc., and Special Events. On the south side of the campus, behind the Dunn Dental Building, is an outdoor

recreational area that includes playing fields for softball, football, and soccer; six lighted tennis courts; a jogging track; and a covered pavilion with restrooms and a picnic patio with barbeque grill. Intramural, recreational, and fitness-oriented activities are scheduled throughout the year for students, faculty, staff, alumni, and dependents of these groups.

Fitness and healthy living are important components of community life at The University of Tennessee Health Science Center. The facilities described here are partially supported by student activity fees, but also represent a significant commitment on the part of the institution to support health promotion and disease prevention.

## **Health Career Programs**

**Isaac O. Donkor, PhD**

**Professor and Associate Dean for Health Career Programs**

**<http://www.utmem.edu/HCP/>**

The mission of the Office of Health Career Programs (HCP) is to increase the enrolment and graduation of students from underrepresented groups in the academic and professional programs at UTHSC. The office serves as an important resource to these students via the provision of counseling on matters of concern to underrepresented students in the health science center environment. A targeted recruitment plan, information dissemination, skill building activities, academic and personal development enrichment programs, and retention strategies are in place to accomplish the mission of the department. A variety of summer enrichment programs are available for undergraduate students. These programs are described below, but students are strongly encouraged to visit the department's website: <http://www.utmem.edu/HCP/>

### **Tennessee Institutes for Pre-Professionals (TIP)**

UTHSC recognizes the need diversify its student population by increasing the pool of underrepresented groups in its health profession programs. The Tennessee Institutes for Pre-Professionals (TIP) is a response to this need. TIP provides a unique structured opportunity for underrepresented Tennesseans to be equipped for successful matriculation into one of the health profession programs at UTHSC. TIP offers year-round advice, support, and activities designed to assist students to realize their career goals. Three tracks have been implemented to prepare underrepresented Tennesseans for successful matriculation into UTHSC programs. Track I provides students with an internship exposure to shadow healthcare practitioners; Track II provides a standardized test-preparation experience for students attempting the following professional school examinations: MCAT, DAT, and PCAT; and Track III provides pre-matriculation experience which simulates the professional curriculum with courses taught by professional school faculty. For further information call (901) 448-6399. Deadline for application is February 28.

### **Summer Research Scholar Program**

The goal of the program is to expose undergraduate students to the relevant technical language, and the scientific method germane to biomedical research with the hope of attracting them into UTHSC graduate programs. It is an eight week summer internship program that offers hands-on research experience in a laboratory setting for

undergraduate students interested in biomedical research, which also pays interns a competitive stipend. Each student is matched with a faculty member and participates in an ongoing research project in the mentor's laboratory. Requirements for participation in the program include a minimum GPA of 3.0 and two letters of recommendation from college faculty members. For additional information contact Dr. Donald Thomason at (901) 448-7224 or Dr. Eldridge F. Johnson, Ph.D. at (901) 448-5992. Deadline for application is February 28.

### **School of Biomedical Engineering Summer Internship Program**

The purpose of this internship is to introduce students to biomedical engineering, which is the application of engineering and physical science to medical problems, including research and development of new technologies. The specific research areas will be in biomechanics, cell and tissue engineering, electrophysiology and medical imaging. Preferences will be given to those who are Tennessee residents or attend Tennessee schools, maintain a GPA of 3.0 or better, have at least two years of college and belong to a minority group; however, others may apply. For further information, call (901) 448-7099. Deadline for application is February 28.

### **High School to Health Sciences Librarianship and Informatics**

Secondary school students are engaged in a variety of learning activities investigating biomedical information careers and the academic paths that can lead them there. To be eligible, students must be a member of an underrepresented minority group in the field of health sciences librarianship and informatics, be a resident of Shelby County, in grades ninth through twelfth, have at least a 2.5 GPA and/or a composite ACT score of 16, and have a demonstrated interest in health information careers. For further information call (901) 448-4759 or e-mail Mrs. Brenda Green at [bfgreen@utm.edu](mailto:bfgreen@utm.edu). Deadline for application is February 28. Project WEB Address: <http://bioinfo-career.org>

### **Community Partners**

The Office of Health Career Programs has teamed up with area organizations such as Memphis Challenge, Memphis Prep, and Health Disparities International Research Training to disseminate UHTSC summer programs to underrepresented minority students. These organizations are described below.

#### **Memphis Challenge Program (MC)**

Created under the auspices of the Hyde Family Foundation, the Memphis Challenge program seeks to inspire and develop future community leaders from among Memphis' brightest graduating high school seniors. As a corporate sponsor for this program, The University of Tennessee Health Science Center provides eight-week summer internships in its clinical and research laboratories for undergraduate students interested in a health profession career. A college GPA of 3.0 is required. For more information contact (901) 312-9621. Deadline for application is February 28.

#### **Memphis Prep (MP)**

The Memphis Prep Program provides promising Memphis City School rising juniors and seniors with enrichment summer experiences, either in intense academic preparatory schools or in programs developing leadership skills, responsibility, and talents. Following their acceptance or attendance at an undergraduate institution, students are

eligible to apply for eight-week summer research internships at The University of Tennessee Health Science Center. Matriculating and current undergraduates must have a minimum GPA of 3.0. For more information contact (901) 312-9621. Deadline for application is February 28.

### **Health Disparities International Research Training (HDIRT)**

HDIRT provides international research training opportunities to qualified undergraduate and graduate students underrepresented in biomedical and behavioral research. Through academic programs in their home institutions, students acquire the basic skills needed to conduct research and become eligible to participate in a research project in Brazil or Uganda. Projects include basic science (neuroanatomy, development, biochemistry) and clinical pediatric oncology (for qualified graduate students) as well as field biology and public health qualitative assessment. Participating students must be a US citizens or permanent residents. Students must have completed at least two years of course work in a major related to biomedical or behavioral science and have a minimum GPA of 3.0. For more information call (901) 321-3445.

### **For additional information contact:**

Office of Health Career Programs  
930 Madison Ave., Suite 836, Memphis, Tennessee 38163  
(901) 448-6399  
[www.utmem.edu/HCP/](http://www.utmem.edu/HCP/)

### **Student Financial Aid**

The goal of the Office of Student Financial Aid is simply to see that no student foregoes an education at The University of Tennessee Health Science Center because they cannot afford it. Each staff member is dedicated to exploring every avenue available in financing an education. The University of Tennessee Health Science Center believes that the cost of education is the primary responsibility of the student and/or the student's family. The purpose of aid is to fill in the gap between family resources and cost.

### **Student Government Association**

Each college at The University of Tennessee Health Science Center has a student governing council, and these organizations represent student interests within the colleges and with the college administrations. The presidents of each college Student Government Association serve on the University of Tennessee Health Science Center Student Government Association Executive Council (SGAEC). The student president of the Memphis branch of the UT Knoxville College of Social Work also serves on the Council. The president of the SGAEC is elected annually from one of the colleges, and represents all students on The University of Tennessee Health Science Center campus in a variety of capacities.

The SGAEC provides leadership in student related matters and serves as the official liaison between the campus administration and The University of Tennessee Health Science Center students. SGAEC members nominate students for university and campus

wide committees and assure that student viewpoints are represented in university forums through these student members.

The SGAEC holds monthly meetings with the chancellor and weekly meetings with student affairs personnel. The Council's structure, including specific duties, responsibilities, and purposes, can be found in The University of Tennessee Health Science Center student handbook, The Center Scope.

## **Student Housing**

The University of Tennessee Health Science Center offers one residence hall for single students who choose to live on campus. The Office of Student Housing operates the facility.

Goodman Family Residence Hall accommodates four residents in an apartment setting. Each apartment consists of 4 individual sleeping rooms, 2 baths and a living/dining/kitchen area. These furnished apartments include a vanity/sink and a private telephone in each bedroom. Students with personal computers can access the university computer system through jacks located in the bedrooms. Cable television access is provided in the 4 bedrooms and in the living area of each apartment. Goodman Hall is air-conditioned and houses both male and female students.

### **For additional information contact:**

June Floyd, Director  
Office of Student Housing  
The University of Tennessee Health Science Center  
Randolph Hall, Suite 5  
Memphis, Tennessee 38163  
(901) 448-5609

## **University Dining Services**

University Dining Services caters food and beverages for campus parties, holiday gatherings, meetings, and seminars. Vending machines are located in most university buildings.



## **University Health Services**

University Health Services provides wellness oriented primary health care to The University of Tennessee Health Science Center students and their families, employees and community. University Health Services offices are staffed by nurse practitioners and a physician during scheduled hours. The University of Tennessee Health Science Center physicians provide specialty medical care on a referral basis.

A student health fee is assessed to each student, which supports the basic primary care and counseling activities of the Health Service. These are designed to complement the Student Health Hospital/Accident Insurance program that includes comprehensive accident, and mental health coverage. Dependents of students may be included in this insurance plan on an optional basis. Students who do not elect this coverage are required to show evidence that they are covered by equivalent insurance. Details of the insurance program are available from University Health Services and Student Life. A women's health clinic is available to female students and dependents. Dental care is also available to students and dependents at reduced fees, through the College of Dentistry. Psychological and psychiatric counseling services are available through the University Health Services, at no out of pocket expense to the student.

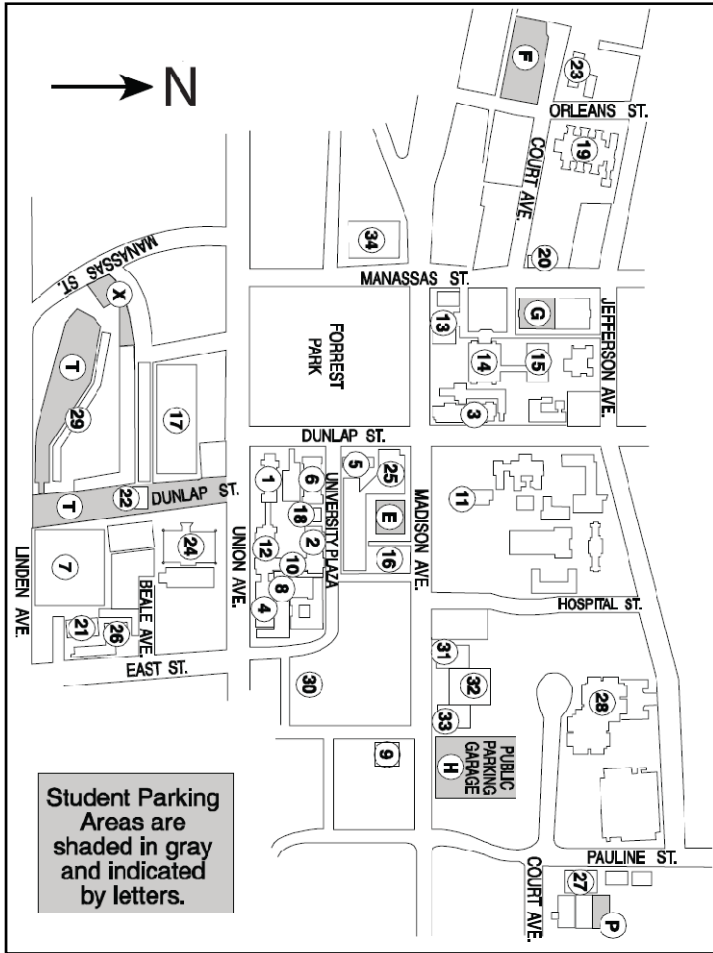
## DIRECT EDUCATIONAL COSTS FOR 2008 – 2009

<b>First Year Tuition</b>	<b>In-State</b>	<b>Out of State</b>
<b>College of Allied Health</b>		
<i>Dental Hygiene–BS</i>	\$ 4,720	\$16,016
<i>Dental Hygiene–MS</i>	\$ 5,704	\$16,828
<i>Physical Therapy–MS</i>	\$ 5,704	\$16,828
<i>Physical Therapy–Doctorate</i>	\$ 7,882	\$18,986
<i>Physical Therapy–Doctor of Sc./Grad.</i>	\$ 5,704	\$16,828
<i>Occupational Therapy–MS</i>	\$ 7,882	\$18,986
<i>Clinical Lab Sciences–MS</i>	\$ 5,704	\$16,828
<i>Medical Technology–BS</i>	\$ 5,868	\$16,828
<i>Cytopathology–MS</i>	\$ 7,882	\$18,986
<i>Health Information Management–BS</i>	\$ 5,868	\$16,828
<i>Health Information Management–MS</i>	\$ 7,882	\$18,986
<b>College of Dentistry</b>	\$16,112	\$38,130
<b>College of Medicine</b>	\$18,256	\$36,168
<b>College of Pharmacy</b>	\$12,426	\$25,432
<b>College of Nursing</b>		
<i>MSN Program</i>	\$ 7,882	\$18,986
<i>DNP Program</i>	\$ 7,882	\$18,986
<i>BSN Nursing</i>	\$ 4,582	\$11,172
<b>College of Graduate Health Sciences</b>	\$ 6,196	\$18,672

*Contact the Cashiers Office for detailed information on tuition costs per semester and non resident fees.*

## *ESTIMATED MONTHLY BASIC LIVING EXPENSES FOR 2008 - 2009*

	<b>Goodman Residence Hall</b>
<u>Room (per semester)</u>	\$1,800
<b>TOTAL</b>	<b>\$1,800</b>



Beale Building .....	17
Boling Center .....	19
Bookstore (concourse level).....	32
Cancer Research Building .....	34
Campus Police/Parking Services .....	20
Cashier's Office, Room103 .....	1
Coleman College of Medicine Bldg. ....	28
Crowe Research Building .....	12
Doc's Field.....	7
Doctors Office Building .....	27
Dunn Dental Building .....	24
Enrollment Services/Registrar, Suite 525 .....	31
Financial Aid, Suite 520 .....	31
Feurt Pharmacy Research Bldg. ....	5
Fitness Center.....	15
General Education Building (GEB) .....	25
Goodman Guard Station .....	22
Goodman Family Residence Hall .....	29
Hyman Administration Bldg. ....	1
Johnson Building .....	6

Lamar Alexander Building.....	16
Library, 2 <sup>nd</sup> Floor .....	16
Link Building.....	18
Molecular Science Building .....	11
Mooney Building .....	10
Nash Addition.....	8
Nash Research Building .....	4
Physical Plant Shop .....	21
Purchasing & Physical Plant Bldg.....	26
Randolph Building.....	13
Rehabilitation Engineering Bldg.....	23
Student Alumni Center (SAC).....	14
Student Life, Suite 309 .....	14
UT-Baptist Research Park (planned) .....	30
Van Vleet Cancer Center .....	3
Wittenborg Anatomy Building .....	2
20 S. Dudley Building .....	9
910 Madison .....	31
920 Madison .....	32
930 Madison .....	33



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# **COLLEGE OF ALLIED HEALTH SCIENCES**

**930 Madison Avenue, 6th Floor  
Memphis, TN 38163  
Tel: (901) 448-5581**

**William Frey, Ph.D., Dean**

Diane Wyatt  
Assistant Dean for Student and Alumni Affairs

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# GENERAL INFORMATION

## History

The University of Tennessee Board of Trustees established the College of Allied Health Sciences in 1972. Educational programs are offered in six specific allied health disciplines: medical technology, cytotechnology, dental hygiene, health informatics and information management, physical therapy, and occupational therapy. The mission of the College of Allied Health Sciences is to educate competent allied health professionals to provide services that address the health care needs of the people of Tennessee. Related to and derivative of this central mission are three additional responsibilities: to provide leadership in the respective allied health professions, to contribute to the knowledge bases of the respective fields through both the faculty and graduates of the College, and to promote lifelong learning through continuing education.

## Faculty

The faculty of the College of Allied Health Sciences possesses the advanced experiential and academic credentials required in a major health sciences center. In addition to being accomplished teachers and scholars, faculty in the College of Allied Health Sciences have a tradition of distinguished professional leadership at the regional and national levels. Scientists and clinical faculty from the Colleges of Medicine, Dentistry, Graduate Health Sciences, Nursing and Pharmacy enrich the instructional environment for allied health students. Volunteer faculty from a wide variety of health care institutions, contribute a real life perspective through their mentorship of students enrolled in the clinical educational experiences offered by the College. Faculty members consistently update their knowledge by engaging in scholarly activity and clinical service in areas related to the courses they teach.

## Alumni Affairs

Graduates of the College officially become members of the University of Tennessee Alumni Association upon graduation, and receive publications of the Office of Alumni Affairs. Alumni also receive the College alumni newsletter, *The Allied Health Update*.

## Degrees Offered

The College of Allied Health Sciences offers programs that lead to the following degrees:

- Master of Cytopathology Practice
- Bachelor of Science in Dental Hygiene
- Master of Dental Hygiene
- Bachelor of Science in Health Informatics and Information Management
- Master of Health Informatics and Information Management
- Bachelor of Science in Medical Technology
- Master of Science in Clinical Laboratory Sciences
- Master of Occupational Therapy

Doctor of Physical Therapy  
Master of Science in Physical Therapy  
Doctor of Science in Physical Therapy

The information that follows is applicable to professional entry-level programs listed above. For information about post professional programs: Master of Science in Physical Therapy, Doctor of Physical Therapy Science, Master of Dental Hygiene, Master of Health Informatics and Information Management, and Master of Science in Clinical Laboratory Sciences, refer to the specific departmental section of this Catalog.

## **Accreditation**

All programs are fully accredited by the appropriate accrediting body. The Program in Cytotechnology is accredited by the Cytotechnology Programs Review Committee in cooperation with the Commission on Accreditation of Allied Health Education Programs; the Program in Dental Hygiene is accredited by the Commission on Dental Accreditation; the Program in Health Informatics and Information Management is accredited by the Commission on Accreditation of Health Informatics and Information Management Education; the Program in Medical Technology is accredited by the National Accrediting Agency for Clinical Laboratory Sciences; the Program in Occupational Therapy is accredited by the Accreditation Council for Occupational Therapy Education; and the Program in Physical Therapy is accredited by the Commission on Accreditation in Physical Therapy Education. Programs in the college have a long and distinguished accreditation history, several being among the oldest of their kind in the nation. Faculty and administrators provide important volunteer service to the specialized programmatic accreditation bodies that serve various programs.

Please see additional accreditation information in the individual programmatic sections of this catalog. The college is an institutional member of the Association of Schools of Allied Health Professions.

## **Honors, Awards and Loans**

### **Honors**

Honors graduates of the College are so designated in recognition of academic distinction achieved in their respective professional curricula. Honors designations receive special mention in the graduation program and on diplomas, and are based on the following cumulative grade point averages:

#### **Grade Point Average Designation**

- 3.50 - 3.69 Graduation With Honors
- 3.70 - 3.89 Graduation With High Honors
- 3.90 - 4.00 Graduation With Highest Honors

## **Awards**

### **Honor Society**

The national allied health honor society, Alpha Eta, recognizes graduating allied health students who exhibit superior academic achievement and potential for leadership in their chosen professions. No more than twenty percent of each graduating class may be selected for membership. The names of newly elected members are announced as part of the college observance of graduation.

### **Allied Health Student Excellence in Research Award**

This award is presented by Sigma-Xi, The Society of Scientific Research to the senior Allied Health Science student submitting the best original paper based upon his/her mentored research.

### **Departmental Awards**

Outstanding students are recognized for their achievements during the College observance of graduation held before each June and December commencement. Program-specific awards given in recognition of academic excellence, professional competence, and leadership are listed below.

### **Department of Clinical Laboratory Sciences**

The four Clinical Laboratory Sciences Department awards are named for former faculty members who provided distinguished service to the University.

**Cyrus C. Erickson Award in Cytotechnology:** This award is presented to a graduating student by the cytotechnology faculty in recognition of professional ability, intellectual curiosity and a sense of responsibility.

**Francis Guthrie Outstanding Student in Medical Technology Award:** This award is presented to a medical technology graduating student who has demonstrated exceptional ability based on academic and professional criteria. The recipient is chosen by faculty and fellow students, and this award is not necessarily presented each year.

**Alice Scott Hitt Faculty Award in Medical Technology:** This award is presented to a graduating student who has demonstrated outstanding personal and professional characteristics. The recipient of the award is chosen by the faculty. This award may not be given every year.

**Brenta G. Davis Outstanding Clinical Laboratory Science Graduate Student Award:** The award will be presented to a graduate of the Master of Science in Clinical Laboratory Science program who demonstrates scholarship, character and dedication to the highest ethical and professional standards. The recipient of the award will be chosen by the didactic faculty. The award will not necessarily be presented each year.



## Department of Dental Hygiene

**Dental Hygiene Clinical Achievement Award:** This award is given to the graduating student who has demonstrated the following professional traits: comprehensive knowledge, proficiency in rendering patient care, sensitivity to patient needs, and commitment to community health needs. These characteristics are accompanied by an apparent desire to assume responsibility as a member of the oral health team.

**The Faculty Award:** This award is presented by the faculty to the graduating student who has earned the highest scholastic average during the study of dental hygiene.

**Preventive Oral Health Educator Award:** This award is sponsored by the Proctor and Gamble Company but is selected by the DH faculty. The award is given to the graduating dental hygienist who has shown exceptional knowledge in the preventive aspects of dental disease and consistent outstanding performance in providing patient education.

**Sigma Phi Alpha Dental Hygiene Honor Society:** The national dental hygiene honor society was founded in 1958. Eligibility for membership is based on scholarship, potential service to the profession, character, and leadership. Eligible students must rank in the top 25% of their class.

**The Tennessee Dental Hygienists Association Outstanding Student Award:** This award is special because the person is nominated and elected by their classmates as the person they believe is the epitome of dental hygiene. This person is recognized at the TDHA annual session.

**Professional Leadership Award:** This award recognizes the student who exhibited the greatest overall professional leadership in the class. Examples include, but are not limited to, the Student American Dental Hygienists' Association and the Memphis Dental Hygienists' Association involvement, holding class office, organizing volunteer activities, etc.

**Community Service Award:** This award is presented to the student(s) who exhibited the greatest enthusiasm for community service.

**Scholarly Research Award:** This award recognizes student(s) who exhibit exceptional research and willingness to compete on a national level at an ADHA annual session.

**Urban Smiles Award:** This award recognizes student(s) who demonstrates a true heart for service, sincere compassion for the patients, and the spirit of teamwork.

**The Outstanding MDH Graduate Student Award:** The award will be presented to a graduate of the Master of Dental Hygiene program who demonstrates scholarship, character and dedication to the highest ethical and professional standards. The student must achieve a GPA of 3.5 or higher on a 4.0 scale. The recipient of the award will be chosen by the MDH faculty. The award will not necessarily be presented each year.

## **Department of Health Informatics and Information Management**

**Tennessee Health Information Management Association Outstanding Student Award:** This award is presented to a graduating BS HIIM student for outstanding academic and clinical ability. The recipient is chosen by health informatics and information management faculty and members of the graduating class.

## **Department of Occupational Therapy**

**Achievement Award in Occupational Therapy:** The faculty presents this award to a graduating senior for outstanding academic and clinical achievement. The recipient has achieved a level of excellence in both academic and fieldwork settings.

**Leadership Award in Occupational Therapy:** This award is presented to a graduating senior who demonstrates outstanding leadership. The recipient is nominated by classmates and chosen by the occupational therapy faculty.

## **Department of Physical Therapy**

**Outstanding Physical Therapy Student Award:** This award, given annually on behalf of academic and clinical physical therapy faculty, is presented to a graduating student in recognition of excellent performance in both classroom and clinical settings.

**Physical Therapy Faculty Award:** As the highest honor faculty can bestow on a student, the Faculty Award requires a unanimous vote of the faculty and is given in recognition of outstanding academic and clinical performance, and potential for leadership in the profession of physical therapy. This award is not necessarily given annually.

## **Loans**

### **Allied Health Student Emergency Loan**

Any allied health student with a documented need for a short-term loan may apply for assistance from the Allied Health Student Emergency Loan Fund. Loans must be repaid within 30 days with repayment, including interest, calculated at six percent per annum. The maximum loan amount that can be authorized is determined by funds available in the account at the time the request is submitted. Applications for loans must be made through the Office of Student Financial Aid.

## **Student Activities**

### **Allied Health Student Government Association**

All currently enrolled allied health students are members of the Allied Health Student Government Association (AHSGA). The AHSGA Executive Council (composed of student class presidents elected in the college each year) meets regularly with the Assistant Dean for Student Affairs to discuss issues and advise the college regarding

student views and concerns. The president of the AHSGA Executive Council is elected annually from the allied health programs, and represents allied health students in the campus level Student Government Association Executive Council (SGAEC). The SGAEC represents views of The University of Tennessee Health Science Center students, studies matters of importance to students, and makes recommendations to The University of Tennessee Health Science Center administrators and faculty. The AHSGA president reports on activities of the campus student government association at meetings of the AHSGA Executive Council.

## **Student Professional Associations**

Allied health students are eligible for student membership in the professional association(s) of each discipline. Cytotechnology students may become student members of several associations including the American Society for Cytotechnology, the American Society of Cytopathology and the Southern Association of Cytotechnologists; dental hygiene students qualify as student members of the American Dental Hygienists' Association; health information management students may join the American Health Information Management Association; medical technology students are required to join the American Society for Clinical Laboratory Science as student members; occupational therapy students may join the American Occupational Therapy Association and the Tennessee Occupational Therapy Association; and physical therapy students may become student members of the American Physical Therapy Association.

## **Admissions and Selection**

### **College Admission Policy**

The College of Allied Health Sciences conducts, through its several admissions committees, appropriate and timely review of student applications and supporting credentials. The resulting decisions and recommendations reflect high academic standards and observance of applicable legal statutes, as well as policies of the University of Tennessee System, the University of Tennessee Health Science Center, the College of Allied Health Sciences, and the individual programs. Admissions procedures, processes and recommendations afford equal educational opportunity to all applicants without regard to race, color, national origin, sex, religion, age, handicap or veteran status.

Details of program admission criteria are available from the respective departments and may be found on the college website which can be accessed through the UTHSC website at [www.utmem.edu](http://www.utmem.edu).

## **Technical Standards**

The Committees on Admissions for the professional programs of the College maintain that certain minimal technical standards must be present in applicants. Candidates for practice in entry level degree programs and graduate education programs must have the following essential skills: motor; sensory/observational; communication; intellectual, conceptual, integrative, and quantitative; and behavioral/social and professionalism. The Committees on Admissions, in accordance with Section 504 of the 1973 Vocational Rehabilitation Act and the Americans with Disabilities Act (PL101-336) have established the aforementioned essential functions of students in the educational programs offered by the CAHS. Copies of Technical Standards for each of the programs are available upon request.

## **Student Professional Liability Insurance**

All allied health students are required to purchase professional liability insurance through the University at a nominal annual cost; payable annually during the first fee payment period of each academic year.

## **Academic Programs and Requirements**

### **Attendance Requirement**

Educational programs in the College of Allied Health Sciences are relatively brief (one to three years) and very intense. Students are, therefore, required to attend all planned learning experiences including lectures, laboratories, clinical assignments, etc. The department chair, program director, or appropriate faculty member in each program will inform students in writing of the consequences of failure to adhere to this general College requirement.

### **Grading**

The grade scale used by each program is established at the departmental level and is discussed with incoming students during new student orientation. (See also “Grade Marking System”.)

### **Examinations**

An examination period is scheduled at the end of each academic period or module. Examinations over courses that extend throughout the semester and do not continue into the next semester should be scheduled during the examination period. No student is excused from a final examination except in the event of the most compelling circumstances. Decisions concerning make up examinations are the responsibility of the appropriate course instructor or course director.

## Progress and Promotions

Promotion of students to subsequent semesters or promotion to graduation requires positive action taken by the Dean, upon recommendations made by each program's Progress and Promotions Committee. Recommendations made by these committees are based upon input from each faculty member or course director who has teaching responsibility during that specific instructional period.

Committee Guidelines. All committees follow specific guidelines related to required student performance and the kinds of recommended actions that may be made.

### 1. Student performance.

- a. (1). For all entry level programs except BS HIIM: Students must attain a semester grade point average of 2.0 to progress to the subsequent semester or to graduate. Any student who earns a grade of "D" (indicates marginal progress), "F" (failing), or "I" (incomplete) is reviewed in depth by the appropriate committee. Students must demonstrate a minimal competency level, as determined by the faculty and made known to students in advance. Students not reaching minimal competency may be required by the faculty to complete additional exams and/or class assignments until they reach the required minimal competence, or final course grades are recorded. The decision to permit this option is handled on a case-by-case basis by the appropriate progress and promotion committee. An explanation of the calculation of the final grade will be made known to students in advance.
- a. (2). For BS HIIM students: Because of the short duration of the BS HIIM program, different guidelines for student performance are followed. A student must pass each semester's courses with a grade of "C" in each course as well as attain a minimum semester grade point average of 2.0 in order to progress to the subsequent semester or term or to graduate.
- b. Students enrolled in post-professional programs must complete all courses with grades of "B" or above in core and clinical concentration courses, and "C" or above in other courses. No more than two grades of "C" may be applied toward a post-professional graduate degree. Students must maintain an overall grade point average of 3.0 ("B"). A student may be dismissed from the program upon earning more than two (2) grades of "C", or a grade below "C." Grades in courses earned at another university will not be computed in the cumulative GPA.
- c. A student must demonstrate satisfactory behavior in personal and professional characteristics deemed by faculty as being necessary for academic success and competency in clinical practice. Such areas may include ability to establish rapport with clients, ability to work effectively with members of the health care team, dependability, judgment, integrity, initiative, and interest.
- d. Students must meet the College and program technical standards to continue in the various curricula and graduate. Copies of these standards are provided to students by their respective programs.

## **2. Recommended actions:**

Progress and Promotion Committees may recommend any of the following actions to the Associate Dean for Academic Affairs:

- a. Promotion of the student to the subsequent semester or to graduation.
- b. Placing a student on academic probation. Academic probation may result from a student's earning a cumulative grade point average of less than 2.0 during the semester, from earning a grade of "D" in any course, or from failure to meet stated objectives associated with professional behavior or technical standards. Committee recommendations to the Dean must include delineation of specific conditions that must be met for the student to be removed from academic probation, and the time by which such conditions must be met.
- c. Dismissal of a student from a program. Dismissal may result from a student's earning a grade of "F" in any course, earning a grade of "D" in two or more courses, failing to meet the requirements of a course(s) as stipulated in the course syllabus, demonstrating serious deficiencies in personal or professional behavior, failing to meet technical standards; or failing to meet stipulated conditions for removal of academic probation within the designated time period.
- d. Allowing a student to repeat all or part of the curriculum. This recommendation may be made only if all of the following conditions are present:
  - 1) The presence of specific non-academic circumstance(s) judged by the committee as having an adverse effect on the student's academic performance.
  - 2) Committee judgment that the identified specific circumstance(s) show(s) probability of resolution within a reasonable period of time.
  - 3) Committee judgment that resolution of the identified circumstance(s) will subsequently result in satisfactory performance by the student.

## **Notification of Student**

Any student who is dismissed from a program or placed on academic probation is notified by email from the Associate Dean for Academic Affairs. A student placed on academic probation is given a written statement of conditions that must be met for removal of academic probation, and the time period allowed.

## **Reconsideration of Progress and Promotions Committee**

### **Recommendations for All Student Entry-Level and Postprofessional Programs**

In the event of a negative action, a student has the right to request reconsideration before an *ad hoc* appeals committee. Such a request must be submitted in written form through the UTHSC email system and received by the Associate Dean for Academic Affairs within five (5) calendar days of receipt of notification of the intended action. The student will meet with the *ad hoc* committee and may bring any person(s), excluding legal counsel, whom the student believes can contribute to the presentation. After hearing all persons who appear on behalf of the student or in-support of the action taken by the

progress and promotion committee, the committee sends a recommendation for resolution of the appeal along with supporting documentation to the Dean. The Dean will notify the student electronically of the final decision made regarding the appeal. The communication from the Dean will also outline any actions necessary for the student to take (i.e. terms of probation).

The *ad hoc* appeals committee is chaired by the Associate Dean for Academic Affairs who also appoints the committee which is composed of faculty from the programs in the College other than the one in which the appealing student is enrolled. If the original negative recommendation made by the Progress and Promotions Committee is sustained by the Dean, the student has the right of appeal to the Chancellor. Such an appeal must be in writing and received by the Chancellor within five (5) calendar days of receipt of notification from the Dean.

During the appeal process, a student may continue to participate in classroom activities but will be suspended from clinical activities.

## **Leaves of Absence, Withdrawal, and Readmission**

Leaves of absence with anticipated readmission may be granted by the Dean upon recommendation of the department chair or program director. Such recommendations must be based upon demonstration by the student of a compelling nonacademic reason for granting such a leave.

Readmission to any program after voluntary withdrawal, or readmission after dismissal can occur only upon demonstration by the student of a compelling nonacademic reason for consideration for readmission. (See 2. d., “Progress & Promotions.”)

## **Attendance at Graduation**

Participation in graduation exercises is mandatory for all graduating students. Any student who is unable to attend graduation exercises must request permission from the Dean to graduate in absentia. Such a request must be submitted in writing and must clearly state the student’s reason(s) for making the request. A student may graduate in absentia only if the Dean of the college has approved the request. The Dean will notify the Chancellor and the Registrar when the request is approved.

## **Graduation Requirements**

In order to be recommended for a professional entry level degree in any of the programs offered by the College, a candidate must comply with the following conditions:

1. Present evidence of having satisfactorily completed all prerequisite coursework.
2. Complete all required courses of the professional curriculum with a grade point average of at least 2.0 and, in the case of clinical education or fieldwork, a level of proficiency satisfactory to the departmental faculty.
3. Demonstrate professionalism expected of a student in the particular discipline satisfactory to the departmental faculty.

4. Discharge all financial obligations to the University and its affiliated organizations.
5. Meet residency requirements of the College.

## **Delayed Graduation Statement**

All students in the College are required to engage in clinical activities as prescribed by their respective programs and are assigned to these activities during the course of their programs according to the needs of the educational programs, the students and clinical sites. With the exception of dental hygiene, which provides clinical education on campus, programs in the College maintain a large number of affiliations with external clinical sites throughout the state and region in order to provide appropriate clinical experiences for their students. Occasionally, a scheduled clinical experience at an external site is unavailable due to circumstances beyond the control of the University; however, because the experience is required for graduation the College programs exercise a number of options and usually successfully substitute one site for another. On rare occasions, such a substitution is not possible and graduation may be temporarily delayed for a student until the required experience can be scheduled by the program and successfully completed by the student.

## **Criminal Background Checks**

All students should be aware that clinical sites, certification committees and state licensure boards may require drug screens and criminal background checks including fingerprinting for comparison against state and federal criminal records. Information discovered in criminal background searches may delay or prevent clinical education opportunities and entry into the profession. If a student needs further information about criminal background searches, the student should contact an academic advisor or the department chair.

## **Programs of Study**

### **Department of Clinical Laboratory Sciences**

Linda L. Ross, M.S., Chair

### **Program in Cytotechnology**

#### **Master of Cytopathology Practice (MCP) Degree**

Barbara D. Benstein, Ph.D., Program Director

Nadeem Zafar, M.D., Medical Director



## Program Objectives

The curriculum for the Master of Cytopathology Practice (MCP) is designed to prepare competent entry-level cytotechnologists with the skills necessary to prepare, evaluate, and interpret all types of cytologic material. Graduates of the program will be able to perform, interpret and correlate ancillary testing for proper triage of patients. They will be able to meet the current demands of the profession and will be prepared to engage future technology as it becomes standard in the cytopathology laboratory. Graduates of the program will also have the necessary skills in quality assessment to direct quality improvement activities and assume positions of leadership in management, research and education.

## Curriculum Description

The program is designed as a “3 + 2” program that leads to a Master of Cytopathology Practice Degree. Students complete three years of pre-requisite courses at other colleges or universities, and then complete two years (21 months) of professional coursework on the campus of the University of Tennessee Health Science Center. Candidates are not required to have a baccalaureate degree prior to admission. Students receive both clinical experience and didactic instruction throughout the program, with the greatest emphasis on microscopic interpretation of cells for diagnosis of disease. Techniques of specimen collection, preparation, and staining are mastered, as well as procedures for documentation and quality improvement. Students are introduced to molecular diagnostic techniques, laboratory management principles, and laboratory information systems. Required oral presentations by students include selected scientific literature reviews and case studies. Students also design and conduct a research project for presentation.

## Admission Requirements

<b>A. Prerequisite Course Work</b>	<b>Semester Hours</b>
General Biology .....	8
General Chemistry .....	8
English or communication .....	9
Social Science .....	12
Mathematics or statistics .....	3
Advanced Biology* .....	15
Electives .....	30
<b>TOTAL</b> .....	<b>85</b>

\*Courses suggested for fulfilling this pre-requisite include histology, cell biology, genetics, anatomy, physiology, and immunology.

### **B. Health Requirements (In addition to general University of Tennessee Health Science Center requirements)**

Students admitted to the Program in Cytotechnology must submit evidence of good health. The health examination should include a chest x-ray or tuberculin skin test,

and a comprehensive eye examination that includes a test for color vision. (Imperfect color vision is not a basis for excluding an applicant from the program, but instructors should know if this defect exists.) Cytotechnology students are required to be immunized against Hepatitis B virus and meningitis.

### C. Technical Standards

Cytotechnology students must have or acquire certain essential skills, functions and professional attitudes and behavior as described in our Technical Standards document. This document is provided upon request to any interested party; however, all students who enroll must be prepared to understand and abide by these requirements.

### D. Accreditation

The UTHSC Program in Cytotechnology is accredited by the Cytotechnology Programs Review Committee in cooperation with the Commission on Accreditation of Allied Health Education Programs (CAAHEP), 1361 Park Street, Clearwater, FL 33756; (727) 210-2350; [caahep@caahep.org](mailto:caahep@caahep.org)

## Curriculum Summary

### First Semester (Fall) ..... Semester Hours

413 MCP Introduction to Pathology .....	1
400 MCP Histology.....	1
460 MCP Gynecologic Cytopathology .....	5
480 MCP Microscopic Evaluation I.....	4
470 MCP Lab Techniques I.....	2
418 MCP Intro to Clin Lab Science .....	2

### Second Semester (Winter/Spring)..... Semester Hours

427 MCP Cell Biology .....	2
421 MCP Human Genetics .....	1
461 MCP Diagnostic Cytopathology I .....	4
481 MCP Microscopic Evaluation II.....	3
471 MCP Lab Techniques II.....	2
490 MCP Principles of Research.....	2
462 MCP Cytopathology Seminar I.....	1
430 MCP Ethics & Professional Issues .....	1
491 MCP Research Proposal.....	2

### Third Semester (Fall) ..... Semester Hours

520 MCP Adv Tech Mol Biol .....	2
519 MCP Virology .....	1
561 MCP Diagnostic Cytopathology II.....	2
580 MCP Microscopic Evaluation III .....	2
570 MCP Advanced Diagnostic Cytopathology .....	3
581 MCP Microscopic Evaluation IV .....	4

571 MCP Advanced Laboratory Techniques .....	1
551 MCP Statistics .....	1
590 MCP Research Seminar I .....	2
562 MCP Cytopathology Seminar II .....	1
598 MCP Clinical Practicum I.....	4

**Fourth Semester (Winter/Spring) .....Semester Hours**

591 MCP Research Seminar II .....	2
515 MCP Basic Ed & Management.....	2
550 MCP Epidemiology .....	1
563 MCP Cytopathology Seminar III.....	1
582 MCP Microscopic Evaluation V.....	2
599 MCP Clinical Practicum II .....	8

**Course Descriptions**

413 MCP Introduction to Pathology. A didactic course designed to orient the student to basic concepts of pathology with emphasis on the relationship of histological, physical and laboratory findings to the pathophysiology of disease. Emphasis is on vocabulary of disease and disease mechanisms.

400 MCP Histology. A course designed to orient the student in tissue structure and function. The characteristics and properties of primary normal human tissues are studied in relation to organ systems.

460 MCP Gynecologic Cytopathology. A didactic course in which the cellular morphology of female genital tract material is specifically studied. Normal biologic variations, atypical changes, premalignancy, and types of malignancy are considered in detail. Patient management and follow-up based on cytologic findings is also presented.

480, 481, 580, 581, 582 MCP, Microscopic Evaluation I, II, III, IV, V. Laboratory courses in the study, interpretation and diagnosis of all types of cytologic specimens. Students acquire the ability to synthesize the information from didactic courses and utilize it in terms of microscopic evaluation. I: Didactic material introduced in 460 MCP is reinforced. II: Didactic material introduced in 461 MCP is reinforced. III: Didactic material from 561 MCP is reinforced. IV: Didactic material introduced in 570 is reinforced. V: Didactic material introduced in previous courses is reinforced. Students evaluate routine cytologic material from local laboratories in preparation for off-site clinical rotations.

470, 471 MCP Laboratory Techniques I, II. I: A didactic and laboratory course which introduces collection, preparation and staining of cytologic specimens from the female genital tract and other body sites. Principles of laboratory safety are emphasized. II: A lecture and laboratory experience in cytopreparation of all types of cytologic specimens including those from the respiratory, urinary, and gastrointestinal tracts; body cavities, central nervous system, breast, thyroid, lymph nodes and other organs. Special emphasis is given to fine needle aspiration material. Special stains, techniques of fixation, cell block preparation immunocytochemical methods are introduced.

418 MCP Introduction to Clinical Laboratory Sciences. A didactic and laboratory course which introduces students to the skills necessary in the clinical laboratory including proper use and care of the microscope. An introduction to the computer includes word processing, graphics, and the internet. A survey of the history and current practice of the laboratory professions and other selected fields in allied health is also presented.

427 MCP Cell Biology. A didactic course which reviews the structure and function of organelles, biosynthetic pathways within the cell, cellular production of energy, and membrane transport systems.

421 MCP Human Genetics. A didactic course in the study of the mechanisms underlying human genetics and their medical applications. Discussions will emphasize the fundamental concepts of genetics; the structure and function of genes, chromosomes, DNA and RNA; replication; transmission and recombination; and the frequency of given genes in the population. A variety of genetic aberrations will be discussed in relationship to the more common medical phenomena. Cancer cytogenetics and immunogenetics are introduced.

461, 561 MCP Diagnostic Cytopathology I, II. Didactic courses in which the gross and microscopic anatomy of the major systems and organs is presented. Cytologic material, including fine needle aspirates, from these areas is presented in detail. Emphasis is placed on differential diagnosis of the various non-neoplastic and neoplastic disease processes which can occur in these sites. I: Course content includes the major organ systems of the respiratory tract, urinary tract, gastrointestinal system, body cavities and central nervous system. II: Course content includes the organs commonly sampled through fine needle aspiration such as the breast, thyroid, salivary glands, lymph nodes, liver, pancreas, kidney, and other organs.

490 MCP Principles of Research. A lecture and independent study course in which the basic elements of research are presented including literature searches, statistical analysis of data, and scientific writing. Students identify a particular research problem for study and prepare a bibliography.

462, 562, 563 MCP Cytopathology Seminar I, II, III. Seminar courses in which students review and interpret selected current literature articles and give verbal presentations for discussion. Students also participate in weekly discussion of current journal and interesting case presentations. Presentations of known and unknown diagnostic cases in a continuing education forum is required for credit.

430 MCP Ethics and Professional Issue. A course in professional and ethical issues as they relate to the practice of cytopathology and molecular pathology. Current laboratory regulations, medical-legal issues and other special topics are discussed.

491 MCP Research Proposal. Practicum involving review of the literature on a chosen topic and the development of a research plan to collect and analyze data. Students will be required to prepare a request for approval by the Institutional Review Board.

520 MCP Advanced Techniques in Molecular Biology. Basic concepts, principles, and applications of technological advancements in laboratory science including genetic technologies, flow cytometry, HLA tissue typing, nucleic acid hybridization and amplification techniques and biosensors. Provides opportunity for students to understand how basic scientific discoveries impact patient diagnosis, treatment and prognosis.

519 MCP Virology. The nature, classification, physiochemical properties, multiplication, host cell relationships and immunology of viruses of human importance. Transmission, pathogenesis and selected aspects of laboratory diagnosis will also be discussed.

570 MCP Advanced Diagnostic Cytopathology. A didactic course in which the gross and microscopic anatomy of bone, soft tissue and other organ sites accessible by fine needle aspiration is presented. Emphasis is placed on the differential diagnostic criteria used to make accurate interpretations in all types of cytologic material. Special stains and other ancillary techniques such as flow cytometry, immuno-cytochemistry and molecular diagnostics are presented in terms of their efficacy and significance for diagnosis and prognosis.

571 MCP Advanced Laboratory Techniques. A lecture and laboratory course which addresses the most current and commonly used adjunctive techniques applicable to cytopathology. Emphasis is placed on immunochemistry. Basic principles of procedures such as prognostic marker testing, DNA analysis, Fluorescent in situ hybridization, and other methods will be presented.

551 MCP Statistics. A lecture course in which students apply statistical analyses to clinical problems. Students will develop an understanding of how descriptive and inferential statistics can be used in research. Students will apply knowledge of statistics in critiquing published articles.

590, 591 MCP Research Seminar I, II. I: Practicum course in which the student designs, conducts and prepares a report on a research project in the field of cytopathology. II: Presentation of a research project and submission of a written scientific paper. Students are expected to present their research data in the form of an abstract or poster at a state/regional or national meeting and/or submit their paper for publication in an appropriate scientific journal.

598, 599 MCP Clinical Practicum I, II. Clinical experiences under supervision in a laboratory setting. I: Students utilize microscopic evaluation techniques with special emphasis on development of differential diagnostic skills. II: Students perform microscopic evaluation of all types of cytologic material with efficiency and an emphasis on accuracy of interpretation.

515 MCP Basic Education and Management Principles. Principles of learning with specific application to the development of instructional objectives, strategies and evaluation for specific teaching-learning situations. Also basic principles of management with particular emphasis on the clinical laboratory. Includes the basic management process, personnel supervision, identification and allocation of resources and simulated problem solving. Provides practical application of management principles under the supervision of local laboratory managers.

550 MCP Epidemiology. An introduction to the basic principles and applications of epidemiology for students and practitioners in allied health and related disciplines. Application of epidemiologic methods to the understanding of the occurrence and control of conditions such as infections, chronic diseases, community and environmental health hazards will be emphasized. Local, national and international health issues will be discussed and the role of public health intervention programs in alleviating public health disparities will be evaluated. Principally, this course will foster an appreciation of the role of the individual in helping shape public health policy to improve the overall health status of the (global) community.

## **Requirements for Graduation**

The following requirements must be satisfied to earn the degree of Master of Cytopathology Practice:

1. Satisfactory completion of 72 semester credit hours of core course requirements.
2. Obtain a minimum GPA of 3.0
3. Satisfactory completion of a research project and presentation are required prior to graduation.
4. Satisfactory score on written and visual comprehensive examination.
5. Successful students will complete the program in May and will be eligible to take national certification examinations and apply for a Tennessee license to practice in the state.
6. Students must discharge all financial obligations to the University and remove all deficiencies documented by the Registrar.

Attendance at graduation is mandatory. Those unable to attend the commencement must obtain permission to receive the degree *in absentia* by filing a written request with the Dean of the College.

## **Program in Medical Technology**

Linda L. Ross, M.S., Program Director

Sherri D. Flax, M.D., Medical Advisor

## **Program Objectives**

The curriculum is designed to produce graduates who reflect the current expectations of the profession and of employers, particularly with respect to the need for problem solving and supervisory skills in the laboratory. Graduates of the program are prepared to function effectively as technologists in any laboratory setting and eventually to assume positions of responsibility in laboratory management, teaching and consulting.

## Admission Requirements

### A. Prerequisite Course Work .....Semester Hours

English and/or Communication Skills .....	6
General Chemistry .....	8
Organic Chemistry* .....	8
General Biology or Zoology .....	8
Human Physiology or Anatomy/Physiology .....	3
College Algebra .....	3
Electives .....	<u>25</u>
TOTAL .....	61

\*One semester of Organic Chemistry and one semester of Biochemistry are acceptable.

### B. Health Requirements (In addition to general University of Tennessee Health Science Center requirements)

Medical technology students are required to be immunized against Hepatitis B virus, Neisseria meningitidis and to have skin tests for tuberculosis.

### C. Technical Standards

Medical Technology students must have or must be able to acquire certain essential skills, functions and professional attitudes and behavior as described in our Technical Standards document. This document is provided upon request to any interested party; however, all students who enroll must be prepared to understand and abide by these requirements.

### D. Accreditation

The UTHSC program in medical technology is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS), 8410 Bryn Mawr Avenue, Suite 670, Chicago, IL 60631, (773) 714-8880; <http://www.naacls.org>

## Curriculum Description

The curriculum of the medical technology program is a two-year professional program. Two years of preprofessional course work are required for entrance into the program. Clinical experience is integrated throughout the curriculum. The curriculum is designed so that there are opportunities for interactions with other health sciences students, and for integration of professional principles with the techniques of medical technology.

Students are required to pass either a comprehensive examination upon completion of the program covering all courses in the curriculum, or comprehensive examinations at intervals as specified by faculty. Examinations may be written, practical, or both. Where a sequence of courses is described below, each course in the sequence is prerequisite to the subsequent course. Generally, for promotion to the next semester or to graduation, all courses in each semester must be completed with a passing grade.

## Curriculum Summary

### **First Semester (Fall)..... Semester Hours**

411MT Biochemistry .....	3
412MT Clinical Analysis .....	3
413MT Introduction to Pathology .....	1
415MT Urinalysis .....	1
418MT Introduction to Clinical Laboratory Sciences .....	2
423MT Immunology .....	1
414MT Parasitology .....	2
425MT Urinalysis: Clinical Practicum .....	1

### **Second Semester (Winter/Spring)..... Semester Hours**

421MT Human Genetics .....	1
426MT Basic Microbiology .....	2
427MT Cell Biology .....	2
434MT Clinical Immunology I .....	2
431MT Hematology I .....	3
432MT Clinical Microbiology I .....	4
422MT Clinical Chemistry I .....	3
433MT Clinical Chemistry II .....	3

### **Third Semester (Summer/Fall)..... Semester Hours**

#### **Summer Term**

441MT Hematology II: Clinical Practicum .....	2
442MT Microbiology II: Clinical Practicum .....	2
443MT Chemistry III: Clinical Practicum .....	2
444MT Immunology/Serology II: Clinical Practicum .....	1
519MT Virology I .....	1
520MT Advanced Techniques in Molecular Biology .....	2

### **Fall Term..... Semester Hours**

511MT Hematology III .....	4
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513MT Clinical Chemistry IV .....	3
518MT Introduction to Research .....	1
512MT Blood Bank I .....	5
532MT Clinical Microbiology III .....	2
<b>Fourth Semester (Winter/Spring) .....</b>	<b>Semester Hours</b>
515MT Basic Educational and Management Principles .....	2
517MT Principles of Laboratory Utilization .....	1
521MT Hematology IV: Clinical Practicum .....	3
523MT Clinical Chemistry V: Clinical Practicum .....	2
531MT Off Campus Experiences .....	1
533MT Ethics and Professional Issues .....	1
535MT Research Practicum .....	2
542MT Microbiology IV: Clinical Practicum .....	2
544MT Blood Bank II: Clinical Practicum .....	4

## Course Descriptions

411 (MT) Biochemistry. The biosynthesis and metabolism of carbohydrates, lipids, proteins, and amino acids and basics of enzymology. DNA replication and RNA synthesis.

412 (MT) Clinical Analysis. Principles involved in preparing various types of solutions and dilutions used in the clinical laboratory. Also laboratory safety, and organic chemistry review. Basic principles of spectrophotometry, chromatography, electrochemistry and radioisotopes. Principles of enzyme kinetics, pH and buffer systems. Laboratory exercises support lecture material.

413 (MT) Introduction to Pathology. Basic concepts of pathology with emphasis on the relationship of historical, physical and laboratory findings to the patho-physiology of disease. Emphasizes vocabulary of disease and disease mechanisms.

414 (MT) Parasitology. Lecture and laboratory exercises emphasizing classification and identification of parasites of medical importance including morphology of infective and diagnostic forms. Also included will be consideration of arthropod vectors, laboratory quality control and proper specimen collection and handling.

415, 425 (MT) Urinalysis and Urinalysis: Clinical Practicum. Didactic presentations and laboratory experience in the examination of urines. This includes quality control, renal physiology and the pathology of kidney abnormalities. Practical clinical experience under supervision in all areas of the foregoing.

418 (MT) Introduction to Clinical Laboratory Sciences. The purpose of this lecture and laboratory course is to introduce new medical technology and cytotechnology students to the principles of Universal Precautions and safety in the laboratory, the use of the microscope and identification of basic human cells. Principles of specimen collection, dilution calculations and cell suspensions will also be covered. Use of the computer to access campus email, on-line course materials, internet searches and database preparation

and use will be included. The seminar portion of the course is designed to provide entering students in medical technology and cytotechnology with a general orientation the allied health sciences, the clinical laboratory sciences and the health care system.

421 (MT) Human Genetics. A study of the mechanisms underlying human genetics and their medical applications. Discussions will emphasize the fundamental concepts of genetics; the structure and function of genes, chromosomes, DNA and RNA; replication; transmission, and recombination; and the frequency of given genes in the population. A variety of genetic aberrations will be discussed in relationship to the more common medical phenomena.

423 (MT) Immunology. A study of basic principles pertaining to the immune response. Includes the in vivo mechanisms underlying response to infectious agents, alteration of immunity, aberrant immunity, tumor immunity, hypersensitivity and structures and functions of antigens and antibodies. An introduction to diagnostic testing concepts is also included.

426 (MT) Basic Microbiology. Principles of microbial physiology and genetics, microbial growth and nutrition and sterilization and disinfection. Mechanisms of disease production, antibiotic action and laboratory exercises in isolation and morphologic study of selected pathogens.

427 (MT) Cell Biology. A study of the structure and function of organelles, biosynthetic pathways within the cell, cellular production of energy, and membrane transport systems.

431, 441, 511, 521, (MT) Hematology I, II, III and IV. I and III: Lectures and laboratory exercises covering principles of hematopoiesis, normal and abnormal blood cell physiology, function and morphology, principles of normal and abnormal hemostasis, routine and special laboratory techniques in hematology and coagulation, correlation of disease states with laboratory results, and quality control. II and IV: Clinical experience under supervision including application of appropriate knowledge and skills in a service laboratory setting.

432, 442, 532, 542 (MT) Clinical Microbiology I, II, III and IV. I and III: Lectures and laboratory exercises in clinical microbiology and mycology with emphasis on the isolation, identification and antibiotic sensitivity testing, where appropriate, of human pathogenic microorganisms. Included are pathogenesis and pathophysiology of infectious disease as well as epidemiology and quality assurance. II and IV: Practical application of clinical microbiology and mycology principles in a service laboratory setting under supervision.

422, 433, 443, 513, 523 (MT) Clinical Chemistry I, II, III, IV and V. I, II and IV: Basic concepts of laboratory instrumentation, troubleshooting techniques, operation, evaluation, and selection of instruments. Lectures and assigned readings emphasizing chemical measurements of physiological indicators of normal and abnormal human metabolism. Correlation of laboratory generated data with the available clinical information. Laboratory experience in determining constituents of body fluids, principles of chemical analysis, use and care of equipment and identification of sources of error. III and V: Clinical experience under supervision in a service laboratory setting.

434, 444 (MT) Clinical Immunology I and Immunology/Serology II. I: A study of the immunologic and physiologic principles on which diagnostic immunology/serology is based, including both theoretical and practical application of these principles to the analysis of body fluids for the assessment of various disease states. (lecture and laboratory experience) II: Practical application under supervision in a service laboratory where emphasis is placed on technical proficiency.

512, 544 (MT) Blood Banking I and II. Theories of immunohematology with application to clinical blood banking. I: Includes theoretical and technical considerations of blood groups, serological procedures, transfusion therapy, related pathologic mechanisms and the production of blood products. Problem solving experience related to these concepts is provided. (lecture and laboratory experience). II: Clinical experience under supervision in a service laboratory where emphasis is placed on technical proficiency.

515 (MT) Basic Educational and Management Principles. Principles of learning with specific application to the development of instructional objectives, strategies and evaluation for specific teaching-learning situations. Also basic principles of management with particular emphasis on the clinical laboratory. Includes the basic management process, personnel supervision, identification and allocation of resources and simulated problem solving. Provides practical application of management principles under the supervision of local laboratory managers.

518, 535 (MT) Introduction to Research I and II. I: Discussion of the elements of research, including scientific writing, statistical analysis of data, seminar preparation, and literature searches. Current topics such as the use of animals in scientific research and ethics in research will also be discussed. II: Practicum involving a review of the literature, performance of a research project, submission of a scientific paper and presentation of a seminar on an assigned research project under faculty supervision. Emphasis on application of these principles and techniques in clinical laboratory related investigations.

519 (MT) Virology. The nature, classification, physiochemical properties, multiplication, host cell relationships and immunology of viruses of human importance. Transmission, pathogenesis and selected aspects of laboratory diagnosis will also be discussed.

520 (MT) Advanced Techniques in Molecular Biology. Basic concepts, principles, and applications of technological advancements in laboratory science including genetic technologies, flow cytometry, HLA tissue typing, nucleic acid hybridization and amplification techniques, and biosensors. Provides opportunity for students to understand how basic scientific discoveries impact patient diagnosis, treatment, and prognosis.

517 (MT) Principles of Laboratory Utilization. Principles affecting the cost effective and efficient use of laboratory services in an environment of managed care will be presented. Special emphasis will be placed on the challenge of maintaining quality services while containing costs and the knowledge and skills necessary for successful consultations with physicians on effective use of the laboratory. Clinical correlation case presentations are also included.

531 (MT) Off Campus Experience. WEEK I: Students may choose to concentrate their activity in areas related to medical technology such as forensic pathology or to return to any area for in-depth study. Objectives to be met will be mutually set by student and faculty. WEEK 2: Students spend one week on site in a clinical laboratory which employs molecular techniques. Experiences vary according to site and include techniques such as flow cytometry, HLA tissue typing, molecular pathology, genetics or microbiology, electron microscopy, or cytogenetics. Objectives to be met will be mutually set by student and faculty.

533 (MT) Ethics and Professional Issues. Considerations related to the identification and management of professional and ethical issues in the delivery of health care particularly as they relate to the practice of medical technology. Faculty led and student led discussions on specific topics will be utilized.

## **Master of Science in Clinical Laboratory Sciences**

### **Advanced Practice Track**

The College of Allied Health Sciences offers a Master of Science degree in Clinical Laboratory Science designed for students who have earned a B.S. degree in biology or chemistry and desire to enter a career in the clinical laboratory. The program provides the necessary educational experiences for the student to qualify for certification as a medical technologist/clinical laboratory scientist by national examination and to apply for a Tennessee license to practice as a clinical laboratory professional. The program is a full-time, 24 month advanced practice course of study which begins in September of each year.

### **Graduate Admissions Process Minimum Requirements (Advance Practice Track)**

1. An earned B.S. degree in biology, chemistry, microbiology or other science from an accredited university.
2. In addition to their B.S. degree requirements, qualified students must have successfully completed with a “C” or better the specific courses required for medical technology:
3. Students must complete forty-four (44) semester hours of the undergraduate professional medical technology courses with a GPA of 3.0 or higher on a 4.0 scale before consideration for the Master of Science in CLS Program.
4. Graduate applicants will be notified by the Dean of the College of Allied Health Sciences in late April or early May advising them of their admission status. Master’s level course work begins in the second fall term.

# Curriculum Summary

<b>First Semester (Fall)</b> .....	<b>Semester Hours</b>
MT 411 Biochemistry .....	3
MT 412 Clinical Analysis .....	3
MT 413 Introduction to Pathology .....	1
MT 415 Urinalysis .....	1
MT 418 Introduction to Clinical Laboratory Science .....	2
MT 423 Immunology .....	1
MT 414 Parasitology .....	2
MT 425 Urinalysis: Clinical Practicum .....	1

<b>Second Semester (Winter/Spring)</b> .....	<b>Semester Hours</b>
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### Winter Term

MT 421 Human Genetics .....	1
MT 422 Clinical Chemistry I .....	3
MT 426 Basic Microbiology .....	2
MT 427 Cell Biology .....	2
MT 434 Clinical Immunology I .....	2

### Spring Term

MT 431 Hematology I .....	3
MT 432 Clinical Microbiology I .....	4
MT 433 Clinical Chemistry II .....	3

<b>Third Semester (Summer/Fall)</b> .....	<b>Semester Hours</b>
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### Summer Term

MT 441 Hematology II: Clinical Practicum .....	2
MT 442 Microbiology II: Clinical Practicum .....	2
MT 443 Chemistry III: Clinical Practicum .....	2
MT 444 Immunology/Serology II: Clinical Practicum .....	1
MT 519 Virology .....	1
MT 520 Advanced Techniques in Molecular Biology .....	2

### Fall Term

MT 611 Hematology III .....	4
MT 613 Clinical Chemistry IV .....	3
MT 612 Blood Bank I .....	5
MT 632 Clinical Microbiology III .....	2
CLS 601 Research Design with Statistics .....	2

<b>Fourth Semester (Winter/Spring)</b> .....	<b>Semester Hours</b>
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CLS 602 Education and Training Theory & Methods .....	2
CLS 604 Current Issues in Clinical Laboratory Sciences .....	2
CLS 701 Principles of Laboratory Management .....	2
MT 621 Hematology IV: Clinical Practicum .....	3
MT 623 Clinical Chemistry V: Clinical Practicum .....	2

MT 642 Microbiology IV: Clinical Practicum .....	2
MT 644 Blood Bank II: Clinical Practicum .....	4

<b>Fifth Semester (Summer).....</b>	<b>Semester Hours</b>
CLS 795 Advanced Molecular Techniques: Clinical Practicum.....	2
CLS 798 Research Practicum.....	2
CLS 796 Master’s Project I.....	3
CLS 797 Master’s Project II.....	3

Master’s level courses in the second year will be taken with the BS in MT students but will have higher level course learning objectives to improve the learner’s critical thinking and problem solving skills. To achieve these objectives, graduate students will have additional assignments in each course including clinical rotations. These assignments will include but are not limited to: additional reading assignments, essay test questions, journal critiques, case study presentations, research papers and independent learning assignments. Graduates achieve entry-level competency in laboratory sciences as well as acquire additional, graduate-level skills in problem solving, management, communication and clinical correlation.

## Course Descriptions

411 (MT) Biochemistry. The biosynthesis and metabolism of carbohydrates, lipids, proteins, and amino acids and basics of enzymology. DNA replication and RNA synthesis.

412 (MT) Clinical Analysis. Principles involved in preparing various types of solutions and dilutions used in the clinical laboratory. Also laboratory safety, and organic chemistry review. Basic principles of spectrophotometry, chromatography, electrochemistry, and radioisotopes. Principles of enzyme kinetics, pH, and buffer systems. Laboratory exercises support lecture material.

413 (MT) Introduction to Pathology. Basic concepts of pathology with emphasis on the relationship of historical, physical and laboratory findings to the patho-physiology of disease. Emphasizes vocabulary of disease and disease mechanisms.

414 (MT) Parasitology. Lecture and laboratory exercises emphasizing classification and identification of parasites of medical importance including morphology of infective and diagnostic forms. Also included will be consideration of arthropod vectors, laboratory quality control and proper specimen collection and handling.

415, 425 (MT) Urinalysis. I: Didactic presentations and laboratory experience in the examination of urines. This includes quality control, renal physiology and the pathology of kidney abnormalities. II: Practical clinical experience under supervision in all areas of the foregoing.

418 (MT) Introduction to Clinical Laboratory Sciences. The purpose of this lecture and laboratory course is to introduce new medical technology and cytotechnology students to the principles of Universal Precautions and safety in the laboratory, the use of the

microscope and identification of basic human cells. Principles of specimen collection, dilution calculations and cell suspensions will also be covered. Use of the computer to access campus email, on-line course materials, internet searches and database preparation and use will be included. The seminar portion of the course is designed to provide entering students in medical technology and cytotechnology with a general orientation the allied health sciences, the clinical laboratory sciences and the health care system.

421 (MT) Human Genetics. A study of the mechanisms underlying human genetics and their medical applications. Discussions will emphasize the fundamental concepts of genetics; the structure and function of genes, chromosomes, DNA and RNA; replication; transmission, and recombination; and the frequency of given genes in the population. A variety of genetic aberrations will be discussed in relationship to the more common medical phenomena.

423 (MT) Immunology. A study of basic principles pertaining to the immune response. Includes the in vivo mechanisms underlying response to infectious agents, alteration of immunity, aberrant immunity, tumor immunity, hypersensitivity and structures and functions of antigens and antibodies. An introduction to diagnostic testing concepts is also included.

426 (MT) Basic Microbiology. Principles of microbial physiology and genetics, microbial growth and nutrition and sterilization and disinfection. Mechanisms of disease production, antibiotic action and laboratory exercises in isolation and morphologic study of selected pathogens.

427 (MT) Cell Biology. A study of the structure and function of organelles, biosynthetic pathways within the cell, cellular production of energy, and membrane transport systems.

431, 441, 611, 621, (MT) Hematology I, II, III, and IV. I and III: Lectures and laboratory exercises covering principles of hematopoiesis, normal and abnormal blood cell physiology, function and morphology, principles of normal and abnormal hemostasis, routine and special laboratory techniques in hematology and coagulation, correlation of disease states with laboratory results, and quality control. II and IV: Clinical experience under supervision including application of appropriate knowledge and skills in a service laboratory setting.

432, 442, 632, 642 (MT) Clinical Microbiology I, II, III and IV. I and III: Lectures and laboratory exercises in clinical microbiology and mycology with emphasis on the isolation, identification and antibiotic sensitivity testing, where appropriate, of human pathogenic microorganisms. Included are pathogenesis and pathophysiology of infectious disease as well as epidemiology and quality assurance. II and IV: Practical application of clinical microbiology and mycology principles in a service laboratory setting under supervision.

422, 433, 443, 613, 623 (MT) Clinical Chemistry I, II, III, IV and V. I, II and IV: Basic concepts of laboratory instrumentation, troubleshooting techniques, operation, evaluation, and selection of instruments. Lectures and assigned readings emphasizing chemical measurements of physiological indicators of normal and abnormal human metabolism. Correlation of laboratory generated data with the available clinical information.

Laboratory experience in determining constituents of body fluids, principles of chemical analysis, use and care of equipment and identification of sources of error. III and V: Clinical experience under supervision in a service laboratory setting.

434, 444 (MT) Clinical Immunology I and Immunology/Serology II. I: A study of the immunologic and physiologic principles on which diagnostic immunology/serology is based, including both theoretical and practical application of these principles to the analysis of body fluids for the assessment of various disease states. (lecture and laboratory experience) II: Practical application under supervision in a service laboratory where emphasis is placed on technical proficiency.

519 (MT) Virology. The nature, classification, physiochemical properties, multiplication, host cell relationships and immunology of viruses of human importance. Transmission, pathogenesis and selected aspects of laboratory diagnosis will also be discussed.

520 (MT) Advanced Techniques in Molecular Biology. Lectures and laboratory exercises in basic concepts, principles, and applications of technological advancements in laboratory science including genetic technologies, flow cytometry, HLA tissue typing, nucleic acid hybridization and amplification techniques, and biosensors. Provides opportunity for students to understand how basic scientific discoveries impact patient diagnosis, treatment, and prognosis.

601 (CLS) Introduction to Clinical Research Design and Methods (PT 601). The methodology involved in planning, conducting, analyzing, and reporting research associated with clinical laboratory data. General discussion of the research process followed by examination of several different research methods. Statistical treatment of data from clinical research. Tabular, graphical, and numerical descriptive methods; random sampling; principles of statistical inference; confidence intervals; statistical tests of hypothesis using t and chi-square distributions. Interpreting of statistical analyses in clinical literature.

602 (CLS) Education and Training Theory and Methods. Introduction to educational theory as it applies to health care, with emphasis on the development and management of instructional and training programs in the clinical laboratory setting. Includes development of legally required competency assessment programs for practitioners.

604 (CLS) Current Issues in Clinical Laboratory Sciences. Seminar for the discussion of issues affecting clinical laboratory scientists.

612, 644 (MT) Blood Banking I and II. Theories of immunohematology with application to clinical blood banking. I: Includes theoretical and technical considerations of blood groups, serological procedures, transfusion therapy, related pathologic mechanisms and the production of blood products. Problem solving experience related to these concepts is provided. (lecture and laboratory experience). II: Clinical experience under supervision in a service laboratory where emphasis is placed on technical proficiency.

701 (CLS) Principles of Laboratory Management I. Introduction to laboratory administration with emphasis on human resources management. Leadership styles, communications and interviewing skills, employee selection and evaluation, motivation,



morale, discipline and personnel planning. Includes record keeping, budgets, costs accounting, purchasing, product evaluation, lab safety and regulatory issues.

795 (CLS) Advanced Molecular Techniques: Clinical Practicum. Students spend two weeks on site in a clinical laboratory which employs molecular techniques. Experiences vary according to site and include techniques such as flow cytometry, HLA tissue typing, molecular pathology, genetics or microbiology, electron microscopy, or cytogenetics. Objectives to be met will be mutually set by student and faculty.

798 (CLS) Research Practicum. Supervised clinical experience with a laboratory manager, clinical laboratory science educator or laboratory utilization specialist to permit application of knowledge and skills gained in the curriculum to the clinical laboratory and other affected disciplines.

796 (CLS) Master's Project I. First part in planning and conducting the required master's degree research project. Students are expected to begin formulation of their research questions and to complete their review of the literature and to begin and complete the data collection phase of their research. Student projects are designed in various areas of the clinical laboratories and focus on clinical testing, management and supervision issues. Students are required to formally present the results of their projects to the faculty and student body, and are encouraged to publish their results.

797 (CLS) Master's Project II. Continuation of CLS 796. During this phase the research report is completed and the final defense of the project takes place. Student projects are designed in various areas of the clinical laboratories and focus on clinical testing, management and supervision issues. Students are required to formally present the results of their projects to the faculty and student body, and are encouraged to publish their results.

Graduate students must maintain a GPA of 3.0 or higher. Academic probation or dismissal from the program may result if the GRA falls below 3.0.

## **Requirements for Graduation**

The following requirements must be satisfied to earn the degree of Master of Science in Clinical Laboratory Science Advanced Practice Track.

1. Satisfactory completion of 44 credit hours at the baccalaureate level and 43 credit hours of work at the master of science level.
2. Students must complete all courses and maintain a minimum GPA of 3.0.
3. Satisfactory completion of a research project and presentation are required prior to graduation.
4. Students must file an application for admission to candidacy when the conditions listed above have been fulfilled and the final draft of the master's project has been approved by the research mentor and faculty.

5. Successful graduate students will complete the program in late August and will be eligible to take national certification examinations and apply for a Tennessee license to practice in the state. Graduation will be held in early December of the second year.
6. Students must discharge all financial obligations to the University and remove all deficiencies documented by the Registrar.

Attendance at graduation is mandatory. Those unable to attend the commencement must obtain permission to receive the degree in absentia by filing a written request with the Dean of the College.

## **Post Professional Graduate Program in Clinical Laboratory Sciences**

The College of Allied Health Sciences offers a graduate program leading to a Master of Science in Clinical Laboratory Sciences degree available to certified medical technologists and cytotechnologists. The program provides the opportunity to:

- 1) understand and manage the effects of managed care without sacrificing quality;
- 2) develop skill in teaching student and laboratory personnel; and
- 3) strengthen expertise in administration, federal and state laws regulating the laboratory, and financial issues affecting the laboratory. All students are required to enroll in a core curriculum of research, education, and regulatory courses. Both medical technologists and cytotechnologists may specialize in the management track; however, only medical technologists are accepted for the laboratory utilization track. The Graduate Program in Clinical Laboratory Sciences is designed with the part-time student in mind. Students must have a written plan for completion of the program requirements approved by the Director of the Graduate Program. All degree requirements for the Master of Science in Clinical Laboratory Sciences must be completed within five years of the date of initial enrollment. A master's thesis and a practicum must be completed prior to graduation. The minimum credit hours required for graduation is 36 semester hours.

For specific information about areas of specialization available and the curriculum, please contact the Program Director.

## **Graduate Admissions Process Minimum Requirements**

Minimum requirements for consideration for admission to the Master of Science in Clinical Laboratory Sciences degree program are:

- 1) A degree from an accredited program in clinical laboratory sciences with a minimum GPA of 3.0 on a 4.0 scale;
- 2) National certification as a medical technologist or cytotechnologist;

- 3) Two years work experience in a clinical laboratory. Tennessee state licensure is required for any person who will be responsible for the performance of laboratory testing on human samples during the course of their studies. Licensure is available to all persons having national certification as a medical technologist or cytotechnologist;
- 4) Minimum score of 1000 on verbal and quantitative scales of the Graduate Record Examination;
- 5) Three letters of recommendation from previous college instructors or immediate supervisors;
- 6) Foreign applicants whose native language is not English must submit the results of TOEFL, with a minimum score of 550;
- 7) Personal interview with the faculty; and
- 8) Official transcripts must be sent to the Office of Enrollment Services.

Additionally, applicants are required to complete application forms for admission. A required essay stating the applicant’s goals for graduate study is included in the application.

## Curriculum Study

### **Core Courses (21 SH required) .....Semester Hours**

CLS601 Research Design .....	2
CLS602 Education and Training Theory and Methods .....	2
CLS603 Biostatistics in the Health Sciences .....	3
CLS604 Current Issues in CLS .....	2
CLS605 Legal and Regulatory Issues and the Clinical Laboratory .....	2
CLS710 Health Care Economics (U of Memphis ECON 7710).....	3
CLS798 Research Practicum .....	3
CLS799 Thesis .....	4

### **Management Track (10 SH required).....Semester Hours**

CLS701 Principles of Laboratory Management I .....	2
CLS702 Principles of Laboratory Management II. ....	3
CLS703 Financial Principles & Methods for the Clinical Laboratory .....	3
CLS705 Health Information Systems .....	2

### **Laboratory Utilization Track (13 SH required) .....Semester Hours**

CLS720 Laboratory Utilization I. ....	2
CLS721 Laboratory Utilization II .....	3
CLS722 Laboratory Utilization III .....	3
CLS723 Integrating the Laboratory Across Clinical Disciplines .....	2
CLS724 Quality Assurance and Outcomes Assessment .....	3

**Electives..... Semester Hours**

CLS 610 Computer and Network Technology in Laboratory Medicine .....	2
CLS 612 Scientific Writing, Contract Development and Grantmanship.....	2
CLS 613 Advances in Clinical Laboratory Sciences and Technology .....	3
CLS 614 Health Care Ethics (U of M HADM 7107) .....	2
CLS 615 Medical Sociology (U of M SOCI 7851) .....	3
CLS 704 Health Care .....	3
CLS 711 Health Care Politics and Policy (U of M HADM 7110) .....	3
CLS 712 Epidemiology .....	3
CLS 713 Negotiation Strategies (U of M MKTG 7510) .....	3
CLS 714 Market Driven Quality (U of M MKTG 7511) .....	3
CLS 725 Strategies for Health Policy Formation and Planning .....	3
CLS 800 Special Topics in Clinical Laboratory Science .....	1-4

Other courses through the University of Memphis College of Education in Instruction and Curriculum Leadership, Instructional Design and Technology, Educational Psychology and Research, Leadership or Higher and Adult Education as approved by the Program Director.

## **Course Descriptions**

### **Core Courses**

CLS 601 Introduction to Clinical Research Design and Methods (PT 601). The methodology involved in planning, conducting, analyzing, and reporting research associated with clinical laboratory data. General discussion of the research process followed by examination of several different research methods.

CLS 602 Education and Training Theory and Methods. Introduction to educational theory as it applies to health care, with emphasis on the development and management of instructional and training programs in the clinical laboratory setting. Includes development of legally required competency assessment programs for practitioners.

CLS 603 Biostatistics in Clinical Laboratory Sciences (PT or Nursing). Statistical treatment of data from clinical research. Tabular, graphical, and numerical descriptive methods; random sampling; principles of statistical inference; confidence intervals; statistical tests of hypothesis using t and chi-square distributions. Interpreting of statistical analyses in clinical literature.

CLS 604 Current Issues in Clinical Laboratory Sciences. Seminar for the discussion of issues affecting clinical laboratory scientists.

CLS 605 Legal and Regulatory Issues and the Clinical Laboratory (on line course). Laws and regulations affecting administration of clinical laboratories and other healthcare organizations, including CLIA '88; administrative law, corporate and business law, labor law, civil liability, tax-related issues. Legal issues relevant to administration, utilization, compliance, medical necessity, and reimbursement.

CLS 710 Health Care Economics (U of M ECON 7710). Overview of the economics of and strategies for financing health care in the United States, with emphasis on the effects on successful financial management of health care institutions and clinical laboratories. Includes analysis of financing and delivery of health care and discussion of current health reform issues.

CLS 798 Research Practicum. Supervised clinical experience with a laboratory manager or laboratory utilization specialist to permit application of knowledge and skills gained in the curriculum to the clinical laboratory and other affected disciplines.

CLS 799 Thesis. Consideration of all facets related to the investigative process; formulation of a problem, search and analysis of the literature, procedure for collecting data, analysis of data, and organization of thesis proposals and thesis. The student is required to present and obtain committee approval of the proposal prior to the data collection.

## **Management Courses**

CLS 701 Principles of Laboratory Management I. Introduction to laboratory administration with emphasis on human resources management. Leadership styles, communications and interviewing skills, employee selection and evaluation, motivation, morale, discipline and personnel planning.

CLS 702 Principles of Laboratory Management II. Introduction to laboratory administration with emphasis on record keeping, budgets, costs accounting, purchasing, product evaluation, lab safety, and labor relations.

CLS 703 Financial Principles and Methods for the Clinical Laboratory. Budget development, and analysis, including analysis of variance reports; cost accounting, and test pricing; analysis/preparation of proposals for purchase vs. lease of equipment, reagents, etc.; negotiation of arrangements and development of contracts with vendors and professional staff; maximization of billing strategies consistent with public and private payor requirements; cost/benefit analysis of test menus, point-of-care offerings and business plan development.

CLS 705 Health Information Systems. Basic attributes of information systems used for in-patient, out-patient, and research health data; methods useful to manage and evaluate such systems.

## **Laboratory Utilization Courses**

CLS 720 Laboratory Utilization I. Principles of appropriate laboratory utilization by providers and rationale for its importance in a managed care environment. Emphasis on clinical appropriateness criteria, and clinical relevance issues and their relationship to care management team and other clinical decisions. Also review of the model of the interactive laboratory in the integration of total patient care with algorithmic test selection, triggered automatic test sequencing and factors influencing clinician use of the laboratory.

CLS 721 Laboratory Utilization II (Prerequisite: Laboratory Utilization I). An application of principles of laboratory utilization in selected clinical disorders including emphasis on pathophysiology of various disease processes as reflected by symptomatology and in clinical laboratory findings. Also effects of treatment on laboratory findings, especially for evaluation or monitoring of treatment. Considerations of appropriate test choices incorporating issues of clinical need, scientific and technical factors and cost effectiveness concerns. In addition to lectures, supervised clinical projects will be utilized to enhance student understanding of the principles described.

CLS 722 Laboratory Utilization III (Prerequisite: Laboratory Utilization I). This course is similar to Laboratory Utilization II except that a different array of clinical disorders will be studied.

CLS 723 Integrating the Laboratory Across Clinical Disciplines. The role of the clinical laboratory as part of a health care team in managed care and communicating ways to effectively utilize the clinical laboratory to other health care disciplines, with emphasis on the development and utilization of consultation and team building skills.

CLS 724 Quality Assurance and Outcomes Assessment. History of assessing and assuring quality of care. Emphasis recent activities concerning clinical outcomes, appropriateness, and effectiveness, including cost effectiveness.

## **Elective Courses**

CLS 610 Computer and Network Technology in Laboratory Medicine. Review of health applications of computers for providing care and managing resources. Introduction to microcomputers and package software for the clinical laboratory.

CLS 612 Scientific Writing, Contract Development and Grantsmanship. Writing skills for the communication of clinical research in the form of publications, standard operating procedure manuals, and effective grant writing.

CLS 613 Advances in Clinical Laboratory Sciences and Technology. An overview of recent changes in clinical laboratory sciences, with emphasis on new methodologies in clinical laboratory testing and their impact on laboratory management and utilization.

CLS 614 Health Care Ethics (U of M ADM 7107). Ethical perspectives on managing healthcare organizations; components of a decision-making framework with framework applied to selected ethical issues; institutional mechanisms for dealing with ethical problems.

CLS 615 Medical Sociology (U of M SOCI 7851). Social meaning of disease, with special emphasis on the cultural, organizational, and behavioral contexts of the occurrence and management of disease.

CLS 704 Health Care Marketing (HSA 823). Managing the market of the clinical laboratory; marketing planning, strategy, and management concepts. Identifying marketing problems and opportunities; constructing evaluating and managing a marketing plan.

CLS 711 Health Care Politics and Policy (U of M HADM 7110). Political, economic, and social forces affecting the contemporary health care system in the United States. Some cross-national comparisons with other health care policy systems and issues that they face.

CLS 712 Epidemiology. The course introduces the basic principles and methods of epidemiology and demonstrates their applicability in the field of public health. Topics to be covered include the historical perspective of epidemiology, measures of disease occurrence and of association, clinical epidemiology, disease screening, casual inference, and study design.

CLS 713 Negotiation Strategies (U of MKTG 7510). Application of negotiation strategies and tactics in a variety of business, non-profit, and political environments; emphasis on collaborative and competitive styles of negotiating.

CLS 714 Market Driven Quality (U of MKTG 7511). Application of TQM principles and techniques in marketing operations; emphasis on measuring and analyzing quality from customer's perspective.

CLS 725 Strategies for Health Policy Formation and Planning (PHAC 825). Development of health care policy, issues which impact the formulation of health care policy, and the planning process. The objective is to enhance the student's appreciation of the decision process in formulating health policy, the relationship of health policy development and health financing, the evaluation of current local, state, and national policy as related to health care. The student will evaluate current policy and develop alternatives to current policy.

CLS 800 Special Topics in Clinical Laboratory Science. Directed readings or topics of current interest in clinical laboratory science. The course may be repeated with topic change.

## **Requirements for Graduation**

The following requirements must be satisfied to earn the degree of Master of Science in Clinical Laboratory Sciences:

1. Satisfactory completion of 36 semester credit hours of work, which must include 21 hours of core courses, 8-13 hours of specialty concentration courses, and 2-7 hours of electives.
2. Students must complete all courses with a "B" average.
3. Satisfactory completion of practicum and thesis presentation with a final oral examination is required.
4. Admission to candidacy for the master's degree. Students file an application for draft of the thesis has been approved by the Committee.
5. Students must discharge all financial obligations to the University and remove all deficiencies documented by the Registrar.

Attendance at graduation is mandatory. Those unable to attend commencement must obtain permission to receive the degree in absentia by filing a written request with the Dean of the College.

## **Department of Dental Hygiene**

Cassandra B. Holder Ballard, RDH, Ed.D., Interim Chair

## **Bachelor of Science Degree in Dental Hygiene**

Cassandra B. Holder Ballard, RDH, Ed.D., Program Director

## **Objectives**

The curriculum in dental hygiene is designed to prepare graduates with a broad based general education, and a level of professional competence necessary for current and future dental hygiene practice. Graduates are prepared to function effectively in a clinical



office setting, and also possess advanced knowledge and skills required for careers in teaching, research, public health, and other related areas.

## Curriculum

The Department of Dental Hygiene offers two options leading to the Bachelor of Science Degree in Dental Hygiene.

- 1. The Entry Level Program:** this option prepares graduates for entry into the field of dental hygiene. The Entry Level Program is designed as the third and fourth years of a baccalaureate degree program. Two years of pre-professional college coursework are required prior to admission, and are followed by two years of professional coursework. The curriculum extends over four semesters. Each semester's courses must be passed before a student is allowed to progress to the next semester. Students matriculate in the fall semester and are eligible for the June graduation two academic years later. Didactic instruction and clinical practice are integrated throughout the curriculum and provide opportunities for interaction with dental hygienists, dental students, dental school faculty, and other health care professionals in the area, as dental hygiene services are included as a part of comprehensive health care.
- 2. The Degree Completion Program:** This option allows dental hygienists who have an associate degree or certificate in dental hygiene to earn a baccalaureate degree in dental hygiene.

The degree completion program is different from the entry-level dental hygiene curriculum only in course sequence, method of delivery, and in the number of courses required to be taken on the UT Health Science Center campus. In addition to completing the pre-professional course work, students in the degree completion program must be dental hygienists who have previously graduated from an accredited associate or certificate level dental hygiene program, passed the National Board Dental Hygiene Examination, and hold a current dental hygiene license in at least one state. Degree completion students earn 23 semester hours of senior level dental hygiene course credit once enrolled in the program. Depending on whether a student is attending on a full time or part time basis, it is estimated that it will take one to four years to complete degree requirements.

## Admission Requirements

### A. Prerequisite Course Work Semester Hours

Biology (General and Zoology) .....	4
Microbiology .....	4
Biology (Human Anatomy and Physiology) .....	8
General Chemistry* .....	8
English .....	9
Psychology .....	3
Sociology .....	3
Social Sciences** .....	6
Speech .....	3

Electives .....	10
TOTAL .....	58

\*Chemistry courses for Pre-Nursing Students are acceptable.

\*\*Social Sciences courses may include psychology, sociology, anthropology, and philosophy.

**B. Health Requirements** (in addition to general University of Tennessee Health Science Center requirements). Dental hygiene students are required to be immunized against Hepatitis B virus and to have annual TB skin tests.

**C. Technical Standards**

Dental Hygiene students must have or acquire certain essential skills, functions and professional attitudes and behavior as described in our Technical Standards document. This document is provided upon request to any interested party; however, all students who enroll must be prepared to understand and abide by these requirements.

**Curriculum Summary**

**First Semester (Summer/Fall) ..... Semester Hours**

410DH Clinic Theory 1.....	3
418DH Clinic Theory Lab.....	2
411DH Head and Neck Anatomy .....	3
412DH Introduction to Biochemistry & Nutrition .....	3
413DH Dental Embryology, Histology & Anatomy .....	4

**Second Semester (Winter/Spring) ..... Semester Hours**

426DH Clinic Theory 2 .....	3
421DH Clinic Practice 2 .....	4
422DH Oral Disease Prevention .....	3
424DH Oral Radiology .....	3
427DH General and Oral Pathology .....	2
437DH Periodontology+ .....	3

**Third Semester (Summer/Fall) ..... Semester Hours**

434DH Dental Pharmacology .....	2
520DH Clinic Theory 3.....	2
430DH Clinic Practice 3 .....	4
436DH Dental Materials .....	2
536 DH Anxiety and Pain Control* .....	4

**Fourth Semester (Spring) ..... Semester Hours**

522DH Community Dental Health.....	3
525DH Clinic Theory 4 .....	2
541DH Clinic Practice 4* .....	4
532DH Special Patient Care* .....	3
542DH Ethics and Jurisprudence & Practice Management.....	2

- \* Denotes courses required for Degree Completion Program students, with credit granted same as for Entry Level Program.
- + Satisfactory completion of this course is required for progression in clinical courses.

## **Course Descriptions**

410 DH Clinic Theory 1. Introduction to dental hygiene including the history and growth of the profession and current roles of dental hygienists in various practice settings. Introduction to patient care including current practices for infection control; recording of medical and dental histories; techniques for recording and monitoring vital signs; guidelines for inspecting oral tissues and charting observations; and basic theory, principles and procedures of oral prophylaxis. Also includes introduction to dental/dental hygiene policies and procedures, and professional conduct. (Serves as pre-requisite to DH 426)

418 DH Clinic Theory 1 Lab. Laboratory and clinical exercises in the techniques of detection and removal of hard and soft deposits from tooth surfaces. Also includes introduction to dental/dental hygiene clinic policies and procedures, and professional conduct. (Serves as pre-requisite to DH 421)

411 DH Head and Neck Anatomy. Morphology of the head and neck with emphasis on structures pertinent to dentistry. Includes cranium and soft tissue relations; origin, insertion, action, and innervation of muscles of mastication and facial expression; brain and cranial nerves; and vascular supply to the head and neck. Anatomical basis for routes of spread of dental infection and anatomical basis for dental anesthesia also discussed. Lectures and demonstrations.

425 DH Introduction to Biochemistry & Nutrition. A study of biochemistry including 1) proteins, enzymes, carbohydrates, lipids, and nucleic acids; 2) the synthesis and degradation of these compounds; and 3) the metabolic pathways responsible for generation and utilization of metabolic energy. An introduction to applied nutrition for dental hygienist in the prevention, treatment, and control of oral disease. Emphasis is placed on a practical, clinical basis for integrating nutrition and food selection guidance and wellness concepts into preventive services.

413 DH Dental Embryology, Histology & Anatomy. Overview of prenatal development, development of the face and neck, orofacial structures, tooth development and eruption. Histological and microscopic anatomy of tissues and organ systems with emphasis on oral soft tissues, enamel, dentin, pulp, tissues of periodontium. Study of the anatomy of the human dentition and supporting structures including anatomical terminology. Emphasis on anatomic form of teeth in gingival tissue, basic occlusion, morphological anomalies, and relationship of teeth and gingiva. Lectures and laboratory experience included.

422 DH Oral Disease Prevention & Patient Education. Study of oral hygiene, preventive products, and dental health teaching methods. Emphasis on individualized patient instruction in prevention of dental disease using behavior modification.

424 DH Oral Radiology. Basic instruction is given in contemporary dental radiology techniques, emphasizing an introduction to intraoral and extraoral techniques; radiation physics, principles of and generation of photons (x-rays); components of x-ray producing equipment; radiation hygiene and safety; introduction to radiation deleterious effects on cell biology; composition, processing and chemistry of x-ray film; intraoral and extraoral anatomical bony landmarks; recognition of operator error/ processing artifacts; and introduction to differential diagnosis in oral radiology. Special emphasis is placed on determining radiographic signs of caries, bone loss associated with periodontal and systemic diseases, periapical pathology and radiographically notable dental materials for clinical interpretation.

427 DH General and Oral Pathology. This course deals with the study of human diseases. The first part of the course addresses the basic mechanisms that cause disease (general pathology). The second part of the course reviews the effects of those basic disease mechanisms on various organ systems (systemic pathology). The third part of the course presents, in detail, the diseases that affect the oral cavity and adjacent tissues and structures (oral pathology). Special emphasis will be given to those pathologic mechanisms, systemic conditions, and oral diseases that are common in the population or of particular significance of oral health care providers and patients.

434 DH Dental Pharmacology. Study of basic pharmacologic principles, drugs used in dentistry, and misuse of therapeutic agents. Includes discussion of commonly prescribed drugs, their uses, side effects, and dental treatment implications of such drugs.

436 DH Dental Materials. Chemistry of materials used in dental practice. Includes lecture and laboratory exercises in the study of physical and mechanical properties of various dental materials.

437 DH Periodontology. Didactic courses covering both the historical and scientific background of dental hygiene periodontal practice, pathogenesis of periodontal diseases, rationale for therapy, critical analysis of patient assessments, current theories of treatment, and specific rationales for techniques. (Satisfactory completion of this course is required for progression in clinical courses.)

426 DH Clinic Theory 2; 520 DH Theory 3; 525 DH Theory 4. Continuation of basic theory, principles and procedures of oral prophylaxis. Lectures to supplement clinical learning experiences through integration and application of basic, dental, and dental hygiene science to problems encountered while providing dental hygiene services. (Satisfactory completion of each course is required for progression to the next in the series.)

421 DH Clinic Practice 2; 430 DH Practice 3, 541 DH Practice 4. A series of courses in which students gain clinical proficiency by providing dental hygiene services to patients. Includes rotations for clinical experiences in specialty clinics within the College of Dentistry, community and government dental clinics and school-based programs for at-risk populations.

522 DH Community Dental Program. Study of public health with emphasis on dental public health; organization and administration of health care in the United States, levels

of prevention and natural history of dental diseases, epidemiology; oral disease indexes, and community based prevention programs for prevention of caries and prevention and intervention of tobacco use. Student projects related to use of dental indexes and use of the Internet to study the United States Public Health Service are a part of this course. Students will be expected to assess, plan, and implement community dentistry projects.

532 DH Special Patient Care. The goal of this course is to lead the student to discover information concerning effects of systemic diseases, conditions, and aging and how these situations will require special treatment modifications for dental care. This course should also provide the student with the knowledge and skills to meet the oral health needs of special patients listed in the course outline. Prevention and management of medical emergencies that may arise in the dental environment is also included in this course.

536 DH Anxiety and Pain Control. This is a didactic course reviewing the procedures available for the management of pain and anxiety. Principles of local anesthesia will include anatomy, physiology, pharmacology, armamentarium, technique and complications. Principles of nitrous oxide and oxygen conscious sedation will be covered. A laboratory component will be included to prepare the students for certification in the administration and monitoring of nitrous oxide. Local anesthesia is not taught to laboratory or clinical competence. Nitrous oxide analgesia is taught to laboratory competence but not clinical competence.

542 DH Ethics, Jurisprudence & Practice Management. Experience in problem solving and ethical decision making in dental hygiene based on theories and principles of ethics. Case studies are used for practical application. Study of principles of law as related to dental hygiene and dental practice, including tort and contract law. Includes preparation for the jurisprudence examination administered by the Tennessee State Board of Dental Examiners. A study of dental practice management and treatment planning.

## **Master of Dental Hygiene Degree**

Nancy J. Williams, RHD, EdD, Interim Program Director

### **Objectives**

The Masters of Dental Hygiene curriculum is non-traditional post-professional program that allows dental hygienists the opportunity to obtain a Master of Dental Hygiene (MDH) degree while continuing full-time employment status. The major focus of the program is to prepare dental hygienists as educators and leaders in the dental hygiene profession.

## Admission Requirements

Minimum requirements for consideration for admissions to the Masters of Dental Hygiene degree program are:

- Graduation from an ADA accredited dental hygiene program
- 3.0 cumulative GPA in dental hygiene course work \*
- Each dental hygiene license held must be in good standing
- Baccalaureate degree from an accredited college or university
- Foreign applicants whose native language is not English must submit results of TOEFL, with minimum score of 550.

Additionally, applicants will be required to complete the UT application form for admission to the MDH program.

Included in the application will be a required essay. It is recommended that applicants state name of institution where dental hygiene degree was earned, other institutions attended and major, number of years of dental hygiene practice, type of practice, dental hygiene teaching experience, on-line learning experience, and goals for graduate study.

A personal and/or telephone interview with the applicant may be required.

\*Applicants who do not meet the 3.0 minimum GPA must provide evidence to the admissions committee that demonstrates the likelihood of academic success.

## Curriculum for Master of Dental Hygiene Degree

<b>Core Courses.....</b>	<b>Semester Hours</b>
600DH Methods and Strategies of Dental Hygiene Teaching.....	3
601DH Theories of Dental Hygiene Clinical Teaching and Evaluation .....	3
602DH Introduction to Research for the Health Professional .....	3
603DH Community Oral Health Promotion.....	3
700DH Dental Hygiene Education: Administration, Planning, & Organization .....	3
701DH Student Services in Dental Hygiene Education .....	3
702DH Internship in Dental Hygiene Education.....	3
703DH Discipline Studies in Dental Hygiene Education.....	3
705DH Elective Study in Dental Hygiene Education .....	3
706DH Capstone Project in Dental Hygiene Education.....	3

## Course Descriptions for Masters of Dental Hygiene Degree

600 DH Methods and Strategies of Dental Hygiene Teaching. The purpose of this course is to prepare graduates to teach and evaluate didactic courses traditionally included in the undergraduate dental hygiene curriculum. Components of this course include: overview of adult educational theory, face-to-face and web-based instructional technology, curriculum design, and teaching strategies and evaluation techniques related to cognitive and affective teaching and learning.

601 DH Theories of Dental Hygiene Clinical Teaching and Evaluation. The purpose of this course is twofold. First, graduates will be prepared to teach and evaluate fine psychomotor skills both in preclinical technique courses and in dental hygiene clinic. The second purpose is to prepare graduates to serve as clinical coordinators and/or clinical faculty members. Included in this section is information related to clinic administration as it applies to both clinical faculty and students. Developing undergraduate students' professional behavior, clinical technique, and patient communication skills during patient treatment will be emphasized. Graduates will gain knowledge related to clinical administration as it relates to establishing clinical requirements, competencies and mock clinical exams and calibration of clinical grading.

602 DH Introduction to Research for the Health Professional. This course is designed for basic introduction to research methods and statistics for dental hygiene educators. It will provide a step-by-step overview of the research process and describe widely used methods for statistical analysis.

603 DH Community Oral Health Promotion. This is a project based course that builds on knowledge and skills acquired in undergraduate preventive and community oral health.

700 DH Dental Hygiene Education: Administration, Planning, and Organization. The study of leadership theories and program administration unique to dental hygiene educational programs, including an understanding of general and specialized accreditation processes, role of state dental licensure boards, human resources, faculty performance assessment, program financing from public funding and clinical fees, clinic administration and outcomes assessment.

701 DH Student Services in Dental Hygiene Education. An overview course of student services available at the community college or university level such as but not limited to student health, recruiting, admissions, financial aid, and judicial affairs.

702 DH Internship in Dental Hygiene Education. Each graduate student will provide pre-clinical and/or clinical instruction and evaluation in a dental hygiene program and also will assist a Professor in teaching a didactic course in a dental hygiene program. Each graduate student will work closely with graduate faculty to identify appropriate faculty mentors from dental hygiene educational programs in students' home communities so this requirement can be completed, even at a distance from the Memphis campus. PREREQUISITE: 600DH and 601DH

703 DH Discipline Studies in Dental Hygiene Education. Concentrated study in the discipline which the graduate student plans to teach, such as oral radiology, histology, periodontology, community oral health, clinical dental hygiene, etc. Students may also use this course to study the latest technology used in distance learning.

705 DH Elective Study in Dental Hygiene Education. The purpose of this elective is to allow students the opportunity to enhance their skills and knowledge in their area of interest. Suggest modules include: Advanced Dental Hygiene Clinic Practice, Dental Hygiene Program Administration, Community Oral Health Planning, Dental Hygiene

Research, Instructional Technology Used in Dental Hygiene Education, Continuing Education Administration, etc.

706 DH Capstone Project in Dental Hygiene Education. Each graduate student will conduct a research project or develop a program and present findings at a professional meeting. This is a capstone activity in which students enroll during the final term of the program. Sound demonstration of writing, organizational and communication skills associated with the MDH degree is required. Students must select a faculty advisor and present an overview of the capstone project to the graduate faculty and students at the beginning of the course. Each student's advisor as well as the proposed content must be approved by the graduate faculty prior to initiation of the project. PREREQUISITE: 602DH.

Advanced Clinical Practice. Student will identify areas of advanced clinical practice, and faculty will organize learning experiences in these skills. Areas of advanced clinical practice can include but are not limited to local anesthesia, restorative procedures, and periodontology.

Dental Hygiene Program Administration. Student will have an opportunity to assist a dental hygiene program director or clinic coordinator to learn by experience both leadership and administrative skills. Faculty will assist student in identifying one or more administrators in a dental hygiene or other health related organization.

Community Oral Health Planning. Student will assess, plan, implement, and evaluate a community oral health program for an underserved population.

Dental Hygiene Research. Students will have an opportunity to assist a faculty member in development of a research project.

Instructional Technology. The student will work directly with dental hygiene or other allied health faculty who use distance learning technology to further develop pedagogical skills. The student will be required to submit an on-line or distance learning teaching module(s).

Continuing Education Administration. The student will work directly with a director of dental and/or dental hygiene continuing to develop administrative skills including budgets, marketing, fund-raising, speaker identification, course evaluation, etc. The student will be required to assist in development of a regional or national continuing education program or develop and oversee continuing education programs provided by local dental hygiene associations. The student is required to pass an exam related to continuing education requirements of their state's dental board, dental hygiene association, AGD, and other applicable agencies.

The student will be required to submit a written overview of the elective project.



## **Requirements for Graduation**

The following requirements must be satisfied to earn the degree of Master of Dental Hygiene:

1. Satisfactory completion of 30 semester credit hours of graduate level coursework.
2. Complete all required courses of the professional curriculum with a grade point average of at least 3.0.
3. Satisfactory completion of the Culminating Project.
4. Demonstrate professionalism expected of a licensed dental hygienist.
5. Maintain, in good standing, dental hygiene license(s).
6. Discharge all financial obligations to the University and remove all deficiencies documented by the registrar.
7. Attendance at graduation is mandatory. Those unable to attend commencement must obtain permission to receive the degree in absentia by filing a written request with the Dean of the College.

## **Department of Health Informatics and Information Management**

Elizabeth D. Bowman, M.P.A., Interim Chair

The Department of Health Informatics and Information Management offers two degrees: the Bachelor of Science in Health Informatics and Information Management and the Master of Health Informatics and Information Management as well as a post-baccalaureate certificate in Health Informatics and Information Management.

## **BS Program in Health Informatics and Information Management**

### **BS Program Objectives**

The BS curriculum is designed to produce graduates who can combine knowledge of a broad number of disciplines to provide high quality health information services in a variety of health care settings. The program produces graduates who meet the current demands of the health care field and who will assume leadership roles in health informatics and information management. The curriculum emphasizes the full diversity of opportunities to contribute to quality patient care by providing excellent health information services.

## **Health Informatics and Information Management BS Curriculum Description**

The BS curriculum in health informatics and information management constitutes the fourth year of a baccalaureate program. The twelve-month program includes courses in organization and administration, medical terminology, health information technology and systems, medical science, personnel management, health care administration, law, and health information science. Clinical rotations through selected Memphis hospitals and other health care facilities provide practical experience. Students spend a month in management affiliations usually outside the Memphis area. Criterion referenced evaluation is used in each course and students are required to reach the minimum competency level established for the course. Grades are based on written and practical examinations, as well as on performance in directed experience. A student must pass each semester's courses with a grade of "C" in each course as well as attain a minimum semester grade point average of 2.0 in order to progress to the subsequent semester or term or to graduate. Each student must pass a comprehensive examination in order to graduate.

### **Admission Requirements for BS Degree**

Prerequisite Course Work .....	Semester Hours
Human Anatomy and Physiology .....	8
Principals of Management .....	3
English Composition and Literature .....	12
Social Science .....	6
Statistics .....	3
Electives .....	<u>40</u>
TOTAL .....	72

Computer literacy is expected upon enrollment in the HIIM program and computer courses are recommended as electives. Written communication skills are vital as the HIIM program and career require intensive writing. Upper division hours are highly recommended.

### **Technical Standards**

BS Health Informatics and Information Management students must have or acquire certain essential skills, functions and professional attitudes and behavior as described in our Technical Standards document. This document is provided upon request to any interested party; however, all students who enroll must be prepared to understand and abide by these requirements. Written and oral communication skills are extremely important.

### **Progress and Promotion for BS Students**

A BS student must pass each semester's courses with a grade of "C" in each course as well as attain a minimum semester grade point average of 2.0 in order to progress to the subsequent semester or term or to graduate.

## Accreditation of BS Program

The UTHSC BS Program in Health Informatics and Information Management is accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM); 233 N. Michigan Ave., Suite 2150; Chicago, IL 60601-5519; (312) 233-1100; www.cahiim.org.

## BS Curriculum Summary

### First Semester (Fall) .....Semester Hours

511 HIM Health Information Science and Laboratory I .....	5
512 HIM Organization and Administration of Health Care Facilities .....	2
513 HIM Organization and Administration I .....	3
514 HIM Fundamentals of Medical Science and Terminology I .....	4
541 HIM Health Information Technology and Systems I .....	3

### Second Semester (Winter/Spring) .....Semester Hours

515 HIM Directed Experience I .....	2
521 HIM Health Information Science and Laboratory II .....	5
522 HIM Legal Concepts for the Health Fields .....	2
523 HIM Organization and Administration II .....	3
524 HIM Fundamentals of Medical Science and Terminology II .....	3
525 HIM Directed Experience II .....	2
542 HIM Health Information Technology and Systems II .....	2

### Third Semester (Summer).....Semester Hours

529 HIM Research Seminar .....	1
533 HIM Personnel Administration .....	3
535 HIM Directed Experience III .....	2
537 HIM Management Affiliation .....	3
543 HIM Health Information Technology and Systems III .....	3

## Course Descriptions

511 HIM and 521 HIM Health Information Science and Laboratory I and II. Introduction to the field of health informatics and information management, including history of patient records, and functions of a health information department. In-depth study of components, development and use of the record and flow of patient information through the facility; design of forms and computer views; ICD-9-CM and HCPCS/CPT coding; statistical techniques and use of clinical information in quality, risk management, and peer review activities. Survey of related systems for other health facilities included.

512 HIM Organization and Administration of Health Care Facilities. Principles of organization and administration of hospitals and other health care facilities; accrediting and regulatory agencies; financing of health care; medical staff organization; and organization of other hospital and health care facility departments.

513 HIM and 523 HIM Organization and Administration I and II. Application of principles of organization, administration, supervision, and human relations to the health information department. Includes utilization of financial and physical resources, financial management of health care facilities, development of systems, procedures, services, and equipment; controlling quality of departmental functions, and professional ethics.

514 HIM and 524 HIM Fundamentals of Medical Science and Terminology I and II. Study of the nature and causes of disease, treatment and management of patients, and terms related to medical science and the health care field.

515 HIM, 525 HIM and 535 HIM Directed Experience I, II and III. Directed practical experience in information management procedures, management of personnel, and interdepartmental relationships in health care facilities in the Memphis area.

541 HIM, 542 HIM, 543 HIM Health Information Technology and Systems I, II, III. A review of information systems, the evolution and implementation of the electronic health record, including the necessary supporting information and technology infrastructure; and the application of new techniques to the handling of information in patient care situations; systems analysis and design; systems selection and evaluation; project management. Lectures supplemented with laboratory experience in the computer lab.

522 HIM Legal Concepts for the Health Fields. Principles of law applied to the health field with emphasis on federal, state, and local laws affecting health information management practice, confidentiality, and security of information.

529 HIM Research Seminar. Introduction to principal research techniques and procedures, literature resources, information retrieval and clinical/biomedical research support.

533 HIM Personnel Administration. Employer-employee relationships, governing laws and regulations evaluation, selection, training and in-service education, transfer, promotion, dismissal of employees, and problem solving.

537 HIM Management Affiliation. Five-week management assignment in a facility/organization usually outside the Memphis area that includes experience in activities and responsibilities of department directors and other HIIM roles.

## **Master of Health Informatics and Information Management (MHIIM)**

Rebecca B. Reynolds, MHA, RHIA, Program Director

### **Program Objectives**

The goal of the MHIIM is to provide the competencies for health care professionals to Manage information in an increasingly complex electronic health environment.

# Master of Health Informatics and Information Management Curriculum Description

The master’s degree curriculum at UTHSC will prepare graduates for leadership roles in a variety of employment settings. These roles are associated with enterprise-wide information systems strategic planning, management and health data administration. Individuals may attain a variety of positions in the management, analysis, and dissemination of information. These positions may be in institutions focused on the delivery of healthcare, enterprises that engage in development of health information systems, or other private or governmental agencies that engage in the use, management, or analysis of patient related information for public health surveillance.

## Admission Requirements for MHIIM

- Baccalaureate degree in a health-related discipline
- Minimum grade point average of 3.0
- Three letters of recommendation from previous college instructors or immediate supervisors
- Foreign applicants whose native language is not English must submit results of TOEFL, with minimal score of 550, 213 on the computerized version Official transcripts
- Personal interview with the admissions committee
- Ability to meet published technical standards of the College of Allied Health Sciences and the Department of Health Informatics and Information Management
- A completed application form including an essay describing the applicant’s career goals. A non-refundable application fee must accompany the application.

## Technical Standards

Master of Health Informatics and Information Management students must have or acquire certain essential skills, functions and professional attitudes and behavior as described in our Technical Standards document. This document is provided upon request to any interested party; however, all students who enroll must be prepared to understand and abide by these requirements. Written and oral communication skills are extremely important.

## Curriculum Summary for MHIIM

<b>First Year, Fall Semester</b> .....	<b>Semester Hours</b>
MHIIM 600 Information Technology & Systems.....	3
MHIIM 602 Legal Issues in Health Information Technology & Systems .....	3

### First Year, Spring Semester

MHIIM 601 Quality Management in Health Services:	
Information for Quality Care .....	2
MHIIM 605 Healthcare Information Systems.....	3

### **Second Year, Fall Semester**

MHIM 603 Leadership in Health Information Technology & Systems .....	3
MHIM 604 Financial Management for Health Professionals.....	3

### **Second Year, Spring Semester**

MHIM 607 Statistics and Decision Making .....	3
MHIM 608 Knowledge Management .....	3

### **Third Year, Fall Semester**

MHIM 609 Concepts of Research Methodology .....	3
MHIM 610 Issues in Health Information Technology Seminar .....	2

### **Third Year, Spring Semester**

MHIM 606 Healthcare Vocabularies and Clinical Terminologies .....	2
MHIM 611 Thesis .....	3

OR

MHIM 612 Non-thesis research project .....	3
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## **MHIIM Course Descriptions**

MHIM 600 Information Technology and Systems. Broad coverage of technology concepts underlying modern computing and information management as well as survey of the field of health informatics to provide students with the foundation for the program of studies. Topics include computer networks, communications protocols, data architecture, Internet, basic computer security, database management, graphical user interfaces, client/server systems, and enterprise applications.

MHIM 601 Quality Management in Health Services. Information for Quality Care – Diverse perspectives in quality management and regulation including relevant research and management methodologies, performance improvement, methods and applications in the area of outcomes research including practice variation, risk adjustment, quality measures and quality management (or quality improvement), practice guidelines, evidence-based medicine, clinical decision support, health-related quality of life, utility assessment, economic evaluations (including cost-effectiveness studies).

MHIM 602 Legal Issues in Health Information Technology and Systems. Examination of legal issues related to electronic-based health information; the growth of computer and communication technologies, including privacy, security, electronic data interchange and compliance related issues; policy, regulatory and related concerns; interpretation and implementation of enterprise information policy

MHIM 603 Leadership for Health Information Technology and Systems. Strategic management and planning, change management, leadership in e-health environment, project management including planning, scheduling, monitoring and reporting, process modeling. This course builds on the undergraduate health information management or other professional preparation. Discussion of implementation of electronic health record systems, systems analysis from the enterprise level will be the focus of the class.

MHIM 604 Financial Management for Health Professionals. Overview of financial statements, components of operational budgeting and capital budgeting and management of capital projects; variance analysis, internal controls, contracts; facility – vendor and/or supplier relationships, cost reporting, reimbursement methods, and return on investment. The course will provide students with the foundation to understand and to apply key financial principles to help their organizations meet their core business goals.

MHIM 605 Healthcare Information Systems. A survey of fundamental concepts of information technology applied to health care from the perspectives of providers, payers, consumers. Major topics include the electronic health record, health information systems, repositories and data bases, enterprise-wide systems, laboratory, radiology (PACs) systems, voice recognition, physician order entry, telemedicine, decision support systems. Overview of historical, current, and emerging health information systems; concepts and knowledge involved in making strategic use of information technology (IT) in health care organizations and linkages to business, planning, and governance; Overview of multiple systems, vendors, processes and organizations; methodology for evaluation of health information systems

MHIM 606 Healthcare Vocabularies and Clinical Terminologies. Standard clinical terminologies including SNOMED, Clinical Terms Version 3 (Read Codes), UMLS, ICD-9-CM, ICD-10-CM, and ICD-10-PCS, CPT/HCPCS, medical linguistics, medical vocabulary standards, natural language processing and the role of healthcare vocabularies and clinical terminologies in the electronic health record.

MHIM 607 Statistics and Decision Making. Advanced statistical techniques building on existing knowledge of descriptive statistics and fundamental inferential statistics as applied in the field of health information; biostatistics, methods of health data collection, analysis, and interpretation, including descriptive statistics, probability, and hypothesis-testing and confidence interval estimation for normally distributed data; tools in using data to make informed management decisions; use of data from clinical information systems in performing clinical effectiveness research, including the strengths and limitations of these data.

MHIM 608 Knowledge Management. Application of decision analysis and knowledge-based systems and decision analysis techniques; Topics include data mining, data marts, data warehouses, clinical data repositories, OLAP and data modeling and obtaining information from clinical and administrative systems.

MHIM 609 Concepts of Research Methodology. Discussion of the elements of research, evaluation methodologies including the research process, study design, methods of data collection with emphasis on preparation and evaluation of data collection instruments, statistical analysis of data including use of statistical packages, literature searches, and scientific writing.

MHIM 610 Issues in Health Information Technology Seminar. An exploration of current issues related to health informatics including healthcare policy analysis and development, ethical issues, structure of healthcare delivery systems, assessment of population health, models of health care delivery, access and quality of care issues.

MHIM 611 Thesis. Original research in the area of health information management, information systems and/or health informatics.

MHIM 612 Non-thesis research project. Rigorous project focused on a real-world informatics setting and application of problem-solving methods for development of solutions. Oral and written reports required, including oral presentation and defense of project.

## **Master of Health Informatics and Information Management**

### **Requirements for Graduation**

The following requirements must be satisfied to earn the degree of Master of Health Informatics and Information Management:

1. Satisfactory completion of 33 semester credit hours of graduate level coursework.
2. Completion of coursework with a 3.0 average. A grade of “B” or above in each course is required.
3. Satisfactory score on written comprehensive examination.
4. Meeting technical standards for the degree.
5. Discharge of all financial obligations to the University and removal of all deficiencies documented by the Registrar.
6. Attendance at graduation is encouraged. Those unable to attend commencement must obtain permission to receive the degree in absentia by filing a written request with the Dean of the College.

## **Certificate in Health Informatics and Information Management**

### **Program Objectives**

The goal of the Certificate in Health Informatics and Information Management is to provide the basic skills needed to practice in an electronic healthcare environment for the student who does not wish to complete the masters.

### **Certificate in Health Informatics and Information Management Curriculum Description**

The certificate curriculum will allow the healthcare practitioner to obtain the basic skills needed to practice in an electronic environment.



## **Admission Requirements**

- Baccalaureate degree in a health-related discipline
- Three letters of recommendation from previous college instructors or immediate supervisors
- Foreign applicants whose native language is not English must submit results of TOEFL, with minimal score of 550, 213 on the computerized version.
- Personal interview with the admissions committee
- Ability to meet published technical standards of the College of Allied Health Sciences and the Department of Health Informatics and Information Management
- A completed application form including an essay describing the applicant's career goals. A non-refundable application fee must accompany the application.

## **Technical Standards**

Certificate of Health Informatics and Information Management students must have or acquire certain essential skills, functions and professional attitudes and behavior as described in the technical standards document. This document is provided upon request to any interested party; however, all students who enroll must be prepared to understand and abide by these requirements. Written and oral communication skills are extremely important.

## **Curriculum Summary**

MHIM 600 Information Technology and Systems .....	3
MHIM 605 Healthcare Information Systems.....	3
MHIM 610 Issues in Health Information Technology Seminar .....	3

## **Course Descriptions**

The descriptions for these courses are included under the Master of Health Informatics and Information Management section of this catalog.

## **Department of Occupational Therapy**

Ann H. Nolen, Psy.D., Chair

## **Master of Occupational Therapy Program**

Ann H. Nolen, Psy.D., Program Director

## **Program Objectives**

The program is designed to prepare entry-level occupational therapists who can meet the present practice demands of the profession and can utilize advanced problem-solving skills to meet emerging health care needs of the society. Based in a strong foundation of liberal arts and of biological and behavioral sciences, students develop expertise in the performance, analysis, instruction and therapeutic use of a wide variety of occupations.

Students learn to understand and appreciate the role of occupation in the promotion of health, prevention of disease, and minimization of dysfunction. A strong emphasis is placed on the use of occupation in the community and other emerging practice environments. The program promotes both professional and academic development and seeks to graduate future leaders in the profession of occupational therapy.

## **Curriculum Description**

The curriculum in occupational therapy is an entry-level master's degree program that follows 90 semester hours of pre-professional coursework. An undergraduate degree is not required for admission to the Program. The curriculum is taught across two campuses, Memphis and Chattanooga, using primarily interactive video conferencing. The distance learning technology provides students in Memphis and Chattanooga exposure to faculty and students on both campuses.

The students enrolled at the Chattanooga campus begin in the fall semester (August) to take anatomy, joining the Memphis students who start in January. Together, the students complete 18 months of academic coursework followed by nine months of clinical rotations. Students graduate in June of the third year.

Courses are sequenced across the human lifespan and include the understanding of systems, occupation and adaptation, evidence-based practice, ethical reasoning, critical thinking and leadership change. Curriculum courses include: occupation-centered practice; perspectives of development across the lifespan, leadership, evidence-based practice, biomechanical and neurological aspects of occupational performance, management and healthcare policy and the basic sciences. To provide active learning experiences instructors use small group activities, hands on labs, and two week Level I fieldworks in each of the following settings: pediatric, adult and gerontology. The student is responsible for room and board during the Level I Fieldworks.

Three, three-month Level II fieldwork placements give the students the opportunity to apply and synthesize knowledge and skills in a variety of both traditional and community based settings. Fieldwork sites are available nationally and internationally. While the Department's Academic Fieldwork Coordinator sets up and monitors the Level II fieldwork, the student is financially responsible for room and board during the nine month experience.

\*The Accreditation Council of Occupational Therapy Education (ACOTE) has accredited both the Memphis and Chattanooga campuses through the 2012/2013 academic year.

ACOTE is located at 4720 Montgomery Lane

P.O Box 31220

Bethesda, MD, 20824-1220.

Telephone: (301) 652-7711

E-mail: [accred@aota.org](mailto:accred@aota.org)

# Admission Requirements

<b>A. Prerequisite Requirements .....</b>	<b>Semester Hours</b>
General Biology (Including Zoology) .....	8
Anatomy & Physiology* .....	8
General Chemistry* .....	4
General Physics* .....	4
English Composition .....	6
Speech .....	3
<u>Psychology</u>	
General .....	3
Lifespan** .....	3
Abnormal .....	3
<u>Social Science</u>	
General Sociology .....	3
Anthropology .....	3
Other*** .....	3
Humanities**** .....	9
Statistics .....	3
Computer Science .....	3
Medical Terminology .....	1
Electives***** .....	<u>23</u>
Total .....	90

\*Must include laboratory experiences and must be completed within the FIVE years prior to application. Upper level courses will be accepted to meet the lower level science requirements if taken within FIVE years prior to application. Candidates wishing to request a waiver of this limitation must write a letter to the OT chair documenting the current level of knowledge. Each case will be considered on an individual basis.

\*\*Course content MUST cover conception to death. Two courses may be required if taken in the psychology department. If one lifespan course is offered in another department, submit a copy of the course syllabus with admission application to request substitution.

\*\*\*Recommended courses to complete the required semester hours include political science, government, and economics.

\*\*\*\*Recommended courses to complete the nine semester hours include foreign language (Spanish preferred), philosophy, logic, ethics, literature, and/or fine arts.

\*\*\*\*\*Recommended courses include: computer/technology skills, kinesiology, education, technical or critical writing, fine and performing arts, language and communication systems, philosophy, and industrial arts or activity-based courses (e.g., woodworking, ceramics, photography).

No more than four credits in activity-based courses are acceptable. Proof of one year of American history at the high school or college level is a requirement for graduation from the University of Tennessee Health Science Center. Applicants must demonstrate good physical and mental health consistent with the demands of the educational program.

## **Application Process**

**Application Deadlines for the Master in Occupational Therapy are:**

**Chattanooga: March 1 for the following August**

**Memphis: May 1 for the following January.**

\*Online applications may be completed; however, application materials below must be sent to:

Office of Enrollment Services  
UTHSC  
910 Madison Suite 525  
Memphis, TN 38163

\*In the event that the class does not fill, the admission deadline may be extended. Check with enrollment services.

### **B. Health Requirements (In addition to general University of Tennessee Health Science Center requirements)**

Students must demonstrate good physical and mental health consistent with the demands of the educational program and of the professional field. Immunization against Hepatitis B virus is required. Some fieldwork sites have additional requirements for health screening and/or further immunization.

### **C. Technical Standards**

Occupational Therapy students must have or acquire certain essential skills, functions and professional attitudes and behavior as described in our Technical Standards document. This document is provided upon request to any interested party; however, all students who enroll must be prepared to understand and meet the technical requirements.

### **D. Background Checks**

Background checks are now required for admission to the program. A felony conviction may prevent an individual from obtaining national certification or state licensure.

# Curriculum Summary

## The Master of Occupational Therapy Curriculum

### Fall Semester (August – December) Chattanooga Campus only

\*PHYT 410 Human Gross Anatomy .....6

### Winter/Spring Semester I (Jan–June) .....Semester Hours

ANAT 311 Anatomy .....6

ANAT 342 Neurobiology .....2

OT 431 Leadership Development I .....1

OT 432 Occupation-Centered Practice .....3

OT 433 Perspectives of Early Development .....4

OT 434 Biomechanical Aspects of Occupational Performance .....4

OT 435 Conceptual Foundations of OT .....2

OT 436 Evidence-Based Practice .....2

Total .....24 hours

### Summer/Fall Semester II (July–Dec) .....Semester Hours

PATH 321 Basic Concepts of Pathology .....1

OT 531 Leadership Development II .....3

OT 532 Occupation-Centered Group Practice .....3

OT 533 Occupation-Centered Practice in Pediatrics .....4

OT 534 Perspectives of Adult Development .....4

OT 535 Occupation-Centered Practice in Adulthood .....4

OT 536 Research Project Design .....2

OT 537 Neurological Aspects of Occupational Performance .....3

OT 538 Special Topics .....1

Total .....25 hours

### Winter/Spring Semester III (Jan–June) .....Semester Hours

OT 631 Leadership Development III .....1

OT 632 Perspectives of Aging .....4

OT 633 Occupation-Centered Practice with Older Adults .....4

OT 634 Health Care Politics and Policy .....2

OT 635 Administration, Organization, and Management .....2

OT 636 Research Project Implementation .....3

OT 637 Presentation of Research Project .....1

Total .....17 hours

### Summer/Fall Semester II (July-Dec) .....Semester Hours

OT 731 Level II Fieldwork .....5

OT 732 Level II Fieldwork .....5

Total .....10 hours

### Winter/Spring Semester III (Jan-Mar) .....Semester Hours

OT 733 Level II Fieldwork .....5

Total .....5 hours

**Total .....81 Semester Hours**

\*Must be admitted to UTHSC MOT program to enroll in this course

## Course Descriptions

PHYT 410 (Chattanooga) ANAT 311 Anatomy (Memphis). The study of the gross structure of the human body, focusing on the musculoskeletal and cardiovascular systems. Dissection of cadaver supplemented by lecture.

PATH 321 Basic Concepts of Pathology. An introduction to the origins of disease at the cellular level. In addition to the musculoskeletal system, the course covers neoplasia, cell injury, and immunopathology as it impacts the circulatory, respiratory and gastrointestinal systems.

ANAT 342 Neurobiology. This course covers the basic organization of the central, peripheral and autonomic nervous system.

OT 431 Leadership Development I. Introduction to professional behavior and concepts central to the development of leadership, emphasizing the importance of a strong occupational therapist identity.

OT 432 Occupation-Centered Practice. This course serves as a foundation for the practice of occupational therapy, preparing students to analyze the person-task environment interactions of individuals with various impairments across the life span. Emphasis is on occupation and adaptation, activity analysis, the occupational therapy practice framework, the theoretical basis for clinical decision-making, and the critical reasoning that is necessary in the current clinical practice environment in a broad variety of settings.

OT 433 Perspectives of Early Development. This course is the study of the conceptual and theoretical basis of occupational therapy practice in childhood. The course will integrate the theoretical principles with developmentally appropriate occupations, adaptive demands, and selected impairments.

OT 434 Biomechanical Aspects of Occupational Performance. This course will integrate the study of the structure and function of muscles and joints, including electromyography (EMG) and biomechanics. The students will be prepared to consider occupations for therapeutic intervention based on EMG and biomechanical analysis. It will examine properties of muscles and muscle contractions, range of motion, strength, and joint structure to address occupational performance dysfunction. The course will help apply the utilization of lower limb muscles in ambulation and stability, and help formulate and apply determinations of manual muscle strength, range of motion normative data, goniometry measurement and functional range for clinical application; explore joint structure, function and joint categories; and analyze biomechanical principles with particular emphasis on human skeletal levers.

OT 435 Conceptual Foundations of Occupational Therapy. Introduction to the basic theoretical and philosophical constructs, knowledge, skills and attitudes essential for successful practice in occupational therapy. Course covers history and development of the profession, standards and ethics, and professional terminology.

OT 436 Evidence-Based Practice. This course is designed to develop/increase the ability to collect evidence from published research reports and one's own experience to answer practice related questions. In addition students will discuss the ethical and practical issues that can influence the search for sound evidence.

OT 532 Occupation-Centered Group Practice. This course examines the dynamics of group interaction and how activity and occupation may be utilized in the group experience to promote participation for health and well-being. Through the small group experiences, the student will develop leadership skills and practice teamwork.

OT 533 Occupation-Centered Practice in Pediatrics. This course provides opportunities for the application of theoretical constructs of occupational therapy practice, including the evidence base for client-centered assessment and intervention approaches. It will require utilization of the systems approach, taking into the account the individual, the context of his/her functioning, and his/her perception of quality of life, well-being, and occupation.

OT 534 Perspectives of Adult Development. This course is the study of the conceptual and theoretical basis of occupational therapy practice in adulthood. The course will integrate the theoretical principles with developmentally appropriate occupations, adaptive demands, and selected impairments.

OT 535 Occupation-Centered Practice in Adulthood. This course promotes the application of theoretical constructs of occupational therapy practice, including the evidence base for client-centered assessment and intervention approaches. It requires utilization of the systems approach, taking into the account the individual, the context of his/her functioning, and his/her perception of quality of life, well being, and occupation 4 semester hours.

OT 536 Research Project Design. This course includes principles of research design, critical analysis of occupational therapy research, preparation of the literature review, and completion of a proposal for a selected project or presentation. Introduction to clinical inquiry skills for qualitative and quantitative research is also included. Emphasis on problem definition, research design and methodology, including differential and inferential statistical analysis. Students will begin the proposal for the project or presentation.

OT 537 Neurological Aspects of Occupational Performance. This course considers the function and dysfunction associated with anatomy and physiology of the nervous system. Emphasis is on clinical manifestations associated with occupational performance in the sensory, motor, cognitive and psychosocial domains.

OT 538 Special Topics. This course will provide in depth training to students in a specialty areas such as special agent modalities. The content area may vary from year to year based on practice demands.

OT 531 Leadership Development II. Becoming a leader change agent in the profession of occupational therapy require that the individual acquire effective communication, advocacy, and problem solving skills. Students will both study the essential habits of effective leaders and will practice this through the development of a community initiative plan.

OT 631 Leadership Development III. This course emphasizes culminating leadership activities, to include continued professional development, development of the professional portfolio, principles of advocacy, development of a vision for the profession, and development of the global occupational therapy identity in preparation for Level II Fieldwork and future practice.

OT 632 Perspectives of Aging. This course is the study of the conceptual and theoretical basis of occupational therapy practice in older adulthood. The course will integrate theoretical principles with developmentally appropriate occupations, adaptive demands, and selected impairments.

OT 633 Occupation-Centered Practice with Older Adults. This course involves application of theoretical constructs of occupational therapy practice, including the evidence basics for client-centered assessment and intervention approaches. It will require utilization of the systems approach, taking into account the individual, the context of his/her functioning, and his/her perception of quality of life, well-being and occupation.

OT 634 Health Care Politics and Policy. Political, economic, and social forces affecting the contemporary health care system in the United States. Policy information processes, policy makers in systems, and policy-related role expectations within the professional culture of occupational therapy.

OT 635 Administration, Organization, and Management. This course involves the application of the theories of organization and management to occupational therapy program development and management in the evolving health care environment. Management strategies and problem solving in administrative or supervisory roles are emphasized.

OT 636 Research Project Implementation. Implementation of the proposal for the project or presentation, including needs assessment, distribution of surveys, data collection and analysis.

OT 637 Presentation of Research Project. Preparation of a presentation or investigative project in partial fulfillment of the requirements of a master's degree program.



Professional contribution through submission of a manuscript to a professional publication, or presentation at a professional meeting is expected.

OT 731 Level II Fieldwork. The first Level II Fieldwork experience is designed to facilitate students' personal and professional development. The integration and application of clinical reasoning and practical skills will be required in each of three placements. Students will experience a range of client populations and settings to include psychosocial, physical disabilities, and an area of special interest to the student. The fieldwork experience is provided at approved facilities with supervision that meets ACOTE accreditations standards.

OT 732 Level II Fieldwork. The second Level II Fieldwork experience is designed to facilitate the student's personal and professional development. The integration and application of clinical reasoning and practical skills will be required in three placements. Students will experience a range of client populations and settings to include psychosocial, physical disabilities, and an area of special interest to the student. The fieldwork experience is provided at approved facilities with supervision that meets ACOTE accreditations standards.

OT 733 Level II Fieldwork (6). The third Level II Fieldwork is designed to facilitate the student's personal and professional development. The integration and application of clinical reasoning and practical skills will be required in each of three placements. Students will experience a range of client populations and settings to include psychosocial, physical disabilities, and an area of special interest to the student. The fieldwork experience is provided at approved facilities with supervision, which meets ACOTE accreditations standards.

OT 734 Advanced Level II Fieldwork (6). The advanced fieldwork is open to a limited number of students.

Permission from the Academic Fieldwork Coordinator is required for scheduling.

## **Department of Physical Therapy**

Barbara H. Connolly, Ed.D., DPT, FAPTA, Chair

## **Doctor of Physical Therapy Program**

Barbara H. Connolly, Ed.D., DPT, FAPTA, Program Director

## **Objectives of the DPT Program**

The objectives of the Department of Physical Therapy are to provide a quality education to enrolled students that requires accumulation of scientific knowledge, acquisition of essential physical therapy skills and the development of professional attitudes and behaviors. Therefore, the Doctor of Physical Therapy degree program is designed to:

1. provide knowledge and competence in promoting optimal human movement and function based on the biological, behavioral, physical and medical sciences
2. prepare leaders in the multifaceted roles of clinicians, educators, researchers, and administrators in individual, group, and community contexts
3. model and instill in students the values that promote professionalism and caring
4. facilitate student commitment to independent thinking and lifelong learning and to student realization of the intrinsic rewards of these attributes

## **Curriculum Description**

The Department of Physical Therapy is located within the College of Allied Health Sciences. The program is designed as a “4 + 3” program that leads to the Doctor of Physical Therapy degree. Students complete four years of preprofessional coursework at other colleges or universities, and then complete three years of professional education on the campus of the University of Tennessee Health Science Center. Candidates are required to have a baccalaureate degree prior to admission. Students matriculate in the fall semester and graduate at the end of the winter/spring semester (June), three years later, after completion of all academic and clinical internship requirements. Clinical internship sites are located in Memphis, throughout Tennessee, and in surrounding states. Due to the limited number of clinical sites in Memphis and other urban areas, students should anticipate the financial impact of traveling and living out of town for the majority of their clinical internships. The intent of the clinical internships is to provide the student with a broad exposure to physical therapy practice in a variety of settings and geographic locations. As a rule, no student will be allowed to complete all clinical internship experiences in any one geographic location.

## **Admission Requirements**

To be eligible for consideration for admission, applicants must fulfill the requirements listed below. Meeting the minimum requirements does NOT assure admission to the Doctor of Physical Therapy program. Priority is given to residents of Tennessee and children of UT System alumni. Applicants whose native language is not English must submit results of TOEFL, with minimal score of 550.

1. A baccalaureate degree which includes prerequisite courses must be completed prior to enrollment, with a minimum cumulative grade point average of 2.00 on a 4.00 scale. Grades of “D” in required courses are not acceptable.
  - If a required course is repeated, both grades are calculated into the cumulative GPA, but the credit hours assigned to the course may be counted only once in fulfilling the required number of hours.
  - Credit hours earned for non-theory courses in physical education, music, and military science are not accepted in fulfillment of prerequisite hours or as elective hours.

- Credit for science courses completed more than five years prior to application will be carefully reviewed by the Admissions Committee and may not be accepted in fulfillment of the required number of hours.
  - Courses completed in a PTA program may not be used in fulfillment of any science course required for admission to the UT Memphis physical therapy program. Selected coursework completed in a PTA program may be accepted in partial fulfillment of the required number of elective hours.
  - Experience has shown that generally a cumulative GPA of at least 3.00 must be presented for an applicant to be competitive.
  - Priority is given to students who have completed at least a portion of each required course sequence by the fall term prior to application.
2. A competitive score on the verbal and quantitative sections of the Graduate Record Examination will be required.
  3. A completed application and application fee must be received by the Department of Enrollment Services on or before January 15 prior to the September class for which admission is sought. The deadline for early admission is November 1 with notification by January 1<sup>st</sup>. The following additional materials must be received by the Department of Enrollment Services prior to any final action taken by the Admissions Committee.
    - Pre-Professional Advisory Committee recommendation from each college or university attended for more than one term
    - Official transcript from each college or university attended
    - Projected plan for completion of remaining required courses that include date(s) and name(s) of institution(s) at which student plans to enroll
    - Verification of completion of American history in high school or college
  4. A personal interview is required for admission.
  5. Applicants must demonstrate good physical and mental health consistent with the demands of the educational program.
  6. Applicants who accept a position in the program must declare the ability to fulfill the Technical Standards for Admission to the College of Allied Health Sciences, Department of Physical Therapy.

Prior to enrollment, the following courses, described in the UTHSC Admissions Requirement Brochure, must be completed with grades of “C” or better.

**Courses..... Semester Hours**

Biological Sciences* (must include General Biology or General Botany And General Zoology) .....	8
Anatomy and Physiology* .....	8
General Chemistry* .....	8
General Physics* .....	8
Mathematics <sup>1</sup> .....	3
Computer Sciences <sup>2</sup> .....	3
Statistics <sup>3</sup> .....	3
General Psychology <sup>4</sup> .....	6
Humanities/Social Sciences <sup>5</sup> .....	12
English Composition .....	6

\*Must include laboratory experiences

1. Student must complete coursework that fulfills physics prerequisite.
2. If coursework has not been taken, must demonstrate computer literacy through meeting objectives from other courses
3. Statistics - course should cover nonparametric and parametric statistics, including analysis of covariance and multivariate analysis of variance. Use of statistical techniques with data sets, interpretation of statistical results and computer interaction in data analysis strongly recommended. Biomedical statistics, education statistics, psychology statistics as well as statistics courses in the math department are acceptable.
4. Must include General Psychology I and II or General Psychology I and Human Growth and Development
5. Recommended courses to complete humanities/social science courses are: (child, adolescent or abnormal) psychology, personality development, psychology of adjustment, sociology, anthropology, economics, counseling, human relations, political science, humanities, art history, philosophy or logic, English literature, history, foreign language, fine arts, religion.

**Factors Considered in the Selection of Students**

Factors utilized by the Admissions Committee include, but are not necessarily limited to:

1. Academic Record. Past academic performance is considered an indication of the probability of an applicant’s completing the academic portion of the program successfully. As noted, the minimum GPA required to be considered for admission is 2.00; however, the average GPAs of recent entering classes has significantly exceeded the required minimum.

2. Graduate Record Examination scores.
3. Pre-Professional Evaluation (PPE). Recommendations from student's Pre-Professional Advisory Committees are important considerations in the selection process.
4. Personal Interview. Students admitted to the professional program are selected on a competitive basis. The personal interview explores areas such as: experience and knowledge of the profession, interpersonal skills, communication skills, problem solving abilities and professional potential. For identification, interviewees will be expected to present a personal photo at the time of the interview.
5. Motivation and Knowledge of the Field. The Admissions Committee believes that students who know the most about what physical therapists do are most likely to take maximum advantage of the educational opportunities in the physical therapy educational program. Interest in and knowledge of the field may be evidenced by an applicant's having taken advantage of available opportunities for learning about physical therapy. No set numbers of observational/volunteer/actual work experience hours are required. However, students who have been successful in gaining admission to the program typically have over 100 hours in a variety of clinical settings. These students were also successful in expressing their overall knowledge of the field of physical therapy during their individual interviews.

## The Professional Curriculum

The schedule of a physical therapy student is rigorous. Because of the time required for attending lectures, laboratories and clinical assignments, plus the time necessary for study and practice, students are encouraged to minimize outside work commitments during the time they are enrolled in the program.

The following is a summary of the courses included in the Doctor of Physical Therapy professional curriculum:

	<b>Credit Contact Hrs.</b>	<b>Lec Hrs.</b>	<b>Lab Hrs.</b>
<b>(1) FALL SEMESTER I (September –December)</b>			
402 PATH - Basic Concepts of Pathology	1	15	0
505 PT - Fundamentals of Physical Therapy	2	18	26
506 PT - Psychosocial Aspects of Physical Therapy	3	45	0
508 PT - Principles of Research	2	30	0
509 PT - Lifespan Development	2	20	15
510 PT - Applied Exercise Physiology for Physical Therapists	4	42	21
514 PT - Clinical Procedures I	3	30	40
524 PT - Applied Statistics	<u>2</u>	<u>30</u>	<u>0</u>
	19	230	102
<b>(2) WINTER/SPRING SEMESTER I (January–June)</b>			
511 ANAT - Gross Anatomy	6	60	60
513 ANAT -Neurobiology	2	30	2

523 PT - Physical Evaluation Procedures	5	45	60
525 PT - Applied Pathology	3	45	0
526 PT - Kinesiology/Pathokinesiology I	4	65	0
527 PT - Clinical Correlates in Neurobiology	2	20	10
528 PT - Physical Therapy in Orthopedics I	5	60	30
534 PT - Research Proposal	3	45	0
609 PT - Professional, Ethical, and Supervisory Issues	3	45	0
712 PT - Fundamentals of Epidemiology	<u>3</u>	<u>45</u>	<u>0</u>
	36	460	162

**(3) SUMMER/FALL SEMESTER II (July–December)**

603 PT - Clinical Internship I	2 (Clin Ed-5 wks)		
604 PT - Pharmacology in Physical Therapy	2	30	0
605 PT - Physical Therapy in Orthopedics II	4	42	28
606 PT - Physical Therapy in Neurological Disorders I	5	60	30
608 PT - Kinesiology/Pathokinesiology II	2	30	0
613 PT - Physical Therapy in Geriatrics	1	15	0
614 PT - Health and Wellness	<u>3</u>	<u>45</u>	<u>0</u>
	19	222	58

**(4) WINTER/SPRING SEMESTER II (January - June)**

622 PT - Prosthetics and Orthotics	3	35	26
623 PT - Clinical Internship II	2 (Clin Ed-5 wks)		
629 PT - Physical Therapy in Orthopedics III	4	45	35
632 PT - Physical Therapy in Neurological Disorders II	5	65	40
633 PT - Clinical Procedures II	2	24	40
637 PT - Issues in Women’s Health	<u>1</u>	<u>15</u>	<u>0</u>
	17	184	141

**(5) SUMMER/FALL SEMESTER III (July - December)**

607 PT - Physical Therapy in Cardiopulmonary Disorders	2	20	20
638 PT - Administration in Physical Therapy	4	60	0
700 PT - Physical Therapy in Neurological Disorders III	5	60	30
701 PT - Clinical Procedures III	1	10	10
702 PT - Clinical Internship III	3 (Clin Ed-8 wks)		
703 PT - Physical Therapy in Integumentary Disorders	1	20	10
705 PT - Research Seminar	3	45	0
Electives (1)	<u>3</u>	<u>45</u>	<u>0</u>
	22	260	70

**(6) WINTER/SPRING SEMESTER III (January - June)**

706 PT - Clinical Internship IV	6 (Clin Ed-8 wks)		
707 PT - Clinical Internship V	<u>6</u> (Clin Ed-8 wks)		
	12		

**TOTAL HOURS FOR CURRICULUM 125**

**Elective Courses (Students will select 3 credit hours of coursework)**

630 PT - Clinical Gait Analysis	3	45	0
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639 PT - Sports Physical Therapy	3	45	0
642 PT - Special Topics in Physical Therapy	1-3	15-45	0
610 AHS - Comm. Service–Socially Responsible Learning	1-3	15-45	0

## Course Descriptions

402PATH Basic Concepts of Pathology. Study of inflammation and repair, cardiovascular reactions, immunologic responses, metabolic adaptations and cellular replication. Pathological processes encountered in physical therapy emphasized.

505PT Fundamentals of Physical Therapy. Section 1: This section of the course presents patient care skills which are fundamental to the practice of physical therapy. Skills included in the course are patient positioning and turning, transfer training, wheelchair management, gait training, aseptic techniques, and assessment of vital signs. Use of correct body mechanics and patient safety are emphasized throughout the course. Additional topics include an introduction to basic medical equipment and an overview of architectural barriers. Section 2: Designed to orient the student in several areas basic to patient care in preparation for actual clinical experience. Includes an introduction to medical terminology and abbreviations, introduction to medical record systems, extraction of pertinent information from medical records and recording of patient information in progress notes. Basic teaching and learning principles are applied to patient education and group presentation.

506PT Psychosocial Aspects of Physical Therapy. Content includes an introduction to the helping role, communication, basic Spanish terminology for physical therapists, assertiveness training, conflict management and stress management. Issues of loss, illness, disability, grief, sexuality, ethics, culture, and death and dying are discussed from the perspectives of the patient, family, child and health care worker. Social issues such as AIDS, eating disorders, depression, suicidal behaviors, addictive disorders, and violence are addressed.

508PT Principles of Research. Introduction to basic research concepts. During this course students learn to become a critical consumers of professional literature and understand how to design and implement a research project.

509PT Lifespan Development. Normal development throughout the life span is studied as a basis of examining and evaluating movement dysfunction that may during childhood, adolescence and adulthood. Developmental reflexes are discussed, as are normal motor milestones. Stages in psychosocial and emotional development described and information on factors affecting development in these areas presented. Introduction to concepts of motor development, motor learning and motor control is included.

510PT Applied Exercise Physiology for Physical Therapists. This course explores basic concepts of exercise physiology, including integration of metabolic, pulmonary, cardiovascular and neuromuscular systems during exercise. Also covered are anaerobic and aerobic metabolism during exercise and metabolic training principles and adaptations. Physiologic responses of respiratory and cardiovascular systems to various types of acute exercise will be covered as well as cardiorespiratory responses to exercise

training. The course covers pathophysiology of cardiovascular and pulmonary disease. Labs for EKG interpretation, heart and breath sounds are included in this course. Considerations that influence the exercise responses of children, the elderly and pregnant women are covered. Considerations relevant to cardiovascular, pulmonary and skeletal diseases are covered as well as those relevant to other selected clinical conditions. Laboratory sessions focus on the principles of physical fitness exercise testing and prescription for the promotion of cardiorespiratory and muscular fitness in apparently healthy adults, as well as various patient populations. Laboratory sessions will complement lectures for a better understanding of applied exercise physiology. Students prepare an exercise prescription for a cardiac patient as an assignment. Students also review current literature as another assignment.

511ANAT Gross Anatomy. The study of the gross structure of the human body, focussing on the musculoskeletal and cardiovascular systems. Dissection of cadaver supplemented by lecture.

513ANAT Neurobiology. This course covers the basic organization of the central, peripheral and autonomic nervous system.

514PT Clinical Procedures I. The first course in the Clinical Procedures series emphasizes the theoretical bases for application of thermal agents but also includes instruction in massage, intermittent pneumatic compression, elastic wrap application, and ultraviolet. Laboratory experience is provided.

523PT Physical Evaluation Procedures. Section 1: Lecture and laboratory instruction in basic skills utilized to evaluate dysfunctions in the musculoskeletal and neuromuscular systems. Development of palpation skills is emphasized. Other examination procedures included are: active and passive range of motion assessment, goniometry, posture evaluation, gait evaluation, girth measurements, and neurological screening procedures. The importance of evaluation prior to intervention and re-evaluation throughout the course of treatment is emphasized throughout this course. Section 2: This section of Physical Evaluation Procedures deals specifically with the evaluation of muscle strength using manual muscle testing (MMT) techniques.

524PT Applied Statistics. Students will apply statistical analyses to clinical problems which include patient management, administration, and business management.

525PT Applied Pathology. Lectures presented by physicians and clinical specialists cover general medical and orthopedic concepts including orthopedic pharmacology; orthopedic radiology; oncology; bloodborne pathogens; pathology and medical management of common connective tissue diseases; and medical/surgical management of common orthopedic diseases and disorders.

526PT Kinesiology/Pathokinesiology I. Fundamental biomechanical and kinesiological principles of human movement as related to anatomical and neuroanatomical structures under normal and pathological conditions. Structural and functional classifications of muscles and joints are introduced. Study of the relationships between the structure and function of the human musculoskeletal system. Application of biomechanical principles and science to movement analysis including: the material properties of biological tissues,



the effect of normal muscle activity and muscle imbalance, and movement dysfunctions. Kinesiology and pathokinesiology of the extremities, thorax, vertebral column, temporomandibular joint; normal and abnormal posture, balance, gait.

527PT Clinical Correlates in Neurobiology. This course covers the clinical aspects of neuroanatomy and neurobiology.

528PT Physical Therapy in Orthopedics I. This course runs concurrently with Applied Pathology and introduces orthopedic physical therapy management principles. Divided into two sections, it is the first of a three-course series on the physical therapy management of orthopedic conditions. Section I will cover principles of basic therapeutic exercise for fitness and for musculoskeletal conditions. This will include exercise terminology, types, goals, guidelines, and critical evaluation of exercise programs. Options for strengthening and stretching of soft tissues will be presented, analyzed and practiced. Students will be allowed to problem solve through case studies and application. Section II will include principles, theories and techniques of physical therapy management throughout the continuum of care for postsurgical, rheumatic and pediatric musculoskeletal conditions. The end result will be the development of comprehensive treatment programs for a variety of musculoskeletal conditions.

534PT Research Proposal. Development of a research proposal in an area of interest to the student and related to ongoing departmental research as well as to current professional practice. Students will work in small research groups with assigned faculty advisor to complete a comprehensive research proposal in the faculty advisor's area of knowledge and interest.

603PT Clinical Internship I. Two hundred hours of supervised clinical experience in selected physical therapy clinics with emphasis on developing professional behaviors in the clinical environment. The student is provided an opportunity to observe all areas of patient care and to participate in developing physical therapy skills in which the student has completed the required coursework.

604PT Pharmacology in Physical Therapy. Physiology and biochemistry of neural synapses and neurotransmitters and their alteration by different classes of drugs: catecholamines, anticonvulsants, antidepressants and anticholinergic drugs. Emphasis on possible side effects and implications for physical therapy.

605PT Physical Therapy in Orthopedics II. Lecture and laboratory instruction in the physical therapy evaluation of and intervention for non-surgical musculoskeletal dysfunctions of the extremities. Musculoskeletal embryology and the neurophysiology of musculoskeletal pain are also covered. Laboratory sessions emphasize the development of manual skill in peripheral joint assessment and mobilization. Introduction to the treatment of both the adult and child athlete with extremity dysfunction and the principles of sports physical therapy are also included.

606PT Physical Therapy in Neurological Disorders I. This course provides the student with an understanding of the pathophysiology, clinical manifestations and basic management (including diagnostic tests and procedures) of selected adult neuromotor disorders including cerebrovascular accidents, brain injuries, disorders of the basal

ganglia and cerebellum and central nervous system infections and tumors. Students learn how to perform and document examinations of adult clients using a variety of tests and measurement tools and to evaluate relevant information in determining impairments and setting functional goals. Physical therapy intervention and treatment rationale is emphasized through case studies and a multidisciplinary approach.

607PT Physical Therapy in Cardiopulmonary Disorders. Designed to provide knowledge and skills in the evaluation and physical therapy management of individuals with cardiovascular and pulmonary dysfunction. The medical and surgical management of individuals with select cardiovascular and pulmonary dysfunction are presented. PT management in the acute care and rehabilitation settings are discussed. Students are expected to interpret and apply clinical lab, diagnostic, pharmacologic, and medical/surgical evaluations from selected cardiovascular and pulmonary dysfunctions as they affect the overall physical therapy plan of care.

608PT Kinesiology/Pathokinesiology II. Students apply principles of mechanics and physics to tasks commonly performed in physical therapy practice. Students apply motor control theories to biomechanical principles as well as perform kinesiological analysis of upper body and lower body activities such as pitching, running, and stair ascent/descent.

609PT Professional, Ethical and Supervisory Issues. Learning experiences designed to enable students to participate in delegation and supervision of patient care activities by applying theories of human resource management and supervision, performance appraisals; to understand legal and regulatory parameters of physical therapy practice; to practice physical therapy safely, ethically, and legally while utilizing physical therapist assistants and supportive personnel. Also includes discussion of student's role in clinical education, including assuming responsibility for learning, evaluating learning experiences, and appropriate clinical behavior. Discussions of current issues that affect the practice of physical therapy including education, research, and practice. Patient advocacy, alternate medicine and ethics in the health sciences are discussed. Concepts of professionalization discussed with emphasis on history and development of physical therapy. Additional course work in cultural diversity and ethical issues is included.

613PT Physical Therapy in Geriatrics. This is an introductory course in geriatrics, designed to facilitate understanding of the elderly and their special needs. Biological and functional changes due to aging are considered, with emphasis on necessary modification of physical therapy procedures to promote comfort and maximum function. Evaluation, treatment planning, utilization of resources, Medicare and third-party payers guidelines are included.

614PT Health and Wellness. Health promotion and education are the primary components of this course. The 10 Leading Health Indicators identified in *Healthy People 2010* are also discussed. Health and wellness programs are presented with emphasis on intervention, prevention and promotion of health, wellness and fitness, including models to facilitate behavior change. Developing healthy lifestyles through health appraisal, identification of risk factors, and fitness evaluation is emphasized.

622PT Prosthetics and Orthotics. The study of upper and lower extremity prosthetics and orthotics, spinal orthotics, wheelchair design and adaptive seating. Lectures and labs

covering options, components, assessment, measurement, prescription, management and patient instruction are taught by physical therapists, prosthetists, orthotists, and durable medical equipment representatives.

623PT Clinical Internship II. Two hundred hours of supervised clinical experience in selected physical therapy clinics. The student is exposed to all aspects of patient care and to interactions with other healthcare providers. Students develop beginning skills in patient examination and the delivery of selected interventions.

629PT Physical Therapy in Orthopedics III. Lecture and laboratory instruction in physical therapy evaluation and intervention used to manage musculoskeletal dysfunctions of the spine and trunk. Emphasis is on development of manual therapy skills and includes theory and practice related to common manual therapy approaches. The course also includes TMJ dysfunction, industrial physical therapy, sacroiliac dysfunction and surgical management of spinal dysfunction.

632PT Physical Therapy in Neurological Disorders II. This course is a continuation of 521PT providing the student with an understanding of the pathophysiology, clinical manifestations and basic medical management of selected pediatric neuromotor and sensory integrative disorders. Students learn how to perform and document examinations of pediatric clients using a variety of tests and measurement tools and to evaluate relevant information in determining impairments and setting functional goals. Physical therapy intervention and treatment rationale is emphasized through case studies and a multidisciplinary approach.

633PT Clinical Procedures II. The second course in the Clinical Procedures series covers the theory and application of electrotherapy as used in the practice of physical therapy. Laboratory experience is provided.

637PT Issues in Women's Health. This course is designed to provide the learner with an awareness of women's health issues from adolescence to post-menopause. Common problems encountered during pregnancy and post-partum are discussed as well as a variety of gynecological problems. Self-care and preventive strategies that address these problems throughout a woman's lifespan are included. This course also focuses on the role of the physical therapist in marketing and education in the area of women's health.

638PT Administration in Physical Therapy. Theoretical, didactic and practical foundations necessary to manage a health care organization are presented. Topics include organizational theory and structure, personnel recruitment and retention, planning, policies and procedures, quality assurance, risk management, cost analyses, budgeting and controlling, marketing, regulation and public health policy, designing a mock physical therapy delivery organization. Format for course is lecture, presentation by students, and independent and group project work outside class periods.

700PT Physical Therapy in Neurological Disorders III. This course provides the student with an understanding of the pathophysiology, clinical manifestations and basic management of pediatric and adult neuromuscular disorders including congenital and traumatic spinal cord dysfunction, motoneuron disorders, myopathies, and selected neuropathies. Students learn how to perform and document examinations using a variety

of tests and measurement tools, to evaluate relevant information in determining problems and setting goals and to provide physical therapy intervention using a multidisciplinary approach.

701PT Clinical Procedures III. The third course in the Clinical Procedures series includes a review of the physiology and pathophysiology of the neuromuscular system with emphasis on electrophysiology of the system; the theory and practice of electrical testing procedures used in the practice of physical therapy (including nerve conduction velocity testing, and electromyographic evaluation); and an overview of biofeedback. Laboratory experience is provided

702PT Clinical Internship III. Three hundred twenty hours of supervised clinical experience in selected physical therapy settings with emphasis on developing increased independence and clinical reasoning skills.

703PT Physical Therapy in Integumentary Disorders. Course provides a comprehensive review of the management of patients with open wounds, burns, and dermatologic disorders. Physical therapy management of such disorders is emphasized; also includes lectures by physicians, nurses, and other health care providers in management of patients with integumentary disorders.

705PT Research Seminar. Presentation of completed research projects by students. Presentations are to be in poster/platform format. Critiquing done by other students, academic, and clinical faculty. Students complete a research project. A poster presentation is required of all students.

706PT Clinical Internship IV. Three hundred twenty hours of clinical education experience in comprehensive management of all types of patients in general acute facilities, rehabilitation centers, and/or specialty settings.

707PT Clinical Internship V. Three hundred twenty hours of clinical education experience in comprehensive management of all types of patients in general acute facilities, rehabilitation centers, and/or specialty settings.

712PT Fundamentals of Epidemiology. Introduction to the basic principles and methods of epidemiology and demonstration of their applicability in the field of public health. Topics covered include the historical perspective of epidemiology, measures of disease occurrence and of association, clinical epidemiology, disease screening, causal inference, and study design.

## **Elective Courses**

630PT Clinical Gait Analysis. This course introduces the student to clinical gait analysis tools including 2-d and 3-d gait analysis, pressure analysis, temporo-spatial gait analysis, and force platforms. Upon completion of the course, the student will have a better understanding of treatment recommendations based upon interpretation of data.

639PT Sports Physical Therapy. Lecture and laboratory instruction in patient/client management of the injured athlete, including examination, evaluation, diagnosis, prognosis, intervention and outcomes. Topics include emergency medical care of the athlete; taping; pre-season screening; the female athlete; the child athlete; common medical, dermatologic and infections of the athlete; and the roles of the physical therapist and athletic trainer on the sports medicine team

642PT Special Topics in Physical Therapy. Current topics in physical therapy. May be repeated with topic change.

610AHS Community Service – Socially Responsible Learning. The purpose of this course is to foster the development of self-reflective, culturally aware and responsive community participants through reciprocal service and learning. Students will be qualified to compete and be recognized as service-learning scholars. Shared learning and reflection about students' experiences will take place. In this course, students are not functioning as a discipline specific student but are providing service as a health science student. This course does not fulfill the requirements for clinical education, fieldwork experience, or clinical internship for the various departments in the College of Allied Health Sciences.

## **Transitional Doctor of Physical Therapy Program (t – DPT)**

The degree completion program for the Doctor of Physical Therapy primarily is designed as an avenue for past graduates from the University who are licensed as physical therapists to gain the additional knowledge necessary to transition to the entry-level DPT. However, graduates from programs other than UTHSC will be individually evaluated for entry into the program. The degree completion program was developed in conjunction with the Professional Program in Physical Therapy's conversion to the DPT, which occurred in April 2003.

The program utilizes a combination of short course format, independent study, and distance learning. This allows the working clinician to gain additional knowledge in a short period of time and to be able to continue employment. For some of the courses, a prerequisite for the course is completed via a continuing education seminar which is then enhanced through completion of assignments in a distance education format. For other courses, no seminar attendance is required and all learning activities are completed through distance learning. These courses may include assigned readings, videos, CD or DVD presentation, or via the Internet. Some courses that require the development of certain psychomotor skills are offered as block scheduled courses on the UTHSC campus.

If the physical therapist graduated from the 3-year MPT program (2001 – 2006) at UTHSC, the DPT degree completion program will require a minimum of 25 semester hours. Graduates from institutions other than UTHSC will have an individualized review of academic coursework and clinical experiences to determine which courses will need to be taken. Most therapists will be able to complete the program in approximately 1 -2 years while employed in a clinical or academic setting.

If the physical therapist graduated from the 2-year BSPT program (1987 – 2000) at UTHSC, this program will require a total of 38 semester hours. The therapist will be able to complete the program in approximately 1 –2 years while employed in a clinical or academic setting.

If the physical therapist graduated from the 15-month BSPT program (1965 – 1986) at UTHSC or graduated from another baccalaureate program of any length , the therapist will need to take at least the 38 semester hours identified for the BSPT 2-year program graduate from UTHSC. The therapist also may be required to take other coursework based on an assessment of the physical therapy educational coursework completed by the applicant and his professional experiences. This assessment is done through an individualized transcript review and portfolio review. Coursework obtained at another university may be used for degree completion and must have been completed within 7 years of admission to the doctoral program or, if older, be validated by contemporary activities demonstrating ongoing competency with the content. However, in order to obtain a degree from the University of Tennessee (UT), students must have completed 30 hours of coursework at UT.

The schedule for a student who has been awarded competency credit will vary based upon which courses towards the degree completion will need to be taken. Students are given a maximum of 5 years from entrance into the program to complete all the degree requirements.

Students interested in pursuing the t-DPT degree should contact the Department of Physical Therapy for an individualized review of their professional portfolios and determination of a course of study. Applications are accepted three times yearly: Fall, Winter, and Summer semesters.

## **Graduate Program in Physical Therapy (Post Professional)**

Carol Counts Likens, Ph.D., P.T., Program Director

The College of Allied Health Sciences offers post-professional graduate studies leading to either the Master of Science in Physical Therapy (MSPT) or Doctor of Science in Physical Therapy (ScDPT) available to licensed physical therapists. The program provides the opportunity to: 1) elect an area of specialized physical therapy practice; 2) develop an advanced level of clinical competence for leadership in practice; 3) develop a research base for the analysis of the physical therapy profession's scientific body of knowledge and for developing clinically oriented research techniques; 4) and develop

skill in teaching in entry-level educational, clinical, continuing, and public educational programs.

All students are enrolled in a common core of physical therapy theory, education, and research courses. Each student selects a clinical area of concentration; courses of study are offered in musculoskeletal and neurological physical therapy. This Graduate Program is designed for the part-time or full-time student. Students must have a written plan for completion of program requirements approved by the Graduate Program. All degree requirements for the Master of Science in Physical Therapy must be completed within five years of the date of initial enrollment. Degree requirements for the Doctor of Science in Physical Therapy must be completed within seven years of the date of initial enrollment.

## **Graduate Admission Process Minimum Requirements**

Minimum requirements for consideration for admission to the Master of Science in Physical Therapy or Doctor of Science in Physical Therapy degree programs are:

- Current licensure in the U.S. as a physical therapist;
- Entry-level degree from an accredited program in physical therapy (official transcript must accompany application);
- Completion of a minimum of two years of clinical practice as a physical therapist prior to matriculation into the program;
- Minimum GPA 3.00 on a 4.0 scale in entry-level program;
- Graduate Record Examination (GRE): Recommended score of 500 each on verbal and quantitative components and 4 on analytical writing component
- Three letters of reference from previous college level instructors or immediate supervisors;
- Personal interview with members of the faculty;
- Typed essay (3-5 pages) required at time of interview;
- Computer literacy competency as designated by the Department of Physical Therapy, and access to current computer technology to enable collecting information via Internet and communicating via email; and
- Foreign applicants whose native language is not English must submit results of TOEFL, with minimum score of 550.

Additionally, applicants will be required to complete application forms for admission. Included in the application will be a required essay stating the applicant's goals for graduate study.

# Curriculum Summary for Master of Science in Physical Therapy

<b>Core Courses (16 SH Required)</b>	<b>Semester Hours</b>
PT 813 Educational Theory	3 SH
PT 860 Biostatistics for Physical Therapists	3 SH
PT 861 Research Design	3 SH
PT 881 Health Care Management and Policy	3 SH
PT 863 Thesis or Research Project	4 SH

<b>Musculoskeletal Concentration (12-15 SH required)</b>	<b>Semester Hours</b>
PT 803 Theoretical Bases of Orthopaedic PT <sup>1</sup>	3 SH
PT 804 Orthopaedic Clinical Medicine <sup>1</sup>	3 SH
PT 896 Musculoskeletal Evaluation/Treatment of Spine	3 SH
PT 897 Musculoskeletal Evaluation/Treatment of Extremities	3 SH
PT 914 Imaging	3 SH
PT 898 Musculoskeletal Evaluation/Treatment of Upper Quarter	3 SH
PT 899 Musculoskeletal Evaluation/Treatment of Lower Quarter	3 SH

<b>Neurological Concentration (12-15 SH required)</b>	<b>Semester Hours</b>
PT 812 Advanced Neuro. PT Techniques <sup>2</sup>	3 SH
PT 900 Motor Control <sup>2,3</sup>	3 SH
PT 895 Sensory Integration and Perceptual Motor Disorders <sup>3</sup>	3 SH
PT 811 Evaluative Procedures in Pediatric PT	3 SH
PT 814 School-Based Physical Therapy	3 SH
PT 815 Fetal and early development	3 SH
PT 816 Complex Practice Issues in Pediatrics	3 SH
PT 817 Cardiopulmonary Care for Adults with Neurological Disabilities	3 SH

<sup>1</sup>. Required coursework in the Musculoskeletal concentration

<sup>2</sup>. Required for Adult Neurological concentration

<sup>3</sup>. Required for Pediatric Neurological concentration

## Core Courses for Doctor of Physical Therapy Science

<b>(47 semester hours required)</b>	<b>Semester Hours</b>
PT 813 Education Theory and Methods	3
PT 860 Biostatistics for Physical Therapists	3
PT 861 Research Design	3
PT 881 Health Care Management and Policy	3
PT 902 Clinical Science Seminar I	3
PT 903 Clinical Residency Seminar	1
PT 905 Clinical Science Seminar II	3
PT 907 Clinical Residency I	8
PT 908 Complex Clinical Management I	3
PT 909 Clinical Outcomes Project I	3
PT 910 Clinical Residency II	8
PT 911 Complex Clinical Management II	3
PT 912 Clinical Outcomes Project II	3



**The following electives are offered by the Graduate Program:**

<b>Course Name .....</b>	<b>Semester Hours</b>
PT 814 School-Based Physical Therapy.....	3 SH
PT 815 Fetal and Early Development.....	3 SH
PT 816 Complex Practice Issues in Pediatrics.....	3 SH
PT 817 Cardiopulmonary Care for Adults with Neurological Disabilities.....	3 SH
PT 871 Balance Disorders .....	3 SH
PT 875 Human Gait and Disorders.....	3 SH
PT 891 Applied Skeletal Ms. Physiology .....	3 SH
PT 894 Dissection Anatomy .....	3 SH
PT 831 Assistive Technology for Clients with Disabilities.....	3 SH
PT 833 Professional and Ethical Issues .....	2 SH
PT 898 Musculoskeletal Eval and Treatment of Upper Quarter.....	3 SH
PT 899 Musculoskeletal Eval and Treatment of Lower Quarter .....	3 SH
PT 901 Cultural Diversity.....	3 SH
PT 904 Health Communication .....	3 SH
PT 906 Age, Exercise & Rehab .....	3 SH
PT 913 Special Topics: Women’s Health.....	3 SH
PT 913 Special Topics: Wound Care.....	3 SH
PT 913 Special Topics: Pediatric Oncology .....	3 SH
PT 914 Imaging for Physical Therapist .....	3 SH
PT 862 Practicum .....	3,4 SH

**Courses from t-DPT Program that may be applied toward electives in MSPT and ScDPT requirements**

PT 604 Pharmacology (2 SH). Physiology and biochemistry of neural synapses and neurotransmitters and their alteration by different classes of drugs: catecholamines, anticonvulsants, antidepressants and anticholinergic drugs. Emphasis on possible side effects and implications for physical therapy.

PT 608 Kinesiology/Pathokinesiology II (2 SH) Students apply principles of mechanics and physics to tasks commonly performed in physical therapy practice. Students apply motor control theories to biomechanical principles as well as perform kinesiological analysis of upper body and lower body activities such as pitching, running, and stair ascent/descent.

PT 614 Health and Wellness (3 SH) Health promotion and education are the primary components of this course. The 10 Leading Health Indicators identified in *Healthy People 2010* are also discussed. Health and wellness programs are presented with emphasis on intervention, prevention and promotion of health, wellness and fitness, including models to facilitate behavior change. Developing healthy lifestyles through health appraisal, identification of risk factors, and fitness evaluation is emphasized.

PT 712 Fundamentals of Epidemiology (3 SH) Introduction to the basic principles and methods of epidemiology and demonstration of their applicability in the field of public health. Topics covered include the historical perspective of epidemiology, measures of disease occurrence and of association, clinical epidemiology, disease screening, causal inference, and study design.

## **Course Descriptions for Graduate Program in Physical Therapy**

PT 803 Theoretical Bases of Orthopedic Physical Therapy (3 SH). Tissue pathology including inflammation and repair and the effects of immobilization and biomechanics applied to the spine relevant to orthopedic physical therapy practice are discussed. These principles provide the foundation for the examination of patients with orthopedic conditions and the selection of appropriate interventions. An examination scheme for the orthopedic patient will be presented with the emphasis on physical therapy differential diagnosis. Selected functional assessment tools commonly utilized in orthopedic physical therapy practice and radiographic imaging of the skeletal system will also be discussed.

PT 804 Orthopedic Clinical Medicine Seminar (3 SH). A basic format for orthopedic physical examination is presented in this course and the role of the physical therapist as it interfaces with the role of the physician is discussed. Medical diagnostic testing and medical management of orthopedic dysfunctions and diseases is covered including such topics as radiology, surgical procedures, and pharmacology. Discussion and debate of current theories of both medical and physical therapy management of musculoskeletal dysfunction.

PT 811 Evaluative Procedures in Pediatric Physical Therapy (3SH). Introduction to measurement theory, including test reliability, validity, and standardization. Normed and criterion referenced tools commonly used in pediatric physical therapy practice are described in detail. Laboratory develops skills in the administration and interpretation of designated physical therapy tests. Prerequisites: PT 812 or permission of instructor.

PT 812 Advanced Neurological Physical Therapy Techniques (3 SH). An advanced course in therapeutic exercise and management procedures used in the treatment of children and adults with nervous system disorders. Current concepts of motor development, motor control, and motor learning are presented. Traditional neurofacilitation approaches are critically examined in order to develop an integrated treatment model. Course materials are applied to assessment and treatment strategies through use of videotapes of children with developmental disabilities and adults with neurological dysfunctions.

PT 813 Educational Theory and Methods (3 SH). Course includes discussion on planning, implementing, and evaluating the teaching, learning process; educational philosophy and standards; learning theory; curriculum design; course and learning experience planning and evaluation.

PT 814 School-Based Physical Therapy (3 SH). Course addresses physical therapy as a related service provided to assist a child with a disability to function within an educational environment. Includes focus on a child's ability to transition as independently as possible in the school environment; participate in classroom and other activities at school; and maintain and change positions in the classroom.

PT 815 Fetal and Early Developmental (3 SH) Includes evaluating and treating infants in NICU, appropriate standardized testing instruments, and long term issues with NICU graduates,.

PT 816 Complex Practice Issues in Pediatrics (3 SH) Using the framework of ICF and the *Guide to Physical Therapist Practice*, content includes case studies and discussion of the impact of developmental biomechanics on a child's musculoskeletal system, impact of families on childhood development. Includes working with families of and children with Autism spectrum disorders, Multiple Disabilities, evaluating infants for possible motor delays, and the impact of aging on individuals with developmental disabilities.

PT 817 Cardiopulmonary Care for Adults with Neurological Disabilities (3 SH). Designed to provide knowledge and skills in the evaluation and physical therapy management of individuals with cardiovascular and pulmonary dysfunction and comorbid neurological disability(ies). The medical and surgical management of individuals with select cardiovascular and pulmonary dysfunction are presented. PT management in the acute care and rehabilitation settings are discussed. Students are expected to interpret and apply clinical lab, diagnostic, pharmacologic, and medical/surgical evaluations from selected cardiovascular and pulmonary dysfunctions as they affect the overall physical therapy plan of care.

PT 831 Assistive Technology for Clients with Disability (3 SH). Review of current adaptations available for clients/patients who require assistive technology. Seating, augmentative communication, environmental control and ergonomics are the major topics of concern. Lab sessions apply material to children and adults with disabilities.

PT 833 Professional and Ethical Issues (2 SH). Discussion of current issues affecting the practice of physical therapy. Emphasis on projected changes in roles of physical therapists; projected changes in health care delivery systems and probable impact on physical therapy; legal and ethical considerations.

PT 860 Biostatistics for Physical Therapists (3 SH). Course encompasses descriptive statistics, estimation, association and prediction, one and two sample hypothesis testing (paired and unpaired situations), ANOVA concepts (one and two factor, mixed designs, ICC). Instruction includes data entry and use of software for statistical analysis using a PC. Analyses of selected clinical research articles are used to illustrate and reinforce theoretical concepts.

PT 861 Research Design (3 SH). Survey of the techniques, methods and tools of research in the behavioral sciences. General discussion of the research process followed by examination of several different research methods. Experimental and quasi-experimental designs; descriptive research techniques. Overview of different methods of data collection, survey of statistical techniques frequently used in physical therapy literature.

PT 862 Practicum (3, 4 SH). Supervised clinical experience to enable application of knowledge and skills gained from the curriculum within a clinical or educational setting. Practicum settings arranged with UT affiliates. Prerequisite: Consent of program director.

PT 863 Thesis (2, 2 SH). Consideration of all facets related to the investigative process; formulation of a problem, search and analysis of literature, developing procedure for collecting data, data analysis; writing thesis proposal and the final thesis. The student

must obtain thesis committee approval of the proposal prior to data collection. Prerequisites: PT 860, PT 861.

PT 871 Balance Disorders (3 SH) Assessment and Management. Current theories concerning neural control of balance, in health and under pathological circumstances. Analysis of current technology for balance assessment in clinical practice and research settings; includes treatment considerations. Prerequisite: PT 801 or permission of instructor.

PT 875 Human Gait and Disorders (3 SH). Kinematic and kinetic analysis of normal human gait across the lifespan; contrast with typical patterns of patients having neural dysfunction. Includes assessment methods and management considerations. Prerequisite: PT 802, or permission of instructor.

PT 881 Health Care Management and Policy (3 SH). Course is designed to provide students with theoretical, didactic, and practical foundations necessary to manage a health care organization. Topics include policies and procedures, quality assurance and risk management, cost analyses and budgeting, marketing, regulation, reimbursement and documentation, ethics/malpractice/negligence, and health care delivery organizations.

PT 891 Applied Skeletal Muscle Physiology (3 SH). An analysis of the physiological bases of human movement and physical fitness as well as specific acute and chronic adaptations occurring consequent to various regimens of exercises. Exploration of selected techniques for assessing musculoskeletal function and structure.

PT 892 Advanced Study in Selected Topics (2, 3 SH). Management of complex patient problems not specifically addressed in other courses. Course content varies, dependent upon current trends and new perspectives in physical therapy practice. Learning experiences appropriate for students in either neurologic or orthopedic concentrations.

PT 893 Directed Study (2, 3 SH). An elective course designed to provide guided independent learning experiences in an area of physical therapy not otherwise available in the curriculum. May be used to prepare for thesis proposal.

PT 894 Dissection Anatomy (3 SH). An elective course designed to study the relationships of anatomical structure with the clinical aspects of orthopedics and pediatrics. Each student in the class will lead the discussion and dissection of one assigned anatomical area. The discussion should include current clinical aspects of physical therapy as they relate to structure. Learning experiences appropriate for students in either pediatric or orthopedic concentrations. Limited to 8 students.

PT 895 Sensory Integrative and Perceptual Motor Disorders (3 SH). Assessment and treatment techniques are presented for the child with sensory integration and perceptual motor deficits and include the areas of muscle tone, postural mechanisms, extraocular control, body imagery, integration of two sides of the body, motor planning, form and space perception, tactile defensiveness, vestibular mechanisms, mixed dominance, and developmental skills. Standardized testing techniques are introduced to facilitate treatment planning. Prerequisites: PT 812 or permission of instructor

PT 896 Musculoskeletal Evaluation and Treatment of Spine (3 SH). Lecture and laboratory instruction in advanced evaluation and treatment techniques used to manage musculoskeletal dysfunctions of the spine and trunk. This course reviews common pathological conditions of the spine and discusses medical as well as physical therapy interventions. The principles of industrial rehabilitation are introduced as well as the development of programs for the prevention of painful spinal dysfunction. Prerequisites: PT 803, PT 804, or permission of instructor.

PT 897 Musculoskeletal Evaluation and Treatment of Extremities (3 SH). Lecture and laboratory instruction in evaluation and treatment techniques used to manage musculoskeletal dysfunctions of the extremities. Prerequisites: PT 803, PT 804, or permission of instructor.

PT 898 Musculoskeletal Evaluation and Treatment of Upper Quarter (3 SH). Lecture and laboratory instruction in evaluation and treatment techniques used to manage musculoskeletal dysfunctions of the upper quarter including mid- and upper-thoracic and cervical spine, shoulder and upper extremities. Prerequisites: PT 803, PT 804, or permission of instructor.

PT 899. Musculoskeletal Evaluation and Treatment of Lower Quarter (3 SH). Lecture and laboratory instruction in evaluation and treatment techniques used to manage musculoskeletal dysfunctions of the lower quarter including lower thoracic and lumbar spine, sacrum, hip and lower extremities. Prerequisites: PT 803, PT 804, or permission of instructor.

PT 900: Issues in Motor Control and Motor Learning (3 SH). Overview of current research in motor control and motor learning as applied to physical therapy. Focus on applications across the lifespan and to the evidence based practice. Case studies used for application and decision-making.

PT 901: Cultural Diversity Issues and Rehabilitation (3 SH). Introduces students to cultural issues in healthcare and rehabilitation. Students will learn the knowledge, attitudes and skills for enhancing their cross-cultural interactions with patients, families, and colleagues when working in diverse communities.

PT 902: Clinical Science Seminar I (3 SH). Analysis of the reliability and validity of clinical measurements used in physical therapy practice. Critical review of current clinical efficacy literature; utilizing research in advanced practice.

PT 903: Clinical Residency Seminar (1 SH). Objectives for the residency; selecting the residency site. Students encouraged to select community-based, home health, ambulatory settings.

PT 904: Health Communication: Counseling Patients and Personnel (3 SH). Emphasizes application of effective communication strategies to achieve quality rehabilitation outcomes, through students' participation in lectures, student presentations and interactive discussion on topics related to communication in the health care field.

PT 905: Clinical Science Seminar II (3 SH). Writing and analysis of case reports for physical therapy. Reviews of single case studies in rehabilitation literature. Each student selects a practice issue and conducts a scholarly analysis of the external and internal factors affecting physical therapy care; product is a written report suitable for submission to a rehabilitation journal for publication.

PT 906: Age, Exercise and Rehabilitation (3 SH). Overview of normal physiological responses to exercise in the elderly. Comparison of exercise-induced responses of the various physiological systems throughout the aging process. Focus on the importance of exercise from a rehabilitation perspective.

PT 907: Clinical Residency I (8 SH). A guided practicum with a practitioner-mentor, in which the student learns by experience, example and interaction concerning advanced practice. Experience is arranged to include: Community interaction, interdisciplinary cooperation; patient advocacy; patient empowerment issues; family education; consideration of socioeconomic, societal and cultural issues. (480 hours)

PT 908: Complex Clinical Management I (3 SH). Chronic disease and disability in children and the elderly; orthopedic disorders; the essentials of complex reasoning and clinical decision making.

PT 909: Clinical Outcomes Project I (3 SH). Students use the principles of clinical research to analyze a practice issue in their residency site and plan an intervention and assess outcome. Student required to complete an outcome project and report in the prescribed written format.

PT 910: Clinical Residency II (8 SH). A guided practicum with a practitioner-mentor, in which the student learns by experience, example and interaction concerning advanced practice. Experience is arranged to include: Community interaction, interdisciplinary cooperation; patient advocacy; patient empowerment issues; family education; consideration of socioeconomic, societal and cultural issues. (480 hours)

PT 911: Complex Clinical Management II (3 SH). Students present two complex clinical cases from their practice; all students respond to and interact concerning appropriate physical therapy care related to patient problems. Management must include: current pathophysiological aspects of the disease/disorder; current medical issues related to medical treatment of the disease/disorder; patient/ family education; community intervention; interdisciplinary interaction; consideration of cultural aspects; prevention and health promotion; and outcome.

PT 912: Clinical Outcomes Project II (3 SH). Students use the principles of clinical research to analyze a practice issue in their residency site, conduct an intervention and assess outcome. Student required to complete an outcome project and report in the prescribed written format.

PT 913: Special Topics in Physical Therapy (1-3 SH). Selected topics in physical therapy presented. Examples of topics include pediatric oncology, wound care, and women's health.

PT 914 Imaging for Physical Therapists. Introduction to the fundamentals of musculoskeletal imaging. Course presents capabilities and limitations of the different imaging modalities, information given in a radiologist's report, instruction and practice in independent viewing of images. Intended to assist clinician in correlating imaging findings to clinical findings to result in more comprehensive patient evaluations, more specific treatment plans, and better patient outcomes.

## **Requirements for Graduation**

The following requirements must be satisfied to earn the degree of Master of Science in Physical Therapy:

1. Satisfactory completion of 36 semester credit hours of work, which must include 16 hours of core courses, 12-15 hours in a clinical concentration and 5-8 hours of electives.
2. Students must complete coursework with a "B" average overall. Grades of "B" or above in core and clinical concentration courses and "C" or above in other courses are required.
3. Satisfactory completion ("Pass") of either PT603 Thesis (minimum of 4 semester credit hours) or completion of a research project and submission of a publishable manuscript to an appropriate peer-reviewed publication.
4. Admission to candidacy for the master's degree. Students file an application for admission to candidacy when conditions above have been fulfilled and the final draft of the thesis or manuscript has been approved by the committee.
5. Students must discharge all financial obligations to the University and remove all deficiencies documented by the Registrar.
6. Attendance at graduation is mandatory. Those unable to attend commencement must obtain permission to receive the degree *in absentia* by filing a written request with the Dean of the College.

The following requirements must be satisfied to earn the degree of Doctor of Science in Physical Therapy:

1. Satisfactory completion of 92 semester credit hours of work, which must include 47 hours of core courses, 13-14 hours in a clinical concentration and 32-34 hours of electives.
2. Students must complete coursework with a "B" overall average. Grades of "B" or above in core and clinical concentration courses and "C" or above in other courses are required.
3. Satisfactory completion ("Pass") of a research project and submission of a publishable manuscript are required prior to graduation.

4. Students must discharge all financial obligations to the University and remove all deficiencies documented by the Registrar.
5. Attendance at graduation is mandatory. Those unable to attend commencement must obtain permission to receive the degree in absentia by filing a written request with the Dean of the College.



## **Interdisciplinary Studies in the College of Allied Health Sciences**

To facilitate collaboration of disciplines, courses have been designed to allow students enrolled in the various programs of the College of Allied Health Sciences an opportunity to engage in interdisciplinary learning. Courses may include clinical, educational and research components. The listing of interdisciplinary courses may vary each year. Students in other colleges may enroll in these courses with the permission of the instructor.

600AHS Special Topics. Directed readings or special course topics of current interest to allied health professionals. Credit: 1-3 semester hours.

610AHS Community Service-Socially Responsible Learning. The purpose of this course is to foster the development of self-reflective, culturally aware and responsive community participants through reciprocal service and learning. Students are not functioning as a discipline-specific student but are providing service as a health science student. This course does not fulfill the requirements for clinical education, fieldwork experience or clinical internship for the various programs in the College of Allied Health Sciences. Credit: 1-3 semester hours.

821AHS Health Information Systems. This course covers the basic attributes of information systems used for inpatient, outpatient and research health data. Additionally, methods useful to manage and evaluate such systems are reviewed. Credit: 2 semester hours.

## **Clinical Facilities Utilized By College Programs**

Clinical experiences for allied health students are available both within the Health Science Center and through agreements with many community agencies, public and private. Such agencies are located in Memphis, throughout Tennessee, and in out-of-state sites. Over 40 clinical facilities that provide on-site practical experience for college students are located in the Memphis area. Listings of out-of-city sites may be obtained from the appropriate chairman or program director.

## **Licensure**

A license to practice dental hygiene, cytotechnology, medical technology, or physical therapy is required by Tennessee state law. Graduates of programs in dental hygiene and physical therapy are eligible to sit for the appropriate state licensing examination. Medical technology and cytotechnology graduates are eligible for Tennessee licensure upon acquiring national certification.

# College of Allied Health Sciences

## Departmental Faculty Listing

### Department of Clinical Laboratory Sciences

#### *Professors*

Barbara D. Benstein, Ph.D.  
Linda L. Pifer, Ph.D.

#### *Professors Emeritus*

Ann Bell, D.Sc. (Hon)  
Brenta G. Davis, Ed.D.  
Irma F. Rube

#### *Associate Professors*

Vickie Baselski, Ph.D.  
Leonard E. Bloom  
Leilani Collins  
Linda L. Ross  
T. Paulette Sutton  
P. Diane Wyatt  
Nadeem Zafar, M.D.

#### *Assistant Professors*

Wyenona Hicks  
Kathleen Kenwright  
Patty Liddell

#### *Clinical Associate Professors*

Michael Bugg, M.D.  
Beverly Lyman, Ph.D.  
Bereneice M. Madison, Ph.D.  
Shamim M. Moinuddin, M.D.  
Dennis Netzel  
David B. Robins, Ph.D.

#### *Clinical Assistant Professors*

Rebecca A. Brown  
Theodore Morton, Pharm. D.  
Terry D. Williamson

#### *Instructors*

Dorothy J. Adelman  
Rhonda K. Allen  
Keisha Brooks  
Alina F. Jukkola  
Kevin McHugh

Margaret Smith  
Richard Warren  
Wes Williamson

#### *Clinical Instructors*

Hugh E. Berryman, Ph.D.  
Richard D. Blalack  
Jamie Boone  
Dorothy Bush  
Sammy K. Copeland  
Judith G. Davis  
Shelia Ervin  
G. Scott Fernandez  
Tommy Floyd  
Darlene D. Fountain  
Joan G. Freeman  
Janie W. Gardner  
Nanette Gish  
Julie Haley  
Lisa Harris  
James Stacy Horton  
David Houn, M.D.  
Helen K. Kitts  
Keith Kunkel  
Ron Lessard  
Linda J. Liles  
Linda W. McCadams  
Alison McDonald Spakes  
Tim Melton  
David W. Mensi  
Kathryn L. Mitchell  
H. Stephen Nichols  
Charles Remaklus  
Mary Jane Robinson  
Joe R. Shooter  
Tammie Summers  
Robert Wahl, M.D.  
Tim Wallace  
Michael Wheeler  
Joseph T. Wilson, M.D.  
Laura Lee Woods

## **Department of Dental Hygiene**

### *Professors*

Margaret B. Waring, Ed.D.  
Nancy J. Williams, Ed.D.

### *Professor Emeritus*

Mary Alice Gaston

### *Associate Professor*

Cassandra Holder-Ballard, Ed.D.

### *Assistant Professor*

April V. Williams, MDH

### *Instructors*

Eleta Reed-Morgan  
Schelli Stedki  
Elaine Stegman

### *Clinical Instructors*

Katie DeColibus, D.D.S.  
Bobby DeColibus, D.D.S.  
Elizabeth G. Thomas  
Gina P. Warr  
Felisa Jackson  
Marlene Fullilove  
Michelle Miles  
Collett Stewart  
Kelli Illyes

## **Department of Health Informatics and Information Management**

### *Professor*

Elizabeth D. Bowman

### *Professor Emeritus*

Mary C. McCain

### *Associate Professor*

Rebecca Reynolds  
David Rosenthal, Ph.D.

### *Assistant Professor*

Maureen Wheeler

### *Instructor*

Marcia Sharp

### *Clinical Associate Professor*

Maurice W. Elliott

### *Clinical Assistant Professors*

Jerry E. Brantley  
William G. Tuttle

### *Clinical Instructors*

Donna Andrews  
Nancy Cardamone  
Marta Gleneck  
Patricia Langenfelder  
Meg McGill  
Donna Woodside

## **Department of Occupational Therapy**

### *Professors*

Surya Shah, Ph.D.  
William R. Frey, Ph.D.

### *Associate Professors*

Rosemary E. Batorski,  
Lawrence W. Faulkner, Ph.D.  
Anita W. Mitchell,  
Ann H. Nolen, Psy.D.

### *Assistant Professor*

Susan McDonald

### *Instructor*

Lisa Tekell, MS

### *Adjunct Professor*

Larry Tillman, Ph.D.

### *Academic Associate Professor*

Susan McFadden

### *Clinical Associate Professor*

Sandy Fletchall

*Clinical Assistant Professor*

Orli Weisser-Pike

## **Department of Physical Therapy**

*Professors*

Barbara H. Connolly, DPT, Ed.D.

Andrew J. Bush, Ph.D.

*Clinical Professor*

Judith Griffin

*Associate Professors*

Susan Appling, Ph.D.

Judy Clift, DPT

Richard J. Kasser, Ph.D.

Carol C. Likens, Ph.D.

Ruth D. Mulvany, DPT

Pamela D. Ritzline, Ed.D.

Mitzi B. Zeno

Audrey Zucker-Levin, Ph.D.

*Clinical Associate Professors*

Helen Masin, Ph.D.

Lawrence W. Weiss, Ed.D.

*Assistant Professors*

Ann Coleman

Jonathan Rose

*Clinical Assistant Professors*

Sherry Backus

Patricia K. Baker

William G. Boissonnault, DHSc

Ann Giffin

Jo-Ann Hinkle

Victoria Marchese, Ph.D.

Rosemary A. Norris

Mary Ann Seeger

*Instructors*

Lola Cremer

Jeffrey Gill

Edward Zeno

*Clinical Instructors*

Rebecca Harris

Joel Lyons

Teresa Murphy

Susan W. Stralka

Joellyn Sullivan

Deanna Wade

John E. Yarbrough

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# COLLEGE OF DENTISTRY

**875 Union Avenue  
Memphis, TN 38163  
Tel: (901) 448-6200**

**Russell O. Gilpatrick, D.D.S., Dean**

William F. Slagle, D.D.S., M.Ed. Dean Emeritus

Mark R. Patters, D.D.S., Ph.D., Associate Dean, Academic Affairs

Wisdom F. Coleman, D.D.S., M.P.H.A., Associate Dean, Admissions/Student Affairs

Lloyd A. George, D.D.S., J.D., Associate Dean, Clinical Affairs

Mustafa Kh. Dabbous, Ph.D., Associate Dean, Research

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# GENERAL INFORMATION

## History

The College of Dentistry was founded in Nashville in 1878. It is the oldest dental college in the South, and the third oldest public college of dentistry in the United States. The college was located in Nashville until 1911, when, in order to secure larger facilities, the Board of Trustees of the University of Tennessee moved it to Memphis. In that year, authorities of the University of Memphis transferred all of its equipment and the good will of its Dental Department to the Board of Trustees of The University of Tennessee. Through this union, the facilities and equipment of the two institutions were merged into one college.

## National Standing

The programs in dentistry are accredited by the Commission on Dental Accreditation, a specialized accrediting body recognized by the Council on the Recognition of Postsecondary Accreditation and by the United States Department of Education. This accreditation is the direct result of extensive periodic evaluation by the commission every seven years. Accreditation permits qualified graduates of the college to make application for all state and regional board examinations in the United States. As an institution of higher education, the College of Dentistry is fully accredited by the Southern Association of Colleges and Schools as part of the regular accreditation process of The University of Tennessee Health Science Center. In addition, the college is a member of the American Dental Education Association and the American Association for Dental Research.

## Philosophy of Education

The faculty of the College of Dentistry is committed to the education of a health professional whose primary responsibility will be the prevention of oral disease and maintenance of the oral health of the public. This encompasses the recruitment of well-qualified and motivated students who understand the need for a commitment to improving the welfare of those they serve, as well as the personal obligations of continuous development.

Because of the changing patterns of dental disease and the rapidly changing demographics reflected in the populations of the nation, the dentist of the future must be better prepared to change with the times. Students must develop a background that equips them to understand basic scientific principles and concepts, as well as an understanding of how these principles and concepts can change. The student must be able to apply scientific principles to the practice of dentistry and possess the inquiry that will promote advancement of this knowledge. The practitioner of the future must appreciate the value of research as an innovator of change, as well as the need to be a continuing student in order to remain current in scientific knowledge. The educational program provides opportunities to gain the basic knowledge and skills essential to the effective delivery of dental care. It also strives to prepare the student to apply this

information in creative ways when dealing with unique clinical problems that do not have typical solutions.

A part of professional growth includes the recognition that the support of others within the profession is important to the welfare of the professional and that of the patient. Finally, the student must recognize that, by becoming a member of a profession, one assumes responsibilities which extend beyond one's self to include profession, patients, family, community, nation, and alma mater.

## **Faculty**

The faculty is organized by departments to constitute functional units in the major disciplines of the dental curriculum. In addition to the full-time and part-time faculty members in the College of Dentistry, the teaching personnel includes faculty of the Colleges of Medicine, Pharmacy and Graduate Health Sciences. A complete listing of faculty, by department is available in The University of Tennessee Health Science Center Quarterly Directory, which may be consulted for office number and telephone extension.

## **Alumni Affairs**

The Dental Alumni Association is organized to promote the welfare of The University of Tennessee Health Science Center, the College of Dentistry and its graduates. The University of Tennessee Health Science Center College of Dentistry Alumni Association works in conjunction with The University of Tennessee Health Science Center Office of Alumni Affairs on a number of activities throughout the year. The Dental Alumni Association sponsors the MidSouth Dental Congress held each year in early spring. This meeting features nationally known speakers, presentation of the annual award of "Outstanding Alumnus," and class reunions.

The Office of Alumni Affairs arranges receptions for alumni at various state, regional and national professional meetings.

## **Degrees and Certificates Offered**

The College of Dentistry offers a program of study leading to the Doctor of Dental Surgery (D.D.S.) degree. Postdoctoral programs of study are offered in the following dental specialties, four of which lead to the Master of Dental Science degree:

- Orthodontics Master of Dental Science degree
- Pediatric Dentistry Master of Dental Science degree
- Periodontics Master of Dental Science degree
- Prosthodontics Master of Dental Science degree
- Advanced Education in General Dentistry Certificate
- Oral & Maxillofacial Surgery Certificate
- Pediatric Dentistry Certificate

## **Lectureships**

The Frank P. Bowyer Visiting Lectureship was established in 1980 through the generosity of Dr. Bowyer and his colleagues in the dental profession. Dr. Bowyer was an alumnus, past trustee of the University, and past president of the American Dental Association. This endowment makes possible an annual lecture by a prominent individual on the topic of organized dentistry, dental education, community dentistry, dental practice management or other appropriate health care issues. The lectures are primarily for third and fourth year dental students, and add an important dimension to the educational environment of the College of Dentistry.

## **Research Symposia**

The Hinman Student Research Symposium is held annually which features oral and poster presentations of research projects by dental students and postgraduate trainees from the University of Tennessee and from students across the United States and Canada. The Symposium is co-sponsored by the College of Dentistry and the Thomas P. Hinman Dental Society. The objectives include the recognition of student achievements in dental research and the encouragement of dental research careers and education.

## **Fellowships, Honorariums, Associations**

### **Alumni Dental Student Research Fellowship**

The award supported by the National Institute of Dental Research enables dental students, selected on a competitive basis, to engage in individualized research projects during the summer period. The maximum stipend is \$2,500 for the period. Funds may also be available to defray the cost of travel for presentations at national meetings.

### **Richard L. Sullivan Award for Dental Research**

Completed projects of students receiving Summer Research Fellowships are judged at the end of the summer. The winner of this competition is awarded the Richard Sullivan Award and receives \$400 and a plaque.

### **Omicron Kappa Upsilon Dental Honor Society**

Membership in this national honor fraternity reflects recognition of high scholastic standing and consistent, earnest study throughout the curriculum. To be eligible for election a student must rank in the upper twenty percent of his class scholastically, be of high moral character, and show promise of making significant contributions to his profession after graduation.



## **The Richard Doggett Dean and Marguerite Taylor Dean Honorary Odontological Society**

This society, dedicated to promoting high standards in the profession, was founded in 1948 in recognition of Dr. Richard Doggett Dean and his wife, Dr. Marguerite Taylor Dean, for long and faithful service to the University and dental education.

### **Dental Students Research Group (SRG)**

A chapter of the Students Research Group of the American Association for Dental Research was established in 1985. Students are encouraged to join the American Association for Dental Research/International Association for Dental Research (AADR/IADR). The University of Tennessee Health Science Center chapter of the SRG is represented annually at the national meetings of the AADR/IADR. Students participate in research projects guided by faculty mentors during the summer. Research seminars and Journal Club meetings are held periodically to discuss ongoing research and review literature related to dental research.

### **College of Dentistry Student Government Association (CoDSGA)**

The objectives of the CoDSGA are to serve as the collective official voice of the students in the College of Dentistry of the University of Tennessee Health Science Center, and to function as the forum of local dental student government. It represents all students in the College of Dentistry addressing academic, financial, social and other issues affecting the students' overall learning experience. It stimulates interclass relationships and provides a common format for individual dental student's voice and expression.

The CoDSGA sponsors educational, cultural, intellectual and social projects for the betterment of the organization, the dental school, the dental profession and the community. The CoDSGA assists the Dean in implementing favorable relationships and communication between the students and faculty and serves as a liaison between the two. CoDSGA provides an opportunity for the development of leadership qualities in the students and promotes and fosters knowledge of the structure of the dental profession in general.

### **American Student Dental Association**

The University of Tennessee College of Dentistry chapter of the American Student Dental Association is a part of the national organization that is associated with the American Dental Association. Dental students may join the American Student Dental Association and receive the ADA journal, as well as be eligible for the association's insurance programs and other benefits. The membership fee is \$67 per year for students. In addition to maintaining an excellent liaison with the faculty and administration, the organization encourages active participation of each student to work for the highest ideals of the profession.

## **Student National Dental Association**

The Student National Dental Association (SNDA) strives to promote and encourage an increase in minority enrollment in all dental schools. The SNDA is committed to the improvement of the delivery of dental health to all people, with an emphasis on minorities and the under-served. This organization assists those programs within the greater community that require some measure of dental expertise, by educating and involving its members in the social, moral, and ethical obligations of the profession of dentistry and promoting a viable academic and social environment which is conducive to the mental health of minority students.

## **American Association of Women Dentists**

The University of Tennessee Chapter of the AAWD was formed to foster mutual support among female dental students and to provide personal, social and professional association with women dentists.

## **American Dental Education Association**

The American Dental Education Association (ADEA) is a national organization to promote and improve dental education. Its mission is to lead faculty, students and institutions of the dental education community to address contemporary issues influencing education, research, and the delivery of oral health care for the improvement of the health of the public.

## **Fraternities**

On The University of Tennessee Health Science Center campus are chapters of two national dental fraternities: Psi Omega, and XI Psi Phi. The Interfraternity Council aids in the formulation of policies relating to the activities of the fraternities. Through the help of the Council, each fraternity has a program that augments that of the College of Dentistry in preparing dental graduates for successful lives in the dental profession.

## **Honor Code and Honor Council**

The Honor Code of The University of Tennessee Health Science Center is promulgated in order to assure that student academic affairs of The University of Tennessee Health Science Center will be conducted under the highest standards of individual responsibility, thereby promoting personal honor and integrity in the best traditions of the health science professions. Major responsibility for protection of the education process is assumed by The University of Tennessee Health Science Center students who are directly responsible for the effective operation of the Honor Code.

The University of Tennessee Health Science Center Honor Code governs all students enrolled in The University of Tennessee Health Science Center. Each college has established an Honor Council to function under the rules delineated in the Honor Code. Alleged violations of the Honor Code are processed by the Honor Council of the college in which the alleged violation occurred. The Honor Council of the College of Dentistry

is composed of four representatives from each class. Election of the representatives is in accordance with the bylaws of the Honor Code. More detailed information relative to the Honor Code can be found in the Student Handbook.

## **Dean's List For Scholastic Achievement**

Each academic year students who rank in the top 25% of their class are placed on the "Dean's List."

## **College of Dentistry Student Awards**

Academy of Dental Materials Award  
Academy of General Dentistry Award  
Academy of Operative Dentistry Award  
Academy of Osseointegration-Outstanding Student in Implant Dentistry Award  
American Academy of Oral Facial Pain Award  
American Academy of Oral Medicine Award  
American Academy of Oral and Maxillofacial Pathology Award  
American Academy of Oral and Maxillofacial Radiology Award  
American Academy of Pediatric Dentistry Award  
American Academy of Periodontology Award  
American Association of Endodontists Award  
American Association of Oral and Maxillofacial Surgeons Award  
American Association of Oral Biologists Award  
American Association of Orthodontists Award  
American Association of Women Dentists Award  
American College of Dentists Dean's Leadership Award  
American College of Prosthodontics Award  
American Student Dental Association's Award  
Certificate of Merit Awards  
Dean's Leadership Award  
Dean's Odontological Society  
Dental Faculty Award  
Dentsply International Award  
Dr. Maurice Petrovsky Excellence in Fixed Prosthodontics Award  
Imhotep Society  
International College of Dentists Achievement Award  
Jack E. Wells Professional Achievement Award  
Omicron Kappa Upsilon Awards  
Pediatric Dentistry Alumni Association Award  
Pierre Fauchard Academy Award  
R. Malcolm Overby Student Leadership Award  
Sidney S. Friedman, Sr. Periodontology Award  
Southeastern Academy of Prosthodontics Award  
Student National Dental Association's Leadership Award  
Teledyne-Water Pik Award for Excellence in Prosthodontics  
Tennessee Society of Pediatric Dentistry Award  
The University of Tennessee Health Science Center, Student Service Award

## Scholarship Awards

### Available to students of the College of Dentistry on a competitive basis.

Kenneth L. Frame Award. Two students receive \$2,000 each. A criterion for this award is demonstrated excellence in the restorative area.

James T. Andrews Scholarships. Currently, four students receive \$2,000 each (\$8,000 annually). Eligibility for this award is demonstrated outstanding ability in restorative dentistry and financial need.

Cecily W. Tipton Memorial Scholarships. Currently, seven awards of \$2,000 each (\$14,000 annually) are given to Second, Third and Fourth year dental students. Students receiving these scholarships must have demonstrated academic excellence and financial need.

Hinman Scholarships. Two students each year receive \$3,000 each plus trip expenses to attend Hinman meeting in Atlanta. Eligibility for this award is based upon outstanding academic performance and financial need.

Andy Holt Scholarship. University of Tennessee Alumni Association awards an Andy Holt Scholarship to an incoming dental student. This award is a four-year award of \$10,000 per year for a total award of \$40,000.

Pierre Fauchard Academy Award. One student per year receives \$1,500. This is awarded to a senior dental student who has demonstrated outstanding leadership abilities.

R. Malcolm Overbey Student Leadership Award. Two students receive \$2,000 in recognition of exceptional leadership potential, scholastic achievement and personal and professional integrity.

Robert N. Wilson, D.D.S Scholarship. Three awards of \$2,000 to graduating students that are married with at least one child and in the top 1/3 of the class.

Winfield C. Dunn, D.D.S. Scholarship. Two awards of \$2,000 to any student. Eligibility is scholastic, leadership and community involvement.

Doris Costello Bowyer Memorial Scholarship. The ASDA President receives a \$1,000 award for leadership and participation in campus activities.

Weems Scholarship. Three dental students receive \$1,500 each for academic accomplishments.

Russell O. and Fannie B. Ford Scholarship Award. One award of \$1,500 to a deserving student for academic accomplishment and leadership.

F. Payne Hardison, D.D.S. and Mark F. Hardison, D.D.S., Scholarship Award. One award of \$1,500 to a deserving student for scholastic and leadership ability.

Gerald R. Karr, D.D.S. Family Scholarship Award. One award of \$1,500 to a deserving student for academic accomplishment.

Lowell Dale Blevins Scholarship. One award of \$1,000 to a married student whose spouse is employed and demonstrates financial need and scholastic ability.

Delta Dental of Tennessee Scholarship. Three awards of \$2,500 given to a Tennessee student on the basis of scholastic ability and dedication to dentistry.

Delta Dental of Arkansas Scholarship. One award of \$2,000 given to an Arkansas student on the basis of scholastic ability and dedication to dentistry.

Dental Endowment Fund Scholarship. Ten awards of \$1,000 based upon financial need and dedication to dentistry.

Joseph W. Graham, Sr. Scholarship. One award of \$2,000 based upon scholastic ability, financial need and dedication to dentistry with emphasis on excellence in the restorative dentistry area.

W.C. 'Dub' Lady Scholarship. Two awards of \$1,500 given to students demonstrating scholastic ability, financial need, dedication to dentistry and from the eastern part of the state of Tennessee.

O.D. and Ruth McKee Scholarship. One award of \$2,000 based upon scholastic ability, financial need, and dedication to dentistry. The recipient should be from Bradley County, Tennessee, or Benton County, Arkansas.

The Xi Psi Phi Fraternity Scholarship Award. One award of \$2,000 awarded to a graduating or third-year student based on scholastic ability and service to the ZIP fraternity.

Joe and Chris Miller Scholarship. One award of \$1,000 based upon scholastic ability and dedication to dentistry.

Joe and Pat Mosier Scholarship. One award of \$1,000 based upon financial need and dedication to dentistry with special consideration of those students that rank in the middle third of their class.

The Kings Daughters & Sons Home Scholarship. One award of \$1,000 based upon academic ability and an interest in serving those with physical disabilities and/or geriatrics.

Dr. John T. (Jack) Camp Scholarship. Four students receive \$2,000 each. The criterion for this award is having been an athlete in college and upon the 'need' of each individual student.

Harold Cloogman, D.D.S. Scholarship. Six students receive \$2,000 each based upon successful academic performance, financial need and residency in East Tennessee

Helen Flanagan Fry Scholarship. One female student is awarded \$1,000 based upon scholastic ability with financial need a consideration and residency in the eastern part of the state of Tennessee.

Dr. Buford and Lynda Suffridge Scholarship. One student is awarded \$1,000 primarily on the basis of financial need and ranking in the middle third of their dental class.

Elizabeth Club Scholarship. One female student is awarded \$1,000 based on demonstrated financial need and residency in the state of Tennessee.

## **Requirements for Graduation**

### **To qualify for the Doctor of Dental Surgery degree, the student:**

- a. Must have satisfactorily completed all required courses of the curriculum, including the didactic, laboratory, clinical and practical courses, to the satisfaction of the faculty. An overall grade point average (GPA) of 2.00 (on a scale of 4.00) is required for graduation.
- b. Must have satisfactorily completed all required comprehensive and clinical examinations.
- c. Must have performed in a reasonable and professional manner.
- d. Must have been enrolled in the College of Dentistry for all of the senior year.
- e. Must have discharged all financial and administrative obligations to the University.

## **Graduation with Honors**

The College confers to the graduates with the cumulative grade point average (GPA) that ranks in the top 2.5% of the class the distinction of graduation with “highest honors.” Students with cumulative grade point averages that rank in the next highest 5.0% qualify for the designation of graduation with “high honors.” Graduates of the College of Dentistry who attain a cumulative grade point average that ranks in the next highest 10% qualify for the designation of graduation with “honors.” As the “honors” distinction must be reported to the registrar during the spring of the senior year, the GPA established at the end of the summer-fall semester of the senior year is used to determine students qualifying for graduation with honors.

## **Admissions**

### **Office of Admissions**

The Office of Enrollment Services receives, evaluates, and processes applications for admission to the College of Dentistry in both the undergraduate (D.D.S.) program and the various advanced education programs (Oral and Maxillofacial Surgery, Orthodontics, Periodontology, Pediatric Dentistry, and Prosthodontics). Admissions information to any of the programs may be obtained by contacting the Associate Dean for Admissions; The University of Tennessee Health Science Center, College of Dentistry; 875 Union Avenue; Memphis, Tennessee 38163; Telephone: (901) 448-6201.

The Admissions Committee formulates and recommends policies and procedures for admission to the College of Dentistry. The committee establishes criteria, procedures, and data used in appraising and selecting applicants for admission. This committee evaluates qualifications of applicants and submits names of selected candidates for admission to the dean. Information related to applicants such as personal credentials, information gained through interviews, acceptance or denials, and related matters are considered confidential remaining “in committee,” except as reported through appropriate channels.

### **Admission to Advanced Standing**

#### **Admission of Foreign Dental Graduates**

The College of Dentistry considers graduates from foreign dental schools for admission with advanced standing. Applicants may be admitted at a level commensurate with their qualifications as determined by faculty evaluations. In general, applicants are usually admitted at the beginning of the second year, which then requires a minimum of three years in residence to receive the D.D.S. degree. Applicants must be citizens or permanent residents of the United States at the time of application.

#### **Applicants for Transfer with Advanced Standing**

The College of Dentistry considers applications for transfer from students in good academic and professional standing from other dental education institutions accredited by the Commission on Dental Accreditation. Due to the nature of the college’s curriculum, not every request for transfer may be accommodated. Additional information regarding application for advanced standing may be obtained from the Office of Admissions. Applicants must be citizens or permanent residents of the United States at the time of application.

### **Technical Standards**

The primary goal of the University of Tennessee College of Dentistry is the preparation of students for the practice of dentistry. This includes pre-doctoral dental education,

formal postdoctoral dental education, continuing education, and the preparation of all students for life-long learning.

As a health care specialty, primarily defined by anatomical boundaries, the practice of dentistry has unique requirements in that the accumulation of scientific knowledge must be accompanied by the simultaneous acquisition of essential diagnostic and clinical skills, management functions, and professional attitudes, ethics and behaviors. Such requirements are requisite to the provision of safe and effective management of the hard and soft tissue of the oral cavity and adjacent anatomical areas, including the teeth, jaws, and surrounding soft tissues.

The faculty of the College of Dentistry has a responsibility to graduate the best possible dental practitioners, residents, and graduate students; thus admission to educational programs in the College of Dentistry is offered only to those who present the highest qualifications for education and training in the art and science of dentistry. Applicants to programs of the College of Dentistry must possess the following general qualities: critical thinking, sound judgment, emotional stability and maturity, empathy, physical and mental stamina. Applicant must possess the ability to acquire knowledge, surgical skills and technical functions and use such knowledge, skills, and functions in a wide variety of didactic, laboratory, and clinical settings at a minimum level of competency, as defined by the college.

The faculty of the College of Dentistry has a responsibility for the welfare of the patients treated under the aegis of the college and the educational welfare of its students relative to the educational programs of the college. The Committee on Admissions of the College of Dentistry maintains that certain minimal technical standards must be present in applicants to the various educational programs of the college. A candidate for the Doctor of Dental Surgery degree, as well as dentists in the various advanced education programs of the college, must have the following essentials: motor skills; sensory/observational skills; communication skills; intellectual-conceptual, integrative, and quantitative abilities; and behavioral/social skills and professionalism.

## 1. Motor Skills

Candidates for admission to programs of the College of Dentistry must have sufficient motor function to perform and participate in didactic, pre-clinical technique, laboratory, and clinical procedures and exercises at a minimal level of competency, as defined by the college. At a minimum, this includes coordination of both gross and fine muscular movements, equilibrium, and touch. Candidates for admission to programs of the College of Dentistry must have manual dexterity, including full functioning wrists, hands, fingers, and arms.

## 2. Sensory/Observational Skills

Candidates for admission to programs of the College of Dentistry must have sufficient sensory/observational skills to perform and participate in didactic, preclinical technique, laboratory, and clinical procedures and exercises at a minimal level of competency, as defined by the college. At a minimum, this includes the ability to participate in didactic, preclinical technique and laboratory exercises and



interact with patients in terms of observation and data gathering. Candidates for admission to programs of the College of Dentistry must have the functional use of visual and other sensory modalities.

### 3. Communication Skills

Candidates for admission to programs of the College of Dentistry must have sufficient communication skills to perform and participate in didactic, pre-clinical technique, laboratory, and clinical procedures at a minimal level of competency, as defined by the college. At a minimum, this includes the ability to communicate effectively in written and spoken English in classroom, laboratory, and clinical settings.

### 4. Intellectual/Conceptual, Integrative, and Qualitative Skills

Candidates for admission to programs of the College of Dentistry must have sufficient intellectual/conceptual, integrative, and qualitative skills to perform didactic, pre-clinical technique, laboratory, and clinical procedures and exercises at a minimal level of competency, as defined by the college. At a minimum, this includes the ability to manage data, solve problems, and make rational decisions regarding patient care in a timely manner.

### 5. Behavioral/Social Skills and Professionalism

Candidates for admission to programs of the College of Dentistry must have sufficient behavioral/social skills and professionalism to perform didactic, preclinical technique, laboratory, and clinical procedures at a minimal level of competency, as defined by the college. At a minimum, this includes the attributes of integrity, empathy, communication, and motivation, in addition to emotional maturity and stability, sound judgment, punctuality, and interpersonal skills. For this reason, candidates for admission to programs of the College of Dentistry must be adaptable, able to cope with stress, assertive, able to delegate responsibilities, meet deadlines and manage time, and function as part of a dental health care team.

## Summary

In summary, the faculty of the College of Dentistry prepares students for the comprehensive practice of dentistry. The Committee on Admissions in the College of Dentistry, in accordance with Section 504 of the 1973 Vocational Rehabilitation Act and the Americans with Disabilities Act (PL101-336), has established the aforementioned essential functions of students in educational programs offered by the College of Dentistry.

The Committee on Admissions of the College of Dentistry will consider for admission applicants who demonstrate the ability to perform, or to learn to perform, the essential skills listed in this document. The college will strive to see that students or dentists with impaired intellectual, physical, or emotional functions do not place patients in jeopardy. Students will be judged not only on their scholastic accomplishments, but also on their

physical and emotional capacities to meet the full requirements of the college's curriculum and to graduate as skilled and effective dental practitioners.

Upon admission, a student who discloses a properly certified disability will receive reasonable accommodation but must be able to perform the essential functions of the curriculum, as described in this document, either with or without reasonable accommodation. Students seeking accommodation should initiate their request in the Office of Academic Affairs of the University of Tennessee Health Science Center College of Dentistry.

## **Special Student Program**

D.D.S. - Ph.D. The College of Dentistry, in cooperation with the College of Graduate Health Sciences, offers the opportunity for well-qualified students to pursue both the D.D.S. and Ph.D. degrees. However, applicants must meet the admission criteria of both colleges and be accepted for study by both. Once the student has identified a major course of graduate study, a curriculum plan may be jointly developed by the Academic Dean of the College of Graduate Health Sciences, their major Professor, and the Academic Dean of the College of Dentistry. Students electing this program are classified as special students in the College of Dentistry, and their course of study must be individualized. Stipends for graduate study must be negotiated through the Academic Dean with the approval of the Graduate College. The course of study leading to both degrees may vary from six to eight or more years.

## **Attendance Policy**

The College of Dentistry adheres to the University of Tennessee Health Science Center policy concerning student attendance, i.e., "It is expected that students attend the various educational opportunities provided for them as a part of the curriculum of the college in which they are enrolled. Colleges may consider attendance mandatory for certain educational experiences. Students will be informed, in writing, where college policy requires class attendance." Where this policy conflicts with University-wide policies, those University-wide policies will take precedence.

In the College of Dentistry, attendance is required for all laboratories and clinical clerkships. Course directors have the discretion of requiring attendance for lectures. They will inform students at the beginning of the course, in writing, of any attendance requirements and consequences of lack of attendance. Students are responsible for all assigned work in all courses in which they are enrolled, regardless of any attendance requirements.

## **Student Policy Regarding Absences**

### **Excused Absences**

Occasionally, students may be absent from required activities for justifiable reasons. In such cases, students are entitled to an excused absence from attendance and the opportunity to complete those activities without academic penalty. Justifiable reasons

include, but are not limited to, complications related to pregnancy; serious medical problems; death in the family; automobile accident; jury duty and other judicial matters; military service; recognized religious holy days; and official representation of the University, or College of Dentistry.

Students unable to attend class **must** call the Office of Academic Affairs (448-5114) before 8:00 AM the day of the class. A voice mail system will be available at this number that automatically records the date and time of the message. Students should clearly state their name, class and reason they are calling. All messages will be checked at 8:30 each morning. Any student who misses a scheduled course, must provide documentation, including medical, jury duty, etc. to the Office of Student Affairs within five working days of the resumption of matriculation to obtain an excused absence. Medical documentation must be obtained from the Student Health Center, or their health care provider. Please note that an excused absence from the Office of Student Affairs does not excuse a student from assigned clinical blocks. It is the student's professional responsibility to obtain a replacement for any assigned block rotation, and notify the departmental block coordinator of the change.

Students who cannot provide proper documentation will not receive an excused absence and thus may not be afforded an opportunity to make-up missed examinations, quizzes or other assignments. For these students, course directors have the discretion of requiring alternative assignments or examinations to ensure competency. All decisions regarding the feasibility of providing required educational experiences, in an alternative manner or form, will be made by the course director, with input from the departmental chair.

Unfortunate circumstances, such as automobile problems, traffic congestion, over sleeping and other issues of a similar nature are not considered justifiable reasons for an excused absence from required attendance. Students will not be given excused absences for such things as vacations, weddings or trips not authorized by the Office of Student Affairs. Students not eligible for excused absences are still bound by the attendance requirements of the course(s) from which they were absent.

## **Administrative Exemptions**

An Administrative exemption may be given to students planning to take time from the curriculum for reasons other than those outlined such as interviews and other extenuating circumstances. Administrative exemption from required attendance will be granted by the Office of Student Affairs upon receipt of sufficient justification. Students are required to request exemption and provide justification to the Office of Student Affairs **in advance** of anticipated absences from the college. The Office of Student Affairs will then inform the course directors of anticipated absences. In cases where an anticipated absence involves a scheduled examination, the student is required to work with the course director to determine a date and time for re-scheduling. When advance notification is not possible, a request for administrative exemption and justification must be received within five working days of the resumption of matriculation. Unless there is an emergency, **administrative exemptions will not be granted after the fact.** Fourth-year students that have required interviews for residency programs or for other career

opportunities will be afforded the opportunity to obtain administrative exemptions, but it requires that the Office of Student Affairs receive **advanced notice** prior to leaving the dental school and that arrangements have been made to make up any scheduled examinations.

Students who do not have an administrative exemption from attendance may not be afforded an opportunity to take missed examinations, quizzes or other assignments. Course directors have the discretion of requiring alternative assignments or examinations to ensure competency, as dictated by individual circumstances for students with un-excused absences. All decisions regarding the feasibility of providing required educational experiences, in an alternative manner or form, will be made by the course director, with input from the departmental chair.

## **Examination Policy**

Students are expected to be present for all scheduled examinations. D-3 and D-4 students unable to be present for an examination **must** call the Office of Academic Affairs (448-5114) **before 8:00 AM** the day of the examination in order not to incur a penalty for the missed examination.

D-3 and D-4 students returning from an absence will be required to take missed examinations as soon as possible after they return, but no later than two business days after their return to class. Students must present their documentation to the Office of Student Affairs to receive an excused absence and then must contact the course director to arrange a time and place to take the missed examination. **Students who do not call and/or can not provide proper medical documentation will incur a one-letter grade reduction in their grade for that examination.**

D-1 and D-2 students are given integrated examinations at periodic intervals (every 2, 3 or 4 weeks) during the D-1 and D-2 years. Students are expected to take these examinations as scheduled. Students unable to take an examination as scheduled because of an emergency situation (hospitalization or death in the immediate family) must notify the Office of Academic Affairs prior to the examination. Excused absences from integrated exams will only be provided for emergency situations as described above.

## **Contacting Course Director upon Return to School**

In the absence of extenuating circumstances, as determined by the Office of Student Affairs, a student who has been absent, regardless of the cause of the absence, has the responsibility and obligation to contact the course director(s) within five working days of the resumption of matriculation. **Failure of the student to contact the course director(s), regardless of the validity of the absence, may result in an inability of the student to make up or otherwise account for missed lectures, laboratories, clinics, quizzes, or other activities.**

## **Missing Clinical Block Assignments**

D-3 and D-4 students are periodically scheduled for block assignments and are required to attend those sessions. In the event of an anticipated absence, it is the student's professional responsibility to obtain a replacement for any assigned block rotation, and notify the departmental block coordinator of the change. In the event of illness, the student should follow the protocol for reporting their illness by informing the Office of Academic Affairs (448-5114) which block they will be missing due to illness.

## **Sustained Illness**

Sustained illnesses, medical complications and pregnancy and/or delivery may present unique problems in terms of administrative exemption from required attendance. In these cases, an administrative exemption from required attendance may be granted by the Office of Student Affairs, depending upon the circumstances of each case and alternative arrangements considered by the departments working in conjunction with the Office of Academic Affairs. The administration of the College of Dentistry will make every effort to work with students in these cases. However, because of the unique nature of the curriculum, e.g., required attendance for all laboratories and clinical clerkships, exposure to dental materials, the necessity of sequential course scheduling, and patient care responsibilities, prolonged absences may preclude uninterrupted matriculation. Limited institutional resources and sound pedagogy may preclude the offering of specific courses, or portions of courses, in an alternative manner or form, for which any student is justifiably absent. However, the college will attempt to make necessary and appropriate accommodations for such students.

In the event that an alternative educational program is necessary and can be devised, the student will be required to perform the same fundamental and essential elements of the curriculum at the same level as his or her peers. No additional consideration will be given beyond the construction of an alternative curriculum. All students will be evaluated for promotion and graduation using the same basic criteria.

## **Personal Problems**

Students may experience personal problems at some point in their dental education. The College of Dentistry will make every effort to provide reasonable accommodations, however in the event that an individual student's educational needs cannot be met through reasonable accommodations, the student will be given the opportunity to withdraw from program, without prejudice. The student may be considered for readmission for the next academic year, assuming that they were in good academic standing and are otherwise qualified as a student and that sufficient space exists to accommodate them in the ensuing class.

## **Textbooks, Instruments and Materials**

The textbooks, instruments, and materials, which must be utilized in the educational program and furnished by the student, are stipulated by the faculty annually following a comprehensive needs analysis. At the beginning of each academic year, instrument kits

are rented from the College of Dentistry. Additionally, each course director may designate required textbooks. The Curriculum Committee reviews all textbook requests. Required textbooks are available in the bookstore but may be procured from any source. Supplementary textbooks are included on the textbook list; however, they are optional and not required for the course. The estimated expense for textbooks, instruments, and materials may be obtained from the Office of Admissions and Student Affairs, 875 Union Avenue, S-102 Dunn Building, Memphis, TN 381673, (901) 448-6200. Newly entering students must arrange to acquire a laptop computer that meets the specifications provided by the College (<http://www.utmem.edu/dentistry/Admissions/DDS/DDSgenpolicy.html>).

Students are expected to comply with the requirements concerning equipment and textbook purchases as a condition for admission and continued enrollment.

## **Grading Performance Level**

The College of Dentistry adheres to the official University grading system when reporting students' grades to the Registrar's Office. The official grades utilized are: A, B+, B, C+, C, D, F, P, W, WP, WF, G, I, and AU (Audit). The quality value assigned to the grade is outlined as follows:

## **Quality Points**

### **Grade Per Credit Hour**

A .....	4.0
B+ .....	3.5
B .....	3.0
C+ .....	2.5
C .....	2.0
D .....	1.0
F .....	0
P .....	0

The letters WP or WF will be recorded to indicate pass or failure in those instances in which a student withdraws from a course before completing the work. The designation of G will be recorded in those instances in which a student completes all requirements in a course but his/her deficient performance demands further evaluation to determine if the student is performing at the minimum pass level (D). The letter G can only be replaced by a permanent grade of D or F. The designation of I will be used in those instances in which a student is unable to complete a course at the scheduled time because of an acceptable reason. The G and I designations cannot be permanent on a student's record, and must be removed from the record by the end of the semester following that in which the grade was received. In the case of a graduating senior student, either of these designations must be removed no later than the day before commencement. Failure on the part of a student to remove a G or I satisfactorily within the time limit allowed will result in the grade of F being reported and recorded as a permanent grade.

## **Tutorial Service**

The Student Academic Support Services Office offers tutorial services in several areas. These services are designed to provide intensive personalized instruction needed to improve the performance of individual students.

## **Promotions**

Good academic standing leading to promotion requires that each student must earn a passing grade for each course and demonstrate competence in specific clinical activities required for each year of the curriculum. In addition, students are expected to achieve and maintain a cumulative grade point average of no less than 2.0 while enrolled in school with a minimum number of grades of 'D'. A grade point average of 2.0 is expected in laboratory technique courses by the end of the second year. Furthermore, students are required to pass Part I of the National Board Dental Examinations to meet the criteria for promotion to the third year. Student promotion is determined by the evaluation of academic progress by the Student Status Committee through recommendations to the Dean. Other factors considered in the promotion decision are the personal and professional qualities of the dental student. The National Board Dental Examinations, developed and administered by the American Dental Association's Joint Commission on National Dental Examinations, are given in two parts. Part I is normally administered to all students during the winter-spring semester of the second year. Part II of the examination, covering clinical subjects, is administered to fourth year students prior to graduation.

Students must pass Part I and II in order to be eligible for licensure in any state or territory of the United States. Students are required to pass Part I of the National Board Dental Examinations as a condition for promotion to the third year within the College of Dentistry.

## **Policy Governing Student Standing**

### **I. Promotion and Graduation: General Policy**

Promotion and graduation result from positive action taken by the Dean of the College of Dentistry. The Dean receives recommendations regarding student standing from the Student Status Committee based on its review of each individual student's progress toward satisfying the academic, professional and personal requirements established by the College and University. Following procedures established by the University, action taken by the Dean is subject to review by the Chancellor and the President.

### **II. The Student Status Committee: Charge and Structure**

The Student Status Committee is charged by the Dean of the College of Dentistry with monitoring student academic progress, professional and personal conduct, and making recommendations on student standing. The Committee is composed of a minimum of ten (10) voting members and an undetermined number of ex officio members. All voting and ex-officio members are

appointed by the Dean of the College of Dentistry; the Dean also appoints a Committee Chairperson from the Committee membership.

### **III. The Student Status Committee: General Operation**

Although passing grades are required, they are not the sole criterion used in determining whether or not a student is recommended for continuation, promotion or graduation. Other factors, including personal and professional conduct, are also considered. Each student is evaluated individually; extenuating circumstances affecting student performance may suggest modification of the usual actions of the Committee. Information bearing on student progress may be provided by the Office of Academic Affairs, Office of Clinical Affairs, Office of Student Affairs, department chairpersons, course directors, student advisors, students, and other sources. Faculty not appointed to the Committee may be invited to attend the meetings of the Student Status Committee; even though they may not vote, they may be asked for input regarding student progress.

The Committee meets at the end of the first semester during the academic year, to determine whether student progress merits a recommendation for continuation and at the end of the academic year to determine whether student progress merits a recommendation for promotion or graduation. The Committee may meet at other times as necessary to conduct the business of the Committee.

### **IV. Criteria for Continuation or Promotion**

Each student who has fulfilled the didactic, clinical, personal and professional requirements of the College of Dentistry will be recommended for continuation or promotion. Otherwise, the following apply:

#### **1. Course Performance**

Students who receive multiple 'D' grades, a single 'F' grade or a combination of 'D' and 'F' grades in one semester or consecutive semesters will be carefully reviewed by the Student Status Committee. A recommendation will be made as to continuation, repetition of courses, repetition of the academic year, or dismissal from the College. Students with multiple "F" grades in one semester or in consecutive semesters during an academic year will not be recommended for continuation or promotion. The student will either be required to repeat the academic year or be dismissed. If required to repeat the year, the student will be placed on scholastic probation.

#### **2. National Board Performance**

All students are required to pass Part I of the National Board Examination as a condition for promotion to the third (D-3) year. If the student has not passed Part I prior to the end of July, the student will be dismissed from the College. Such dismissal cannot be appealed.



### **3. Scholastic Probation and Minimum Grade Point Average**

To be placed on scholastic probation is intended to signal the student that his/her performance is unacceptable and cannot continue as such. As indicated above, students are placed on scholastic probation when their performance in a course or courses is unsatisfactory (i.e., multiple “D” grades or an “F” grade are received). In addition:

- a. The Committee reserves the right to place a student on scholastic probation based on unacceptable academic performance.
- b. If the student’s cumulative grade point average for all courses falls below 2.00, the student will be placed on scholastic probation.
- c. If a student remains on scholastic probation for three (3) consecutive semesters, the student will be recommended to either repeat an academic year or be dismissed.

### **V. Criteria for Graduation**

At the end of the fourth year of study, each student who has fulfilled the didactic, clinical, personal, and professional requirements will be recommended for graduation. Therefore, to qualify for the Doctor of Dental Surgery degree, the student must:

- a. Satisfactorily complete all required courses of the curriculum with an overall grade point average (GPA) of 2.00.
- b. Discharge all responsibility for patient care according to College policy.
- c. Discharge all financial and administrative obligations to the College and University.
- d. Demonstrate acceptable professional standards and personal conduct.
- e. Pass Part I of the National Board Examination.

### **VI. Recommendations to the Dean**

The Student Status Committee is advisory to the Dean; the Dean may accept, modify, or reject the recommendations of the Committee. The Dean may also request that the Student Status Committee reconsider their recommendations, or request that the Appeals Committee review the recommendations and/or hear a student appeal.

### **VII. College Appeals Process**

The student has the right to appeal the action taken by the Dean regarding continuation, promotion, disciplinary, and graduation decisions, (except in the case of dismissal due to failure to pass Part I of the National Board Examination, which is not appealable as described in section IV, 2.). The student may initiate an appeal by submitting to the Dean a written request for reconsideration. The written request must state the basis of the appeal and must

be received by the Dean within five (5) working days after the student receives notification of the Dean's original decision. When a written appeal is received, the Dean will determine whether or not the appeal will be heard. Failure to provide a concrete basis for an appeal that contains information not previously considered by the Student Status Committee will result in rejection of the appeal request.

#### **VIII. Appeals Heard by an Appeals Committee**

Typically, the Dean decides whether an appeal will be heard by the Appeals Committee. The Appeals Committee is a standing committee which is appointed yearly by the Dean and includes the Chair of the Student Status Committee as an ex-officio member among others. The student will meet with the Appeals Committee, provide information pertinent to the situation, and may be accompanied by individuals who can contribute to the presentation. However, neither the student nor the Appeals Committee may have legal counsel present. After the Appeals Committee has heard the appeal, the Appeals Committee may move to recommend to the Dean that the original action be upheld or modified. After the Dean has considered the recommendation of all committees, the student will be notified of the decision. The student may appeal the decision of the Dean to the Chancellor. No further appeals within the University are available beyond that of the Chancellor.

#### **IX. Professional and Personal Conduct**

In addition to academic performance, personal and professional conduct is also considered when evaluating student activity in a professional school. In this regard, failure to maintain appropriate standards of conduct or integrity in following policies and procedures, violation of College or University rules, and failure to discharge responsibilities to the College and University can lead to reprimand, suspension or dismissal. Further, failure to comply with the Principles of Ethics and Code of Professional Conduct of the American Dental Association or the commission of an illegal act concerning the practice of dentistry may constitute grounds for dismissal from the College. Similarly, conviction of a violation of State or Federal law will result in suspension and/or dismissal.

**The complete text of the Policy Governing Student Standing can be found at:**  
**<http://www.utmem.edu/dentistry/Academics/student-status.pdf>**

### **Student E-mail Policy**

The University of Tennessee Health Science Center provides every student with an e-mail account that enables the administration, faculty and staff of the College of Dentistry to send official electronic correspondence to students. Students are responsible for checking and maintaining their e-mail account, as it is where they will receive official College communications. Official College communication includes but is not limited to e-mail from the administration and faculty including decisions of the Dean regarding promotion, graduation, repetition of courses and/or academic years and dismissal. Students must remove messages from their Inbox to avoid exceeding their e-

mail quota. If a student is “over-quota,” all e-mail sent to the student is returned to the sender. When official e-mail from University faculty is returned due to an “over-quota” situation, the students may be subject to administrative disciplinary action. Students must check their e-mail for new messages no less than once every 24 hours when the College is in session and no less than every 72 hours when the College is not in session. Should a student desire, he/she can forward e-mail from his/her official University e-mail address to any e-mail account they choose. Please note, however, that if a student elects to forward e-mail and that process fails, he/she will still be held accountable for reading and responding in a timely fashion to any official information sent to the official University e-mail address.

## **Policy on Student Classroom Activities**

It is a guiding principle of the College of Dentistry that students attend class for the purpose of learning the information being taught and/or mastering the psychomotor skills that are necessary to practice dentistry. While in class (including laboratories), students are not to study or review other information that is not germane to the specific material being presented. Students may only use written media or any electronic devices (including, but not limited to, cell phones, PDA’s, computers or other internet-capable electronics) during class to assist in learning the specific topics being presented in class or labs. Any use of the UT computer network must be in compliance with the University of Tennessee’s Information Technology Acceptable Use policy. Faculty members may prohibit the presence or use of any written media or any electronic device in their class or laboratory if they believe that those items may be a distraction from the teaching and learning process. Violation of any of this policy will be considered unprofessional conduct and an ethical breach.

## **Withdrawal**

The Administration reserves the right to dismiss or request the withdrawal of any student at any time, whenever it is apparent that the student is ineffectual academically, or lacks the necessary talent to pursue the curriculum in dentistry. Formal withdrawal is a prerequisite to honorable dismissal, or consideration for re-entrance to this institution, and must be approved by the Dean of the College of Dentistry. Students intending to withdraw from the college must notify the Associate Dean for Student Affairs and obtain a withdrawal form sheet.

When the appropriate signatures have been obtained, the student must request an exit interview with the Associate Dean for Student Affairs. The Associate Dean for Student Affairs will sign the withdrawal form and forward it to the Dean for his/her signature. Once the Dean’s approval has been obtained, the form is returned to the Registrar’s Office for final processing.

## **Plan of Instruction**

The Board of Trustees of The University of Tennessee has approved a four-year academic program to prepare dental professionals for the practice of general dentistry.

Class enrollment is limited to a maximum of 80 students admitted in early-August of each year.

Early in the curriculum, students are introduced to basic sciences and preclinical dental sciences that develop an understanding of the human organism in health and disease. These courses offer the foundation for advancement into clinical practice, which is achieved largely in the last two years of the curriculum. Basic science instruction is offered by faculty from the College of Medicine, and dental course instruction is offered by faculty of the College of Dentistry with assistance from faculty of other colleges of the Memphis campus.

The professional dental curriculum is designed to offer those entering the general practice of dentistry a sound foundation of preparation. Those completing the course of study and receiving the D.D.S. degree are qualified to apply for dental specialty programs or positions in governmental agencies that require these credentials.

## **2008-09 Curriculum Calendar**

**The four-year curriculum consists of eight semesters.**

First-year students begin the academic year in early August (17 week Summer/Fall semester).

Second-year students begin the academic year in early July (18 week Summer/Fall semester).

Third and fourth-year students begin the academic year in early July (22 week Summer/Fall semester).

All students have a 19 week Winter/Spring semester that begins in early January. Third and fourth year students have a summer break in early September. All students have a fall break during the Thanksgiving holidays and a spring break in mid-March. Specific course dates are published annually by the college.

The curriculum as listed represents the comprehensive format of study leading to the Doctor of Dental Surgery degree. However, the Curriculum Committee is constantly reviewing the curriculum to fulfill the academic needs of the profession. Thus, the actual course of study may reflect modifications on a year-to-year basis.

### **FIRST YEAR**

#### **Fall Semester..... Credit Hours**

ANAT 101 Histology for Dental Students .....	4
BIDX 101 Biomedical Clinical Conference (BCC), I .....	1 (P/F)
ENOP 101 Operative Dentistry (Lecture)* .....	2
ENOP 102 Operative Dentistry (Lab)* .....	1
ENOP 103 Dental Morphology (Lecture) .....	2
ENOP 104 Dental Morphology (Lab) .....	2
ENOP 105 Tooth Preparation .....	2 (P/F)
MSCI 101 Biochemistry.....	5
ORTH 101 General Human Growth.....	1

PDCH 103 Human Values & Personal Ethics .....	1 (P/F)
PDCH 105 Introduction to Dentistry .....	1 (P/F)
PDCH 107 Informatics and Evaluation of Dental Literature .....	1
PERI 103 Pathobiology* .....	4
REST 113 Biomaterials* .....	2

\*Continues through Winter/Spring Semester

<b>Winter/Spring Semester .....</b>	<b>Credit Hours</b>
ANAT 103 Neuroanatomy.....	2
ANAT 105 Gross Anatomy .....	6
BIDX 103 Biomedical Clinical Conference (BCC), II .....	1 (P/F)
ORTH 103 Development of Occlusion .....	1
PHYS 101 Physiology .....	5
REST 119 Occlusion (Lecture).....	2
REST 120 Occlusion (Lab).....	2

**SECOND YEAR**

<b>Summer/Fall Semester .....</b>	<b>Credit Hours</b>
BIDX 201 Basic Dental Radiology .....	3
BIDX 203 Patient Evaluation* .....	2
BIDX 207 General/Systemic Pathology & Infection Control .....	5
BIDX 211 Biomedical Clinical Conference (BBC), III .....	1 (P/F)
BIDX 213 Introduction to Chemical Dependency.....	1 (P/F)
ENOP 201 Basic Endodontics (Lecture)* .....	1
ENOP 202 Basic Endodontics (Lab)* .....	1
MSCI 201 Microbiology .....	4
ORTH 201 Craniofacial Growth & Development .....	2
PDCH 201 Introduction to Pediatric Dentistry* .....	2
PERI 203 Clinical Periodontology .....	3
PHAR 205 Dental Pharmacology* .....	4
REST 221 Prosthodontics-Complete Denture (Lecture) .....	1
REST 222 Prosthodontics-Complete Denture (Lab) .....	1
REST 223 Prosthodontics-Removable Partial Denture (Lecture)* .....	1
REST 224 Prosthodontics-Removable Partial Denture (Lab)* .....	1
REST 225 Fixed Prosthodontics I (Lecture) .....	1
REST 226 Fixed Prosthodontics I (Lab) .....	2
REST 227 Fixed Prosthodontics II (Lecture)* .....	1
REST 228 Fixed Prosthodontics I (Lab)* .....	1

\*Continues through Winter/Spring Semester

<b>Winter/Spring Semester .....</b>	<b>Credit Hours</b>
ENOP 203 Operative Composite Resin (CR Lecture) .....	1
ENOP 204 Operative Composite Resin (CR Lab) .....	1
ENOP 205 Complete Intracoronal Preparations/Restorations (Lecture) .....	1
ENOP 206 Complete Intracoronal Preparations/Restorations (Lab) .....	1
ENOP 207 Introduction to Clinical Dentistry (Clinic) .....	1 (P/F)
OMSU 201 Pain Control I.....	2
OMSU 203 Principles of Oral & Maxillofacial Surgery .....	2
PDCH 202 Pediatric Dentistry Lab .....	1

PDCH 203 Dentist-Patient Relationship .....	1
REST 230 Basic Life Support .....	1 (P/F)

### THIRD YEAR

<b>Summer/Fall Semester .....</b>	<b>Credit Hours</b>
BIDX 301 Clinical Correlation Conference .....	2
BIDX 302 Oral Diagnosis Clinic* .....	3
BIDX 311 Basic Oral & Maxillofacial Pathology* .....	6
BIDX 313 Special Patient Care .....	2
ENOP 301 Dental Auxiliary Utilization .....	1 (P/F)
ENOP 302 Endodontics Clinic* .....	1
ENOP 304 D.A.U. Clinic* .....	1 (P/F)
ENOP 306 Operative Clinic* .....	5
OMSU 301 Advanced Pain Control .....	2
OMSU 302 Oral Surgery Clinic* .....	3
ORTH 301 Orthodontic Diagnosis and Treatment .....	3
ORTH 302 Orthodontic Appliance Fabrication (Lab) .....	1
PDCH 301 Introduction to Practice Management .....	1
PDCH 302 Pediatric Dental Clinic* .....	2
PERI 301 Basic Periodontal Surgery .....	2
PERI 302 Periodontics Clinic* .....	3
REST 308 Fixed Prosthodontics Clinic* .....	3
REST 310 Removable Prosthodontics Clinic* .....	4
REST 315 Esthetic Dentistry (Lecture) .....	1
REST 316 Esthetic Dentistry (Lab) .....	1 (P/F)
REST 330 Professionalism & Practice Management (Clinical Practice) .....	1 (P/F)
REST 334 CPR Recertification .....	1 (P/F)

\*Continues through Winter/Spring Semester

<b>Winter/Spring Semester .....</b>	<b>Credit Hours</b>
BIDX 305 Advanced Dental Radiology .....	1
OMSU 305 Hospital Protocol .....	1
ORTH 304 Orthodontic Clinic .....	1 (P/F)
PDCH 303 Professional Ethics and the Patient .....	1 (P/F)
PDCH 307 Dental Jurisprudence.....	1
PERI 303 Special Problems in Periodontal Therapy .....	1
REST 309 Advanced Prosthodontics .....	1
REST 311 Oral Implantology .....	1
REST 313 Management of TMD .....	1
REST 336 Professionalism & Practice Management II (Clinical Practice) ..	1 (P/F)

### FOURTH YEAR

<b>Summer/Fall Semester .....</b>	<b>Credit Hours</b>
BIDX 401 Clinical Pathological Conference (CPC) .....	2
BIDX 402 Oral Diagnosis Clinic* .....	2
BIDX 407 Oral Medicine & Therapeutics .....	1
BIDX 409 Advanced Treatment Planning .....	1 (P/F)
ENOP 401 Advanced Endodontics .....	1
ENOP 402 Endodontics Clinic* .....	2

ENOP 403 Advanced Operative Dentistry .....	1 (P/F)
ENOP 404 D.A.U. Clinic* .....	1 (P/F)
ENOP 406 Operative Clinic .....	5
OMSU 402 Oral Surgery Clinic* .....	3
OMSU 403 Advanced Oral & Maxillofacial Surgery .....	2
PDCH 401 Practice Implementation and Management .....	2
PDCH 402 Pediatric Dental Clinic* .....	2
PDCH 403 Community Dentistry .....	1
PERI 401 Advanced Periodontology .....	1
PERI 402 Periodontics Clinic* .....	3
PHAR 403 Applied Pharmacology .....	1 (P/F)
REST 401 Advanced Biomaterials .....	1
REST 406 Fixed Prosthodontics Clinic* .....	5
REST 407 Principles of Prosthodontics Practice .....	1 (P/F)
REST 408 Removable Prosthodontics Clinic* .....	5
REST 430 Professionalism & Practice Management (Clinical Practice) .....	1 (P/F)
REST 434 CPR Recertification II .....	1 (P/F)

\*Continues through Winter/Spring Semester

**Winter/Spring Semester .....Credit Hours**

PDCH 405 Applied Practice Management .....	1 (P/F)
REST 432 Professionalism & Practice Management II (Clinical Practice) .	1 (P/F)

**Basic Science Departments**

(The faculty of the College of Medicine offers the basic science courses that contribute to the dental curriculum.)

**Department of Anatomy and Neurobiology**

Department Chair & Professor: Matthew Ennis, Ph.D.

101 ANAT - Histology for Dental Students. Included are basic cytology, special organ histology and selected topics of embryology relevant to dentistry. In addition to lectures, the laboratories allow direct observation of prepared microscope slides. Credit 4 (51-31).

103 ANAT - Neuroanatomy. Lectures are supplemented with projected slides. The major structures and relationships of the brain (including cranial nerves) and the spinal cord are presented. Credit 2 (28-4).

105 ANAT - Gross Anatomy. This course is an introduction to human gross anatomy by means of dissection supplemented with lectures. Slightly more than one half the course is devoted to detailed study of the head and neck. Credit 6 (61-69).

## **Department of Molecular Sciences**

Department Chair & Professor: Gerald I. Byrne, Ph.D.

101 MSCI - Biochemistry. The course consists of a series of lectures that offers a basis for an understanding of modern biochemistry as well as establishing a background for courses occurring later in the curriculum. Although major emphasis is on fundamental aspects of biochemistry, additional emphasis is given to areas of special importance in oral biology. The laboratory emphasizes analytical techniques applied to oral tissues and secretions. Credit 5 (72-0).

201 MSCI - Microbiology. Lectures and laboratory exercises present the fundamental aspects of microbial structure, growth, and genetics, with a survey of sterilization, disinfection and chemotherapy. Microbial virulence, nonspecific host resistance, and the principles of immunology precede a survey of disease producing microorganisms. Emphasis is placed on those affecting the oral cavity or with oral manifestations, and those of public health interest which might affect the dentist. Credit 4(54-0).

## **Department of Physiology**

Department Chair & Professor: Gabor Tigyi, Ph.D.

101 PHYS - Physiology. The properties, composition, and function of living matter and its reactions to internal and external agents are presented. The course is composed of lectures and laboratory experiences concerning the following organ systems: circulatory, respiratory, renal, digestive, and endocrine. The mechanism of integration of the various physiological systems is stressed. Credit 5 (70-14).

## **Department of Pathology**

Department Chair & Professor: Charles Handorf, M.D., Ph.D.

207 BIDX - General/Systemic Pathology & Infection Control. The faculty of the Department of Pathology provides instruction relative to the fundamental principles and concepts of general pathology in conjunction with the oral pathology taught in this course.

## **Department of Pharmacology**

Department Chair & Professor: Burt M. Sharp, M.D.

205 PHAR - Dental Pharmacology. This course is designed to introduce the student to the basic principles of drug action, drug dose-response relationships and drug interactions to provide a sound basis for understanding practical dental therapeutics. Drug categories most important for beginning dental practice are introduced in this course, such as drugs affecting the autonomic nervous system, analgesic and anesthesia drugs, and antibiotics. This course later concentrates on categories of drugs that may be



encountered in dental practice, such as drugs administered for therapeutic medical treatment of patients that may affect dental health or dental practice. Credit 4 (65-0).

403 PHAR - Applied Pharmacology. This pharmacology course is scheduled as part of the preparation for passage of the Dental National Board Exam, Part II. The second year course, Dental Pharmacology, is a prerequisite. The course concentrates on the drugs that are most important for clinical practice - antibiotics, analgesics, anesthetics, and anti-inflammatory drugs- and on drug interactions pertinent to dentistry. The course incorporates self-study of information through a website, review with faculty, qualifying evaluation and participation in (case) seminars on drug interactions as it applies specifically to dental practice. Credit 0 (7-1).

The below listed course is offered by UTHSC for students of health professions through the last semester of their degree program.

## **Department of Biologic & Diagnostic Sciences**

Interim Department Chair and Professor: John Stansill Covington, D.D.S.

### **Division of Oral Diagnosis**

101 BIDX - Biomedical Clinical Conference (BCC), I. This course is a conference demonstrating the clinical correlation between the biochemistry and histology of developmental disturbances. Credit (1P/F) (10-0).

103 BIDX - Biomedical Clinical Conference (BCC), II. This course is a conference relating to principles being taught in the D-1 basic science courses in physiology and gross anatomy. Credit (1P/F) (10-0).

201 BIDX - Basic Dental Radiology. This course is designed to acquaint the student with the principles of x-ray production, the biological effect of x-radiation, radiation hygiene and protection, the making of intraoral radiographs, and the interpretation of these radiographs. Upon completion of this course the student will be knowledgeable about the proper use of this important diagnostic tool in the dentist's armamentarium. This is a prerequisite course for Advanced Oral Radiology (BIDX 305). Credit 3 (27-24).

203 BIDX - Patient Evaluation. A basic Oral Diagnosis course that introduces students to patient evaluation and examination techniques, the proper recording of collected exam data, the formulation of medical and dental summary diagnoses/problem lists, the planning of treatment alternatives for the patient's dental diagnoses (taking the medical diagnoses into consideration), and the presentation of the treatment plan(s) to the patient. Credit 3 (29-30).

211 BIDX - Biomedical Clinical Conference (BCC), III. This course is a conference demonstrating that a thorough understanding of basic principles of microbiology and pathology is essential in the daily practice of clinical dentistry. This course will be

offered as a “Pass/Fail” course, thus, a “N/C” denotation as semester credit hour. The course is scheduled for the Fall semester. Credit (1P/F) (10-0).

213 BIDX - Introduction to Chemical Dependency. This course is designed to provide a basic understanding of chemical dependency/addiction, including its prevention, recognition, treatment, and impact upon the dental profession. Credit 1 (P/F) (8-0).

301 BIDX - Clinical Correlation Conference. This course provides a practical approach for the dental student by presenting case histories of patients with the most frequently seen medical problems. Clinical medical specialists will discuss specific disease processes, and the relationship of each medical disease and its therapy to the dental plan of treatment. Credit 2 (22-0).

302 BIDX - Oral Diagnosis Clinic. The Junior Oral Diagnosis clinic emphasizes the student’s development of historical and clinical examination skills and his formulation of an appropriate dental treatment plan based upon each patient’s dental and medical diagnoses. Students work in a closely supervised atmosphere and are scheduled briefly into a dental emergency service where patients needing immediate care are diagnosed and treated. Credit 3 (0-114).

305 BIDX - Advanced Dental Radiology. This course introduces the principles and techniques involved in intraoral-occlusal and extraoral radiography with special emphasis on the use of the dental panoramic x-ray machine. The indications and criteria for prescribing these radiographic views are presented as well as material concerning the interpretation of the resultant radiographs. Other lecture topics include TMJ radiography, intraoral and extraoral film processing errors, processing artifacts and radiographic quality assurance programs designed for the modern dental office. Credit 1 (10-5).

313 BIDX - Special Patient Care. This course provides dental students with knowledge of the special needs of patients who are mentally retarded, medically compromised, or elderly. The course is presented by a series of guest lecturers. An interdisciplinary approach is taken in an effort to familiarize dental students with the need for consultation, as well as the varied aspects of health care for this population. In addition, several lectures focus on specific handicapping conditions, and highlight cultural and social aspects of providing dental health care for handicapped and elderly patients. Credit 2 (31-0).

402 BIDX - Oral Diagnosis Clinic. The Senior Oral Diagnosis clinic emphasizes the student’s development of clinical judgment and patient management skills. Students are considered to be clinical interns and they examine, diagnose, and plan treatment for patients with minimal faculty supervision. They are also scheduled into a dental emergency service where patients needing immediate care are diagnosed and treated. Credit 2 (0-101).

407 BIDX - Oral Medicine & Therapeutics. This course deals primarily with the treatment of selected diseases and conditions, other than caries and periodontal disease, in which the dentist plays a major role in the recognition, diagnosis and management of the disorder. Emphasis will be given to drug indications, contraindications, interactions,

dosages, and related therapeutic issues. Clinical information and testing will utilize a case-base format, similar to that found on Part II of the National Board Dental Examination. Credit 1 (14-0).

409 BIDX - Advanced Treatment Planning. This course is designed to prepare the senior dental student for more difficult or complex patient treatment planning. A multidisciplinary group of faculty will present complex treatment cases/treatment considerations in a seminar format designed to encourage student participation. Emphasis will be placed on appropriate treatment options and sequencing. (1P/F) (11-0).

## **Division of Oral Pathology**

207 BIDX - General/Systemic Pathology & Infection Control. The course in general pathology instructs the student in the basic concepts of human disease and presents facts about the more commonly occurring non-oral diseases, particularly those pertinent to the practice of dentistry. Credit 5 (70-0).

311 BIDX - Basic Oral & Maxillofacial Pathology. This course presents the terminology and working concepts of the epidemiology, etiology, pathogenesis, clinical signs and symptoms, histology, radiology (if applicable), treatment, and prognosis of oral and perioral lesions. The course demonstrates the relationship between the basic sciences and clinical oral pathology. Credit 6 (87-0).

401 BIDX - Clinical Pathological Conference. This course utilizes the clinical pathology conference format to teach students to diagnose and manage various forms of oral pathology. Case histories are utilized to present clinical diagnostic problems. Credit 2 (25-0).

## **Department of Endodontics & Operative Dentistry**

Department Chair and Professor: Van T. Himel, D.D.S.

### **Division of Endodontics**

201 ENOP - Basic Endodontics (Lecture). These courses include lectures on the biological and clinical aspects of endodontics plus preparation for the preclinical laboratory exercises. Included in the biological aspects are discussions of the pulp, diseases of pulp and the periapical tissues, diagnostic and treatment procedures, selection of patients, and medications used in endodontics. The clinical lectures are devoted to anatomy and morphology as it relates to endodontics, procedures used in preparing and filling root canals, discussion of instruments and materials used, restoration of endodontically treated teeth and orientation for the clinic. Credit 1 (21-0).

202 ENOP - Basic Endodontics (Lab). The laboratory courses involve access, instrumentation and obturation of both plastic teeth and extracted human teeth. Complete treatment is performed on both single and multi-rooted teeth. Credit 1 (0-45).

302 ENOP and 402 ENOP - Endodontic Clinic. The third and fourth year students have the opportunity to perform clinical endodontics under the supervision of instructors. In addition, students receive training in differential diagnosis, treatment planning and management of the emergency patient. Credit 3D 1(0-42); Credit 2 (0-78).

401 ENOP - Advanced Endodontics. A lecture course is offered at the time when students have had exposure to the endodontic clinical experience. The course is designed to broaden the student's knowledge by examining the biological aspects of endodontics and enhance skills in the management of the more complex problems. In addition, new materials, alternate techniques and controversial subjects are examined with respect to the more routine clinical practice. Credit 1 (20-0).

## **Division of Operative Dentistry**

101 ENOP - Operative Dentistry (Lecture). Lectures include classification and nomenclature of cavities; cavity preparation; instruments and instrumentation; histological structure of the teeth in relation to cavity preparation and selection of restorative materials. The manipulation of amalgam, cement bases, cavity liners, pulpal protection, pin retained amalgams and rubber dam application is introduced in this course. Credit 2 (23-0).

102 ENOP - Operative Dentistry (Lab). Laboratory exercises include cavity preparation for amalgam in ivorine teeth and extracted natural teeth. Amalgam restorations are placed and carved in all of the preparations. Amalgams placed in natural teeth are polished. The manipulation and application of cement bases, liners and cavity varnish are included. Credit 1 (0-57).

103 ENOP - Dental Morphology (Lecture). The Dental Morphology courses are presented in two closely related segments, lecture and laboratory. These courses are a prerequisite for all dental courses. The lecture course is designed to familiarize the student with dental terminology, internal and external tooth anatomy, tooth form, tooth function and supporting structures. The lectures also cover development of the dentitions (deciduous and adult) as well as variations or anomalies of tooth morphology and alignment of the dentition. Credit 2 (31-0).

104 ENOP - Dental Morphology (Lab). The laboratory course reinforces the concepts taught in the lecture segment through waxing of individual anatomical tooth forms. The student learns the handling of instruments and proper wax temperature control through waxing exercises. After completion of exercises the student will wax fourteen individual teeth, seven maxillary and seven mandibular. The student should know the morphology of all human teeth and be prepared to reproduce that knowledge in sculptured wax. Credit 2 (0-84).

105 ENOP - Tooth Preparation. A practice course in Restorative Dentistry, this course provides an initial experience that presents and trains students to perform simulated clinical procedures in Operative Dentistry and Fixed Prosthodontics as well as training of motor skills and cognitive skills. Additionally, ergonomics will be emphasized. Credit (2P/F) (18-24)

203 ENOP - Operative Composite Resin (CR Lecture). This course is designed to provide the student with information about tooth-colored restorative therapy (i.e., composite resins, glass ionomers, and supporting materials). The selected clinical vignettes demonstrate case selection and management of the dentition using Class II, III, IV, V, preventive resin restoration (PRR) , and direct veneer restoration procedures and techniques. Credit 1 (13-0).

204 ENOP - Operative Composite Resin (CR Lab). This course consists of tooth-colored restorative laboratory projects. The projects will be taught in a step-bystep format for preparation design and placement (inserting, contouring, finishing, and contouring) of conservative tooth-colored restoratives (i.e., composite resin, glass ionomer, and supporting materials). The procedures to be taught in the laboratory are: (1) sealants, (2) PRR, (3) Class II, III, IV, V preparation designs and placement of composite resin material, (4) Class preparation design and placement of glass ionomer material, (5) direct composite veneers, (6) management of root caries, (7) detection and management of caries, and (8) resin bonding exercises. Class lab exercises will be done on natural teeth mounted in stone. All practical exercises will be done on plastic teeth mounted in stone. Credit 1 (0-21).

205 ENOP - Complex Intracoronal Preparations/Restorations (Lecture). This lecture course will expand upon the principles of amalgam and composite resin preparations/restorations. Preparation design for compound and complex restorations will be discussed, including the indications and usage of pins, amalgapins, secondary retention features with/without bonding, and replacement of cusps. Introduction of additional, other than alloy based (amalgam) restoratives such as composite and/or composite core materials will be included. Other topics of this course include caries detection/removal and appropriate use of liners and bases in restorative treatment. Credit 1 (11-0)

206 ENOP - Complex Intracoronal Preparations/Restorations (Lab). This laboratory course will include projects allowing the student doctor to work on typodont (plastic) teeth with/without simulated caries and treat natural teeth, simulating real-case clinical scenarios. Exposure to different restorative materials and diverse clinical techniques will be expanded. Student doctors will learn to prepare and insert compound and complex restorations, using both amalgam and composite resin materials, involving cusp replacement, as permanent restorations or build-up restoratives for future prosthodontic care. Credit 1 (0-30)

207 ENOP - Introduction to Clinical Practice. This course blocks students in the clinic during the Winter-Spring Semester of the second year. It will enable each student, at a minimum, to enter the D-3 year with multiple experiences in clinic protocol, infection control protocol, patient record-keeping protocol, and face-to-face interactions with patients. It is further expected that each student will perform diagnostic procedures, pain control procedures, patient education, and selected patient treatment procedures, including experiences as primary operator in the presence of the D-4 student and under the supervision of the attending faculty. Correspondingly, for those procedures that the D-2 is not preclinically prepared to undertake, the student will gain valuable experience assisting or observing the D-4 student. Credit (1P/F) (3-56).

301 ENOP Dental Auxiliary Utilization. This is a course introducing the student to efficiency techniques in the practice of dentistry involving the utilization of dental auxiliaries. Credit 1 (13-0).

304 ENOP - DAU Clinic. Credit is given for application of the principles of Dental Auxiliary Utilization in the clinical setting. Students deliver a limited scope of dental services while learning to use trained chair side dental assistants effectively and efficiently. Credit (1P/F) (0-20)

306 ENOP & 406 ENOP - Operative Dentistry Clinics. Clinical experience in operative procedures taught by this department is gained under supervision of the Operative Dentistry Faculty. Credit 3D 5 (0-240); Credit 4D 5 (0-240).

403 ENOP - Advanced Operative Dentistry. This course is a compilation of clinically relevant techniques and procedures in Operative Dentistry. The intent of this course is to review principles and correlate theory into practice after the students have had clinical experience in operative dentistry. This course will present and review concepts, clinical procedures and problem solving using operative dentistry principles. Critical thinking and case-based learning will be emphasized. It also serves as a critical thinking exercise in preparation for Part II of the National Board Dental Examination. Credit 0 (6-0).

404 ENOP - DAU Clinic. This experience offers application of the principles of Dental Auxiliary Utilization in the clinical setting. Students deliver a broad scope of dental services while learning to use trained chair side dental assistants effectively and efficiently. Credit (1P/F) (0-28).

## **Department of Oral and Maxillofacial Surgery**

Department Chair and Professor: Lawrence W. Weeda, Jr., D.D.S.

201 OMSU - Pain Control I. Surgical anatomy and anatomical relations pertinent to local anesthesia are reviewed. A local anesthetic technique appropriate to all dental procedures is taught as well as the administration of adjunctive drugs by oral, intramuscular, and intravenous routes. The management of drug related, medical-dental emergencies is given strong emphasis as related to pain control. Credit 2 (30-3).

203 OMSU - Principles of Oral and Maxillofacial Surgery. The student is acquainted with the science of oral surgery in theory and practice. Armamentaria and their appropriate application to uncomplicated removal of teeth and soft tissue management are presented by lecture along with laboratory periods which offer instruction in suture technique. Diagnosis and recognition of clinical conditions as they relate to surgical procedures and management of oral infections are stressed. Instruction in instrument care and aseptic technique is given. Credit 2 (30-6).

301 OMSU - Advanced Pain Control. This is an introduction to the armamentarium, agents, and the methods of general anesthesia as they relate to dentistry and oral surgery procedures. Differentiation is made between general anesthesia and inhalation analgesia.

The pharmacology, physiology and technology related to inhalation analgesia are presented in depth, incorporating clinical demonstration and student participation. Other modalities of pain control that are reviewed for the student include oral and parenteral pre-operative and postoperative drugs. Credit 2 (27-8).

305 OMSU - Hospital Protocol. Students are introduced to hospital procedures and protocol. Hospital organization and staff organization are discussed along with specific personnel responsibilities. Application for staff privileges is outlined for the student. Credit 1 (12-0).

302 OMSU & 402 OMSU - Clinics. The student gains experience in the clinical application of those surgical principles that will make him/her proficient in the performance of oral surgery that falls within the realm of the general practice of dentistry. This is achieved according to a specific protocol, and takes place subsequent to didactic and laboratory instruction for any given procedure. The student serves sequentially as: observer; assistant; operator. (Summer Clinic Optional). Credit 3D 3 (0-120); 4D 3 (0-120).

403 OMSU Advanced Oral Surgery. This course embraces selected fundamental oral surgery techniques and a presentation of the total scope of oral surgery. Trauma, preprosthetic, and orthognathic surgery are presented along with surgery related to the infective process. Patient management is stressed. Credit 2 (22-0).

## **Department of Orthodontics**

Department Chair and Professor: James L. Vaden, D.D.S., M.S.

101 ORTH - General Human Growth. The course familiarizes students with major concepts and supporting evidence concerning human growth and development. Broad topics are a) kinds of growth, b) analytical approaches to the study of growth, c) patterns of growth by tissue system, d) physiologic age assessments, e) genetic and environmental factors influencing growth, and f) an overview of growth disorders. Emphasis is on the development of concepts. Credit 1 (9-0).

103 ORTH - Development of Occlusion. This course details the development of normal and ideal occlusions and of malocclusions. Initial discussion includes the normal development and eruption of the primary, mixed, and permanent dentitions, normal maturation of the orofacial musculature, and the physiology of occlusion. Lectures then cover the incidence, affected sites, sequelae, and etiologic factors that may be involved in the development of malocclusions. 1 (16-0).

201 ORTH - Craniofacial Growth and Development. This lecture course provides a comprehensive study of the craniofacial structures. While embryology of the structures is reviewed, the focus is on postnatal development. The major topics are a) theories of craniofacial growth in an historical perspective, b) detailed descriptions of the nature of growth within each morphologic complex, c) genetic and environmental causes of growth disorders, and d) an overview of craniofacial anomalies and syndromes. Credit 2 (28-0).

301 ORTH - Orthodontic Diagnosis and Treatment. In this course, the student is provided with the necessary instruction to perform a comprehensive orthodontic examination, assemble data from diagnostic records, and plan the course of patient treatment. The student is introduced to a variety of contemporary fixed and removable appliances, their component parts and properties, and indications for their use. Instruction also is given on the procedures for placement and adjustment of the appliances, including the mechanical properties of orthodontic materials and biomechanical principles governing orthodontic tooth movement. Credit 3 (41-0).

302 ORTH - Orthodontic Appliance Fabrication (Laboratory). This laboratory course prepares the dental student for the clinical phase of undergraduate orthodontics. Course emphasis is given to teaching the student the clinical skills required to perform effectively in the clinic. This includes learning various diagnostic record techniques, the manipulation of orthodontic wire, banding and bonding techniques, and fabrication of various contemporary fixed and removable appliances. Credit 1 (0-20).

304 ORTH - Orthodontic Clinic. This course entails the application of principles of orthodontic diagnosis and treatment. The student is taught to apply diagnostic principles to the broad range of malocclusions encountered in a general practice. Communication skills necessary to provide effective patient/parent consultation and effective interaction with orthodontic specialists are emphasized. The student is also taught how to treat those malocclusions that are generally considered to be of an uncomplicated nature. Treatment may be provided in a wide variety of situations using either fixed or removable appliances on the child, adolescent, or the adult. Credit 1 (0-12).

## **Department of Pediatric Dentistry & Community Oral Health**

Department Chair and Professor: Sanford J. Fenton, D.D.S., M.D.S.

### **Division of Pediatric Dentistry**

201 PDCH - Introduction to Pediatric Dentistry. This is the basic course in Pediatric Dentistry that covers both preclinical and clinical subject matter. The course presents the following subjects in relation to treatment of the child patient: examination of the child patient, local anesthesia, premedication, behavior guidance, radiographic techniques, pulp therapy, restorative dentistry, eruption of the primary and permanent teeth, space maintenance and arch analysis, correction of minor irregularities in occlusion, limited tooth movement, trauma, gingivitis and periodontal disease, oral pathological conditions in children, dental problems of the handicapped child, special dental problems of the adolescent, and hospital dentistry. Credit 2 (28-0).

202 PDCH - Pediatric Dentistry Lab. This series of lectures and exercises is designed to develop proficiency in the performance of basic periodontic procedures, such as amalgam alloy restorations, chrome crowns, fixed and removable space maintainers and the making and trimming of diagnostic casts. Credit 1 (0-28).



302 PDCH - Pediatric Dentistry Clinic. In a clinical setting, experience is gained in the treatment of the child's dental needs in the areas of diagnosis, treatment planning, prevention, amalgam alloys, chrome crowns, fixed and removable space maintainers, and limited tooth movement. Credit 2 (0-96).

402 PDCH - Pediatric Dentistry Clinic. This course is a continuation of PDCH 302. Credit 2 (0-96).

## **Division of Community Oral Health**

103 PDCH - Human Values & Personal Ethics. This course introduces dental students to the philosophical basis for ethical principles and reasoning which enables them to identify and resolve moral issues as dental students. Furthermore, an attempt is made to increase the moral sensitivity in students so that they are able to better cope with moral problems, thereby maximizing good behavior and minimizing bad behavior. The students are able to develop an understanding of the ethical behavior and standards of proper conduct for entry into the dental profession. Credit (1P/F) (5-0).

105 PDCH - Introduction to Dentistry. This course demonstrates how relationships are affected by such factors as intra- and inter-personal concerns, cultural bias, and the social skills of the dentists, patients and auxiliaries. It assists dental students in their responsiveness to the needs of others and provides a cohesive framework within which students can interpret, understand and respond to patient behaviors. Credit (1P/F) (13-0).

107 PDCH - Informatics and Evaluation of Dental Literature. This course is designed to introduce the student to the concept of evidence based dentistry, provide skills for accessing appropriate evidence-based literature, and help the student to understand the research methods which form the foundation for evidence based dentistry. The student will become familiar with available tools for searching the research literature. The student will be introduced to research concepts which are important in critical reading of the scientific literature with an emphasis on experimental and epidemiological research designs and inferential statistics. Credit 1 (14-4).

203 PDCH - Dentist-Patient Relationship. This course demonstrates how relationships are affected by such factors as intra- and inter-personal concerns, cultural bias, and the social skills of the dentists, patients and auxiliaries. It assists dental students in their responsiveness to the needs of others and provides a cohesive framework within which students can interpret, understand and respond to patient behaviors. Credit 1 (9-0).

301 PDCH - Introduction to Practice Management. This course introduces small business terminology and basic management techniques to students who are beginning their clinical experience. Procedural organization, time management, and development of communication skills are stressed. Students are encouraged to apply these principles to their individual cubicle and gain some insight into the management skills necessary to achieve a successful practice. Credit 1 (9-0).

303 PDCH - Professional Ethics and the Patient. This course provides the dental students with the knowledge of basic moral principles regarding the treatment of dental

patients in the Dunn clinical setting. This offers students an opportunity to discuss ethical issues through the use of case histories for discussion and instruction. Credit 1 (5-5).

307 PDCH – Dental Jurisprudence. This course is a study of the laws pertaining to the practice of dentistry in Tennessee and elsewhere. The legal aspects of the doctor patient relationship, contracts, and practice agreements are emphasized. Credit 1 (13-2)

401 PDCH - Practice Implementation & Management. This course is designed to familiarize the student with the methodology of locating, establishing, and managing a dental practice in the most productive manner. Consultants from the various subject areas lecture in their areas of expertise. Credit 2 (30-0).

403 PDCH Community Dentistry. This course provides dental students with some knowledge of dentistry's function in the delivery of total health care and in society at large. Lecturers represent several disciplines with dental health care including clinical specialties, the State Health Department, and organized dentistry. Topic areas in the course include: The Consumer and Health Care, The Dental Health Care Delivery System, Peer Review, the Public Practice of Dentistry, Continuing Education, and Career Choices in Dentistry. Credit 1 (18-0).

405 PDCH - Applied Practice Management. The Applied Practice Management (APM) course was developed to assure that every UTCOD graduate has been exposed to the "clinical" application of practice management principles and techniques. It is designed to follow the basic Practice Implementation and Management course and is scheduled to coincide with an awakening perception of relevancy as the senior student begins to fully recognize the importance of practice management skills. APM consists of four parts: an orientation describing course policies and faculty expectations; two half-day rotations in private dental offices to observe practice management skills being applied in "real life"; a follow-up seminar to share observations; and a full-day continuing education type program exposing students to a nationally known practice management speaker (Bowyer Lectureship). Credit (1P/F) (3-8).

## **Department of Periodontology**

Interim Department Chair and Associate Professor: Paul S. Bland, D.D.S.

103 PERI - Pathobiology. The objective of the course is to provide the student with fundamental information applicable to the understanding of the major oral diseases, namely periodontal diseases, caries and pulpal pathology. Lectures cover the histopathology, epidemiology, etiology, microbiology, immunology and prevention of these diseases. Clinical sessions are devoted to assessing the relationship between bacterial plaque and gingival inflammation, and implementing and evaluating the success of a preventive program. This is an interdisciplinary course involving faculty from the Department of Periodontology, Department of Restorative Dentistry, and Department of Biologic & Diagnostic Sciences, Division of Endodontics. Credit 4 (49-16).

203 PERI - Clinical Periodontology. This introductory course introduces students to the diagnosis and non-surgical treatment of gingivitis and periodontitis as well as the relative importance of local and systemic factors in the etiology of the periodontal lesion. Information is given regarding the histopathology, epidemiology, classification, diagnosis and management of periodontal diseases. Lectures and laboratory exercises are used to teach the concepts of periodontal instrumentation. A clinic clerkship follows that is designed to introduce students to the clinical procedures required in the management of the periodontal patient. Each student will perform a complete periodontal examination on a classmate, followed by scaling and polishing and disease control evaluation. Students will gain experience in infection control, patient health assessment, clinical periodontal examination, data recording, treatment planning, initial periodontal treatment, and the evaluation of the results of this treatment. Thus, this course serves to prepare students to meet the basic periodontal needs of their patients. Credit 3 (39-23).

301 PERI - Basic Periodontal Surgery. This course is designed to provide the students with the necessary understanding of the principles and techniques of basic periodontal surgery procedures that he/she will perform in the clinic and to introduce the more complicated procedures that the student will observe being performed. Through lectures, and the use of various audiovisual aids, the potentials of periodontal surgery in the rehabilitation of the periodontally diseased mouth are explored. Emphasis is placed on recognizing indications for, and limitations to, periodontal surgery, as well as the ability to accurately evaluate the results of treated cases. Credit 2 (26-0).

302 PERI - Periodontics Clinic. Practical application of previously presented didactic material is accomplished by students providing their assigned patients with appropriate treatment. A detailed periodontal examination of each patient is accomplished with the development of an appropriate treatment plan. The student gains experience in treating a variety of periodontal disease conditions by completing required treatment of several cases under the supervision of faculty. Credit 3 (0-115).

303 PERI - Special Problems in Periodontal Therapy. The objective of this lecture course is to familiarize the dental student with special periodontal problems exclusive of gingivitis and periodontitis. Emphasis is placed on etiology, clinical manifestations, prognosis, treatment and preventive procedures. The topics that are covered include: Diagnosis of Juvenile Periodontitis (Periodontosis), Hyperplastic and Desquamative Changes in the Periodontium, Periodontal and Gingival Disease in Childhood, Diagnosis of Acute Periodontal Conditions; ANUG and Pericoronitis, the Periodontal Abscess, Perio-Ortho Interrelationship, Role of Dental Hygienist in the Dental Office, Root Sensitivity and Desensitizing Agents, Periodontal Splinting and the Perio-Endo Lesion. Credit 1 (18-0).

401 PERI - Advanced Periodontology. Advanced periodontology is a lecture course presented to fourth year dental students. The general objective of this course is to familiarize the student with the most current developments in important areas of periodontology. Topics to be discussed include advances in understanding the microbial etiology of periodontal diseases, use of topical antiplaque and anticalculus agents, regenerative procedures in periodontal therapy, recent advances in mucogingival surgery, management of furcation invasion, restorative procedures related to

periodontics, longitudinal studies of periodontal therapy and new aspects of non-surgical therapy. Prerequisites: PERI 103, 201, 301, 303 or equivalents. Credit 1 (10-0).

402 PERI - Periodontics Clinic. Students continue to improve their clinical skills in evaluation, diagnosis, treatment planning, and by providing treatment to the assigned patients under faculty supervision. Emphasis is placed on treatment of the more complex cases with as wide a variety of clinical needs as is practical. Credit 3 (0-115).

## **Department of Restorative Dentistry**

Department Chair and Professor: Russell A. Wicks, D.D.S.

### **Biomaterials**

113 REST - Biomaterials. A basic course in the study of dental materials that includes physical, chemical and mechanical properties and the interaction of basic materials with the biological system. A laboratory is included to illustrate both properties and manipulation of dental materials. Credit 2 (22-2).

401 REST - Advanced Biomaterials. This course is an update and review of dental materials. Emphasis is placed on new developments along with their practical applications to dentistry. Credit 1 (11-0).

### **General Dentistry - Clinical and Didactic Courses**

230 REST - Basic Life Support (CPR). This cardiopulmonary resuscitation course is designed to certify the student in basic life support by the American Heart Association standards. Certification in Basic Life Support is required for the student to continue clinical treatment of patients. Credit (1P/F) (1-3).

315 REST - Esthetic Dentistry (Lecture). A lecture course designed for third year students to gain basic background knowledge in the biologic, mechanical and esthetics principles necessary to plan, prepare, fabricate, and deliver anterior and posterior esthetic restorations and to apply this background knowledge to the treatment of patients. Credit 1 (16-0).

316 REST - Esthetic Dentistry (Lab). This is the companion course to Esthetic Dentistry (Lecture) - REST 315. This is a laboratory course designed for third year students to apply the technical procedures necessary to fabricate various types of esthetic restorations, both direct and indirect using the most advanced materials and equipment. Credit 1 (0-39).

334 REST - CPR Recertification. This cardiopulmonary resuscitation course is designed to continue certification of the student in basic life support as required by the American Heart Association standards. Certification in Basic Life Support is required for the student to continue treatment of patients. Credit (1P/F) (1-4).

330 REST, 336 REST, 430 REST and 432 REST - Professionalism and Practice Management (Clinical Practice). These courses involve applied principles of professionalism and practice management required in the care of clinical patients. Students will be evaluated each semester by clinical faculty and Group Practice Coordinators according to established criteria. Credit 3D 1 (0-57); Credit 3D II 1 (0-57); Credit 4D 1 (0-57); Credit 4D II 1 (0-57).

434 REST - CPR Recertification II. This cardiopulmonary resuscitation course is designed to continue certification of the student in basic life support as required by the American Heart Association standards. Certification in Basic Life Support is required for the senior student to continue treatment of patients. Credit (1P/F) (1-3).

## **Division of Prosthodontics**

119 REST - Occlusion (Lecture). The fundamental of occlusion course are presented in two closely related segments, lecture and laboratory. The lecture module is designed to familiarize the student with the muscles of mastication, associated musculature, osseous structures and the relationship of these structures to the occlusion. Recognition of basic rotational axes and their influence on occlusion is stressed. Articulator recognition and use is also included. Articulated generation of occlusion is demonstrated by prosthetic teeth arrangement. Credit 2 (26-0)

120 REST – Occlusion (Lab). The fundamental of occlusion course are presented in two closely related segments, lecture and laboratory. The laboratory is designed to familiarize the student with the muscles of mastication, associated musculature, osseous structures and the relationship of these structures to the occlusion. Recognition of basic rotational axes and their influence on occlusion is stressed. Articulator recognition and use is also included. Articulated generation of occlusion is demonstrated by prosthetic teeth arrangement. Credit 2 (0-78)

221 REST – Prosthodontics-Complete Denture (Lecture). An introductory course in prosthodontics which emphasizes the theory and technical procedures involved in the fabrication of complete dentures. Topics discussed in detail are: terminology, examination and treatment planning the edentulous patient, anatomic structures associated with complete dentures, impression making, interocclusal records, selection and arrangement of prosthetic teeth, processing and finishing of denture base resin, delivery of complete dentures, post operative care, and related matters. Credit 1 (9-0)

222 REST – Prosthodontics-Complete Denture (Lab). An introductory course in prosthodontics in which the clinical and laboratory procedures in the fabrication of complete dentures are described in manuals (UT publications), demonstrated (video camera and models), and then performed by the student under direct supervision of an instructor. Some of the specific projects performed are: impressions, recording centric relation, arrangement of prosthetic teeth, finishing denture base resin, and correction of the occlusion . Credit 1 (0-39)

223 REST – Prosthodontics-Removal of Partial Denture (Lecture). This is an introductory course in which the student learns the principles of removable partial prosthodontics. Diagnosis, treatment planning and technical procedures are covered along with the responsibilities of the dentist and laboratory technician. Credit 1 (12-0)

224 REST – Prosthodontics-Removal of Partial Denture (Lab). A basic course in the design, fabrication and fitting of removable partial dentures. Credit 1 (0-37)

225 REST - Fixed Prosthodontics I (Lecture). An introductory didactic course in fixed prosthodontics to expose second year dental student to the basics of fixed prosthodontics. To begin development of diagnostic and treatment skills related to the re-establishment of form, function and esthetics in order to restore oral health. Topics discussed in detail are: terminology, examination, treatment planning and treatment of patients needing fixed prosthetic restorations. Credit 1 (21-0)

226 REST - Fixed Prosthodontics I (Lab). An introductory laboratory course in fixed prosthodontics to expose second year dental student to the basics of fixed prosthodontics. To begin development of laboratory and clinical skills related to the re-establishment of form, function and esthetics in order to restore oral health. Credit 2 (0-72)

227 REST - Fixed Prosthodontics II (Lecture). This is a continuation of the Fixed Prosthodontics I Lecture course. Principles presented in this course will be used to further the knowledge base of basic fixed prosthodontic principles as they relate to single and multiple restorations. These principles will also be applied to removable prosthodontics per the fabrication of survey crowns. Further information pertaining to biomaterials and treatment planning will be presented. Credit 1 (20-0)

228 REST - Fixed Prosthodontics II (Lab). This is a continuation of the Fixed Prosthodontics I Lab. Principles presented in this lab course will be used to further the knowledge base of clinical techniques for basic fixed prosthodontic principles as they relate to single and multiple restorations. These principles will also be applied to removable prosthodontics per the fabrication of survey crowns. To continue to apply the didactic principles learned in the lecture course to basic fixed prosthodontic restorations. Credit 1 (0-66)

308 REST - Fixed Prosthodontics Clinic. The Junior Year in Fixed Prosthodontics offers the opportunity to apply the theories and techniques of Prosthodontics including diagnosis, treatment planning, and treatments learned in the preclinical courses. This knowledge is applied in the treatment of patients in the Fixed Prosthodontic Clinic. Credit 3 (0-150).

309 REST - Advanced Prosthodontics. A presentation of advanced theories, principles, and techniques in Fixed Prosthodontics, Removable Prosthodontics, and Maxillofacial Prosthodontics. Credit 1 (19-0).

311 REST - Oral Implantology. Provides an introduction to dental implantology for the predoctoral student. Oral implantology provides a viable modality for effective treatment planning and delivery of quality oral health care. Knowledge of variations in

types and purposes of oral implants is essential in the current practice of dentistry. Placement and restoration of oral implants must conform to acceptable anatomic and physiologic parameters as well as esthetic values of the oral functional systems. The purpose of the course is to supply the dental student with information that will enable him/her to diagnose and plan treatment for dental patients with appropriate dental implants as a foundation to establishment of occlusal harmony; to introduce the student to the biologic interrelationships essential to successful placement of dental implants within a functional system; to clarify for the student the technical complexities in the patient treatment involving implants. Credit 1 (17-0).

313 REST - Management of TMD. This course provides an introduction and review of the complexities of TMD and Orofacial pain. The course will offer an approach in the examination, treatment and management of this multifaceted disorder. Credit 1 (19-3).

406 REST - Fixed Prosthodontics Clinic. In the Senior Year the student is encouraged to become involved in increasingly more complex cases as knowledge and skills evolve into comprehensive patient care. The skilled student who demonstrates interest is encouraged to accomplish a complete occlusal reconstruction involving extensive prosthodontic therapy. Credit 5 (0-210).

407 REST - Principles of Prosthodontics Practice. This course is a compilation of clinically-relevant techniques and procedures in Prosthetic Dentistry. The intent of this course is to review principles and correlate theory into practice after the students have had clinical experience in Prosthodontics. This course will present and review concepts, clinical procedures and problem solving using prosthodontic principles. Critical thinking and case-based learning will be emphasized. It also serves as a critical thinking exercise in preparation Part II of the National Board Dental Examination. Credit (1P/F) (0-9).

310 REST & 408 REST - Removable Prosthodontics Clinics. Clinical experience is gained in the department by treatment of completely and partially edentulous patients. Credit 3D 4 (0-185); Credit 4D 5 (0-215).

## **Policy Regarding Integrated Examinations for D-1 and D-2 Students**

Integrated examinations are given at periodic intervals (every 2, 3 or 4 weeks) during the D-1 and D-2 years. The content of each courses' contribution to the examination is established by the course director and covers the information taught since the last examination. The questions are generally multiple choice and the examination will be of approximately 2 hours duration and taken on computer. A two-part (4 hours total) final examination will be given at the end of each semester and will consist of both questions pertaining to the material taught since the last examination and questions from the entire course. It is the responsibility of each course director to establish the criteria for the awarding of course grades, the role of examinations in the determination of those grades and communicating this information to the student of the first day of each class or via the course's Blackboard website. Any concerns relative to individual examination questions, criteria for course evaluation or final grades should be directed to the appropriate course director. Students are expected to take examinations as scheduled. Students unable to take an examination as scheduled because of an emergency situation

(hospitalization or death in the immediate family) must notify the Office of Academic Affairs prior to the examination. Excused absences from integrated exams will only be provided for emergency situations as described above.

## **Educational Philosophy and Plan for the Clinical Teaching Program**

The purpose of this component of the curriculum is to prepare dental students for the practice of general dentistry. The clinical teaching program prepares graduates to diagnose, treatment plan, manage and treat patients, at first with faculty assistance and ultimately with a large degree of independent initiative and confidence. This involves the development of basic knowledge, sound clinical judgment, good interpersonal relations, efficient management of time and resources and an acceptable level of technical proficiency. This approach is predicated on the concept that learning accompanies doing and, therefore, applied clinic practice is essential to acquire the various skills that are necessary for practice. Concurrently, application of knowledge offers opportunities for objective evaluation of the learning process.

The Clinical Patient Care Program is dedicated to the achievement of two (2) major objectives: the pursuit of a philosophy of total patient care and the attainment of an optimal level of quantitative and qualitative clinical competence. It will be the dual responsibility of the student and faculty to fashion the clinical experience in such a manner that both objectives are met. Each student will be aided by a Clinical Practice Group Coordinator, the Coordinator of Patient Care and the Clinical Director. The benefits of an applied philosophy of total patient care are realized concurrent with the attainment of evidence indicating competency in all College of Dentistry competency statements along with clinical requirement goals. It is the policy of the College of Dentistry to provide comprehensive care for its dental patients whenever possible. Comprehensive care is defined as the treatment needed to restore the patient's stomatognathic system to optimal appearance and function. It is expected that undergraduate clinic students will provide their portion of a patient's care in the school's clinics and arrange the assignment of their patients to the school's graduate clinics as needed. Any treatments that school clinics cannot provide are to be referred to private dental practice and students are expected to track the patient's treatment progress so any follow-up care by the College can be accomplished in a timely manner. Patients not desiring referral care are to be offered alternative care whenever possible.

## **Program Description**

Entering students (clinical) will be expected to demonstrate a high level of interest and commitment to learning. This will be evidenced by attitude toward assigned tasks, concern for the patient's interest and well-being, time commitment to clinical care of patients, receptivity to instruction, and willingness to do more than the minimum. All clinical performance related to patient care must be rated clinically acceptable (C or better grade).

Students should realize the need to seek advice or help in situations where they do not have the knowledge of experience. Faculty have the responsibility on a routine basis to intervene without being asked when appropriate and to be aware of students' progress



and needs. Student progress in the development of diagnostic, treatment planning and treatment skills will be based upon demonstrated effectiveness in the successful management and treatment of assigned clinical patients and the successful completion of clinical competency tests. These assessments require the students to demonstrate independent problem solving and clinical judgment.

Based upon their level of training, students must demonstrate successful progress in the various areas of clinical practice to be recommended for promotion/graduation. These areas include the demonstrated management of a comprehensive care program for a portfolio of patients who are selected and assigned based upon diversity of care required, effective use of clinical time available to him/her, a record of productivity, a high patient acceptance rating, and demonstrated ability to manage the diagnostic treatment planning and treatment needs of his/her practice. The student should be conversant on the clinical subjects relevant to his/her practice and capable of defending his/her decisions. Demonstration of professional behavior consistent with good ethical conduct is expected.

Students who do not progress satisfactorily as measured by these criteria will be delayed in their promotion and a remedial program implemented. This remedial program will be designed to offer specific help in the areas of deficiency and will not be automatic repetition of the year unless, of course, this is indicated.

Although no one can learn everything in a given period of time, the graduating senior should have demonstrated willingness and ability to learn, an adequate degree of basic knowledge, and a proven record of success in the management of his/her dental school practice. Collectively the faculty should approve the readiness of the graduate to enter practice.

### **Requirements for Graduation:**

- (1) Evidence of having met the competency requirements listed in the College of Dentistry Competency Statements
- (2) Acceptable overall experience encompassing high moral and ethical standards
- (3) An acceptable quantity of experience in specific procedures
- (4) A grade point average that documents acceptable quality performance.

### **Elective Program**

The Elective Program offers students the opportunity to explore subject areas relative to the practice of dentistry in conjunction with the core curriculum. The program is strictly voluntary, scheduled for semester enrollment primarily in the junior and senior years. Although the students do not receive credit hours, the course director verifies participation in the specific elective course for official posting on the student's transcript. The listing of elective courses may vary yearly as the result of the students' participation, introduction of new topics of interest, and the need for review of the dental sciences.

ELEC 504 - Student Research Fellowship Award. This course is designed to expose research-oriented students to the experience of writing a competitive research proposal, including the formulation of research hypotheses, specific objective, and experimental rationale and design. Students will gain hands-on research experience by participating in on-going research activities in the basic sciences or clinical dentistry. The research projects will be targeted to provide increased understanding of the basic mechanisms of oral diseases in order to prepare the student to provide optimum oral health care and management.

ELEC 505 - Summer-Fall Research Elective. This course will involve two projects. The first will look at the different ways an etch enamel surface can be damaged prior to placing a sealant or composite resin. Extracted human teeth will be used for this experiment. The etched enamel surface will be deliberately damaged than viewed under scanning electron microscopy. The other project will be an attempt to determine the fate of the artery, vein and nerve innervating a primary tooth once root resorption has begun. Monkey jaws will be utilized. Sections will be made beginning as the vessels and nerves exits from the interior trunk and followed until these structures enter the apical foramen. There will be an attempt to determine when there is no longer innovation and vascularity to these primary teeth. Additionally, an attempt will be made to determine if these anatomical structures are lying loose within the bone or if they are in a sheath once the root of the primary root has begun to resorb.

ELEC 506 - Passive Endodontics. Ultrasonic and sonic instrumentation along with warm lateral condensation will be taught. Laboratory and clinical time will give the student valuable “hands on” experience. Additional topics will be discussed, if requested by the students. Students will be allowed to use the techniques in the Endodontics Clinic after completion of the lecture and lab sessions. Student may work on one patient in a monitored clinic scheduled by student at the convenience of faculty and student.

ELEC 507 - Table Clinics. This elective is provided to help motivate the student to pursue any aspect of the dental field to a fuller extent. New techniques, new ideas and new concepts can be fully explored and presented by the innovative and dedicated students through the medium of the Table Clinic presentation. The Table Clinic presentations at The University of Tennessee Health Science Center College of Dentistry during the Annual Dental Alumni Meeting will follow the guidelines of the ADA. The “Table Clinic Presentations” will be suitable for presentation at state and national meetings. The overall 1st prizewinner will represent The University of Tennessee Health Science Center College of Dentistry with a table clinic at the Annual ADA Convention. An orientation session will be scheduled to clarify the organization, concepts and presentation of table clinics with each dental class.

ELEC 508 - Oral Surgery Externship. This course is designed to provide advanced clinical experience in oral surgery to a selected group of seniors. The students will be assigned to the Department of Oral and Maxillofacial Surgery on a full-time basis during the summer session of their senior year. During this period they will receive individual experience with advanced procedures such as preprosthetic surgery and surgical removal of impacted teeth. Experience in dentofacial trauma and hospital procedures will be derived from an on-call rotation with the oral surgery resident.

ELEC 509 - Elective in Oral & Maxillofacial Surgery. Goals of the elective course include: (1) operating room decorum and protocol including scrubbing and gowning; (2) hospital ward rounds; (3) pre- and post-operative planning; (4) out-patient surgery including familiarity with advanced dentoalveolar surgical procedures; (5) familiarity with advanced techniques in pain and apprehension control and pharmacology of selected drugs. The students will be assigned to a second or third year Oral and Maxillofacial Surgery resident.

ELEC 510 - Forensic Dentistry. The course will be an introduction to forensic odontology to include dental identification, bite mark investigation, mass disaster identification, and expert witness activities. It consists of lecture/seminars and hands-on laboratory instruction.

ELEC 513 - Advanced Pediatric Dentistry. Two (2) fourth year dental students are offered an elective course consisting of four clinical days for two (2) weeks. Students will be scheduled a variety of patients which will include case work-ups and treatment planning. A number of the patients will be medically or physically compromised in some manner. During the assignment students will be scheduled for hospital dentistry conferences and rounds, and may attend dental operating room cases as an assistant.

ELEC 514 - Research Methods in Periodontal Pathobiology. This course is designed to allow dental students (open to students at any stage of training, D-2 through D-4) to gain experience in the design, performance and documentation of a laboratory research project. Individuals are expected to devise their own research projects within a framework outlined by the Course Director. Projects will vary with students' previous experience and interests.

ELEC 515 - Elective Periodontal Surgery. This course is designed to expand the knowledge of selected students in the field of Periodontology by assigning reading material, discussion in seminar sessions and clinical activities. Each participant will be required to perform at least two different periodontal surgeries and the necessary postoperative procedures. All clinical procedures performed in this course will be credited towards the requirements in perio for the Junior year. Attendance in the course is mandatory except when other blocks are assigned. Students must inform the course director if they have any conflict.

ELEC 518 - UT Endodontic Research Group. The major purpose of this course is to officially recognize and organize a process that is already occurring. The purpose of the group shall be to promote faculty/student research within the division of Endodontics and to assure that proposed and current researches are progressing toward completion in a timely manner. This includes the assurance that all projects have adequate resources. Credit for this elective will be issued upon completion of the student project.

ELEC 519 - Comprehensive Implant Dentistry. The course will consist of didactic and laboratory sessions in which participating students will learn the history, implant biomaterials, treatment planning, surgical placement, ridge augmentation and implant restoration of fixed and removal prosthetic appliances. Students will have the opportunity to surgically place implants in patients who are approved by the course

instructor. If surgical procedures are performed within time allowances, students will uncover and restore implants that they have placed.

ELEC 520 - CEREC Technology. This elective will consist of one lecture followed by laboratory time designing and milling CEREC inlays and onlays on models. This will allow the student to experience this new technology and the enable them to deliver this type of restoration for their clinical patients.

ELEC 523 - Clinical Oral Pathology. This elective course is designed to provide exposure to the clinical practice of oral pathology. The student(s) will experience and participate in examination of diagnosis and treatment of the diseases, conditions, and neoplasms that are typically seen in clinical practice.

ELEC 524 – Project Smile. This course will assist young dentists and dental students to achieve practical real world skills in dentistry in the areas of general, cosmetic and practice management while helping people in need. The objectives include: 1) serve the underserved and the poor; 2) learn real life dentistry; 3) develop relationships with practicing dentists; 4) learn some practice management principles; 5) learn some cosmetic dental procedures; 6) see how cases are diagnosed and worked up in private practice; and 7) complete general dental procedures.

ELEC 525 – Advanced Clinical Experiences in Endodontics. This elective course is designed to provide exposure to a higher competency level of endodontic clinical practice than found in the student doctor curriculum. The student doctor(s) will experience and participate in the examination, diagnosis and treatment of the diseases and conditions that are typically considered non-teaching cases at the College of Dentistry. Each student doctor will be work with course director one half day per week in the clinic. Ideally, students will work in pairs. This would mean the course will be limited to four D-4 student doctors. This number may change depending on student interest and experience with the logistics of the course.

ELEC 526 – Advanced Prosthodontics Elective. Clinical and laboratory experience in complicated removable, fixed and implant combination cases. Treatment planning required of the student. Cases directed by a single case facilitator. The course is offered to third-year (D-3) students that meet established prerequisites.

ELEC 527 – Advanced Prosthodontics Elective II. Clinical and laboratory experience in complicated removable, fixed and implant combination cases. Treatment planning required of the student. Cases directed by a single case facilitator. The academic-year course is offered to senior (D-4) students that meet established prerequisites.

ELEC 528 – Research in Oral Biology. This elective is an introduction to research methodology to acquaint the students with evidence-based approaches to solving problems in oral and craniofacial health care. Research training areas include: Techniques in cell and organ culture; Characterization of connective tissue components of the gingival, periodontal ligament, and temporomandibular joint in health and disease; Adhesive glycoproteins in periodontal reattachment; Crevicular fluid components from normal and inflamed gingival; Saliva glycoproteins and their role in bacterial adhesion; cellular activities in invasive bone tumors; Cell migration and

chemotaxis; Periodontal pathogens and the oral micro-organisms; inflammation and inflammatory mediator; Proteomics and tumor biomarkers; Interaction of oral tissues and micro-organisms with implant materials; Craniofacial development; Biomechanical properties of dental and implant materials.

ELEC 552 - Biochemical Research Techniques. Designed primarily for students who are interested in research, this elective will provide a working knowledge of a variety of research techniques which best suit individual projects. The techniques are treated as independent units so that variable credit is given for each technique studied. The techniques offered will vary from year to year, and a list will be available prior to registration from the course coordinator. Techniques available will include radioimmunoassay, sub cellular fractionation, liquid chromatography, gas chromatography, and disc electrophoresis.

ELEC 553 - Microbiology Research. Qualified students may undertake research in microbiology for which credit and hours will be arranged.

## **Foreign Trained Faculty DDS Program**

The Foreign Trained Faculty DDS program at the University of Tennessee, School of Dentistry is targeted at full-time clinical faculty members who have earned a dental degree in a non-U.S. dental program. Eligible faculty will typically have completed specialty training in a program accredited by the ADA's Commission on Dental Accreditation. Prior to initiating the program, the faculty must have passed Parts I and II of the Joint Commission's National Dental Board Examinations.

Once approved for the program, the candidate will work with their department chair in planning a program of study. Non-contact days and vacation time may be used to complete the requirements of the program. Clinical treatment must be scheduled during periods where regular clinics are operating.

A candidate for the Foreign Trained Faculty DDS program must be a faculty member of the UTHSC College of Dentistry at least two years prior to consideration for this program of study. Upon acceptance the faculty member must be enrolled in the program for a minimum of two semesters before a D.D.S. will be granted. A maximum of two years, or six academic terms will be allowed for completion of all requirements. Each faculty member enrolled in the faculty D.D.S. program will be required to demonstrate clinical competency in all areas required for graduation from the regular pre-doctoral program.

## **ONE YEAR CURRICULUM OR FIRST & SECOND YEAR CURRICULUM**

### **Summer/Fall Semester through Winter/Spring Semester**

FBID 602 - Endodontics Foreign Trained DDS Course

FBID 604 - Oral Diagnosis Foreign Trained DDS Course

FBID 606 - Oral & Maxillofacial Pathology Foreign Trained DDS Course

FOMS 602 - Oral and Maxillofacial Surgery Foreign Trained DDS Course

FORT 602 - Orthodontics for Foreign Trained DDS Course  
FPDC 602 - Clinical Pediatric Dentistry  
FPER 602 - Advanced Placement Periodontology  
FRES 602 - Operative Dentistry (Accelerated)  
FRES 604 - Fixed Prosthodontics Dentistry (Accelerated)  
FRES 606 - Removable Prosthodontics Dentistry (Accelerated)

## **Course Descriptions**

FBID 602 - Endodontic Foreign Trained DDS Course. This course is part of the Foreign Trained Faculty DDS program at the University of Tennessee, School of Dentistry is targeted at full-time clinical faculty members who have earned a dental degree in a non-U.S. dental program. The program is designed to determine the competency level of the student in Endodontics. Consideration has been given to the participants' background knowledge obtained through previous education and demonstrated on standardized examinations. At the end of the course a passing grade will be given if clinical competency has been demonstrated at the level of a new graduating student doctor. Any applicant in this program who holds a degree or certificate from an ADA-accredited graduate endodontics program will be exempted from this course.

FBID 604 - Oral Diagnosis Foreign Trained DDS Course. This course is part of the Foreign Trained Faculty DDS program at the University of Tennessee College of Dentistry. It is designed for full-time faculty members who have earned a dental degree in a non-U.S. dental program. The course is designed to determine the competency level of the faculty member in Oral Diagnosis. The candidate will demonstrate competence in oral diagnosis, treatment planning, exposure and interpretation of radiographs, and diagnosis and management of dental emergencies. Experience is obtained by treatment of patients in the Oral Diagnosis Clinic. Consideration has been given to the participants' background knowledge obtained through previous education and as demonstrated on standardized examinations. At the end of the course a passing grade will be given if competency has been demonstrated at the level of a graduating student doctor of the College of Dentistry.

FBID 606 - Oral and Maxillofacial Pathology Foreign Trained DDS Course. This course is part of the Foreign Trained Faculty DDS program at the University of Tennessee, School of Dentistry. It is designed for full-time faculty members who have earned a dental degree in a non-U.S dental program. The program is designed to determine the competency level of the student in Oral and Maxillofacial Pathology. The candidate will demonstrate competence in the appropriate terminology and working concepts of the epidemiology, etiology, pathogenesis, clinical signs and symptoms, histology, radiographic appearance (if applicable), treatment, and prognosis of oral and maxillofacial lesions. Consideration has been given to the participants' background knowledge obtained through previous education and as demonstrated on standardized examinations. At the end of the course a passing grade will be given if competency has been demonstrated at the level of a new graduating student doctor. Any applicant in this program who holds a degree or certificate from an ADA-accredited graduate Oral and Maxillofacial Pathology program will be exempted from this course.

FOMS 606 - Oral and Maxillofacial Surgery Foreign Trained DDS Course. This course is part of the Foreign Trained Faculty DDS program at the University of Tennessee, College of Dentistry. It is available to full-time clinical faculty members who have earned a dental degree in a non-U.S. dental program. The program is designed to determine the competency level of the student in oral and maxillofacial surgery. Consideration is given to the participants' background knowledge obtained through previous education and demonstrated on standardized examinations. At the end of the course a passing grade will be given if clinical competency has been demonstrated at the level of a new graduating student doctor. Any applicant in this program who holds a degree or certificate from an ADA-accredited graduate oral and maxillofacial surgery program will be exempted from this course.

FORT 602 – Orthodontics for Foreign Trained DDS Course. This course, as part of the Foreign Trained Faculty DDS program at the University of Tennessee School of Dentistry is targeted at full-time clinical faculty members who have earned a dental degree in a non-U.S. dental program. The program is designed to determine the competency level of the student in Orthodontics. Consideration has been given to the participant's background knowledge obtained through previous education and demonstrated on standardized examinations. At the end of the course a passing grade will be given if clinical competency has been demonstrated at the level of a new graduating student doctor. Any applicant in this program who holds a degree or certificate from an ADA-accredited graduate orthodontics program will be exempted from this course.

FPDC 602 - Clinical Pediatric Dentistry. This course provides the individual with the clinical experience necessary to manage the diagnostic, prevention and treatment needs of the pediatric patient. Emphasis is given to detailed case workup, analysis of dental problems, provision of preventive services and comprehensive dental treatment, management of behavior, and evaluation of post-treatment results.

FPER 602 - Advanced Placement Periodontology. This course provides the opportunity for an advanced placement applicant to demonstrate their clinical competency in the examination, diagnosis and treatment planning, periodontal instrumentation and disease control evaluation of chronic periodontitis patients.

FRES 602 - Operative Dentistry (Accelerated). This is a course in which the student reviews the principles of operative dentistry. Diagnosis, treatment planning and technical procedures are covered.

FRES 604 - Fixed Prosthodontics Dentistry (Accelerated). This is a course in which the student reviews the principles of fixed prosthodontics. Diagnosis, treatment planning and technical procedures are covered along with the responsibilities of the dentist and laboratory technician.

FRES 606 - Removable Prosthodontics Dentistry (Accelerated). This is a course in which the student reviews the principles of removable complete and partial prosthodontics. Diagnosis, treatment planning and technical procedures are covered along with the responsibilities of the dentist and laboratory technician.

## **Advanced Dental Education Programs**

The College of Dentistry offers advanced postdoctoral education in the Departments of Oral and Maxillofacial Surgery, Periodontology, Pediatric Dentistry, Prosthodontics and Orthodontics that satisfy the educational requirements of the respective specialty boards. The Master of Science degree is awarded at the completion of the requirements of the Graduate Orthodontic Program, Prosthodontic Program and Periodontics Program and may be granted at the end of the program in Pediatric Dentistry. A certificate of proficiency is awarded following completion of the program in Oral and Maxillofacial Surgery and for non-masters students in Pediatric Dentistry. Course work for non-degree and non-specialty students may be provided in special circumstances.

### **Advanced Education in General Dentistry Program**

A one-year Advanced Education in General Dentistry (AEGD) Program is operated at the University Dental Practice, 910 Union Avenue, Suite 608, Memphis, TN and is a component of the College of Dentistry, University of Tennessee Health Science Center. The AEGD program is one of the clusters of programs administered by Lutheran Medical Center, Brooklyn, New York. For an application and information, call Dr. Anna D'Emilio at 718-630-8901 or Dr. Steven Cloyd at 901-448-7196.

### **Graduate Orthodontic Program**

The graduate program in orthodontics extends for a minimum of thirty-four months. Continuous full-time attendance is a requisite for the course of instruction that leads to a Master of Dental Science degree. Not more than four Masters' students are selected for matriculation each August. Students admitted to the program will be expected to demonstrate clinical proficiency in orthodontics and complete a thesis that is based on original research, demonstrates individual thought, and is of substantive literary and scientific merit. The National Resident Match Program is utilized in the selection of students.

#### **FIRST YEAR CURRICULUM**

##### **Fall Semester**

DSCI 659 - Radiology and Cephalometrics  
ORTH 655 - Clinical Specialty Seminars I  
ORTH 786 - Scientific Writing: Thesis  
ORTH 840 - Special Topics  
ORTH 857 - TMD and Occlusal Concepts  
ORTH 858 - Orthodontic History and Ethics  
BIOE 811 - Biostatistics for the Health Sciences I

##### **Winter/Spring Semester**

DSCI 600 - Head and Neck Anatomy  
DSCI 610 - Graduate Oral Biology  
DSCI 653 - Human Growth and Development  
ORTH 667 - Clinical Specialty Seminars II  
ORTH 755 - Craniofacial Growth



ORTH 785 - Scientific Writing: Thesis Protocol  
ORTH 789 - Independent Research  
ORTH 840 - Special Topics  
ORTH 856 - Craniofacial Anomalies

## **SECOND YEAR CURRICULUM**

### **Summer/Fall Semester**

DSCI 705 - Advanced Oral and Maxillofacial Pathology  
DSCI 717 - Orthodontics-Periodontics Seminar  
ORTH 762 - Biomaterials for Orthodontics  
ORTH 767 - Clinical Specialty Seminars III  
ORTH 785 - Scientific Writing: Thesis Protocol  
ORTH 840 - Special Topics  
ORTH 895 - Independent Research

### **Winter/Spring Semester**

ORTH 768 - Clinical Specialty Seminars IV  
ORTH 786 - Scientific Writing: Thesis  
ORTH 840 - Special Topics  
ORTH 896 - Independent Research  
LBC 711 - Effective Oral Communication Skills

## **THIRD YEAR CURRICULUM**

### **Summer/Fall Semester**

DSCI 800 - Thesis  
ORTH 867- Clinical Specialty Seminars V  
ORTH 840 - Special Topics

### **Winter/Spring Semester**

DSCI 800 - Thesis  
ORTH 840- Special Topics  
ORTH 868 - Clinical Specialty Seminars VI  
ORTH 888 - Scientific Writing: The Journal Article

## **Course Descriptions**

DSCI 659 - Radiology and Cephalometrics. The course provides a thorough understanding of craniofacial radiographic techniques with emphasis on cephalometric roentgenography. The course is designed to acquaint the student with the use of radiographs, radiation hygiene, radiographic evidence of pathology, and cephalometric techniques to assure proficiency in technical skills and in interpretation as needed for diagnostic procedures. This course consists of lecture and laboratory instruction.

ORTH 655 - Clinical Specialty Seminars I. This course is a companion to clinical training in orthodontics and involves faculty and student evaluations of historically significant as well as contemporary orthodontic literature. All of the current research articles in the key journals in orthodontics are reviewed as they are published. Key historical literature based on readings compiled by the faculty is presented in lecture

format by the graduate students. The students are also exposed to the historical development of orthodontics, additional treatment philosophies through guest speakers, and new developments in treatment.

ORTH 786 - Scientific Writing: Thesis. The theory and practice of writing a scientifically based thesis are presented. The purpose, structure, and style of all the parts of a thesis are described. The practical application of this series of lectures is the development of the student's thesis.

ORTH 840 - Special Topics. Directed readings or special course in topics of current interest. The student can select a specific topic. Approval must be obtained from student's advisor and course instructor prior to enrollment.

ORTH 857 - TMD and Occlusal Concepts. Orthodontic treatment has many ramifications for the stomatognathic system. The temporomandibular joint depends on proper occlusion for health and function. This course requires the student to read the appropriate literature, understand the intricacies of the interrelationship of the occlusion and the TMJ, and apply these principles to the correction of orthodontic malocclusion.

ORTH 858 - Orthodontic History and Ethics. This course is an introduction to the history of the development of the specialty of orthodontics with emphasis on the personalities involved in the development and evolution of the specialty. There are also ethical dilemmas in orthodontics that are discussed and studied.

BIOE 811 - Biostatistics for the Health Sciences I. This UTK "web based" course includes descriptive statistics, estimation, and one and two sample hypothesis testing, including paired and unpaired situations. Instruction includes assisting the student attain mastery - level skill in data entry and use of SAS software system for statistical analysis of data on the UT mainframe. September through December.

DSCI 600 - Head and Neck Anatomy. Detailed study of anatomic structures fundamental to dental specialty training, principally through prosections and dissections. Emphasis is on functional (rather than architectural) relationships as they relate to growth, development, and clinical treatment. Included are lectures on osteology of the skull, innervation and blood supply of the face, muscles of facial expression and mastication, and anatomy of the oral cavity. February and March.

DSCI 610 - Graduate Oral Biology. This course provides the students in specialty programs with an overview of the biology of oral tissue functions. The physiological and biochemical basis of normal and pathologic processes in oral diseases are emphasized. Topics include; the role of the extracellular matrix in maintaining oral tissue functions during normal development and in the pathogenesis of oral and maxillofacial disorders; developmental aspects and cell interactions in the dentition and Orthodontic tooth movement; wound healing, joint destruction, and bone resorption; The course also provides an analysis of the conflict between oral pathogens and host defense systems; the role of saliva and cells of the immune system during infection, inflammation, healing and repair. Basic concepts in neuromuscular physiology including reflexes and pain in the oral cavity are emphasized. Discussion of the role of neurotrophic factors in the development of teeth and peripheral taste system. Tooth

innervation and the development of therapies for idiopathic dental pain. A brief exposure to oral cancer biology; mechanism of tumor progression, and Biomarkers in Oral Cancer are discussed.

DSCI 653 - Human Growth and Development. This course provides an overview of the events of human growth and the analytic approaches used to study growth, particularly from birth to adulthood. Discussions center around the nature of growth, mechanisms of growth, general body development, and genetic and environmental influences on growth. Emphasis is given to the head and neck region. First half of semester.

ORTH 667 - Clinical Specialty Seminars II. This course is a companion to clinical training in orthodontics and involves faculty and student evaluations of historically significant as well as contemporary orthodontic literature. All of the current research articles in the key journals in orthodontics are reviewed as they are published. Key historical literature is presented in lecture format by the graduate students based on readings compiled by the faculty. The students are also exposed to the historical development of orthodontics, additional treatment philosophies through guest speakers, and new developments in treatment.

ORTH 755 - Craniofacial Growth. Topics in growth malformations and dysplasias are presented. The etiology, presentation, differential diagnosis, and orthodontic treatment of comparatively common pharyngeal arch syndromes and sequences are described, with extended discussion of cleft lip and palate. Second half of semester.

ORTH 785 - Scientific Writing: Thesis Protocol. The theory and practice of preparing a sound protocol preparatory to thesis-level research is discussed in detail. Various research designs are discussed. Additionally, style and content of a grant proposal are reviewed.

ORTH 789 - Independent Research. This course encompasses the activities necessary to conduct an original research project pertinent to the general field of craniofacial biology or the specific discipline of orthodontics. It involves the development of a problem, the writing of a formal research proposal including a full literature review, statement of material and methods, and the execution of the research and appropriate analysis and interpretation of data. Second half of semester.

ORTH 856 - Craniofacial Anomalies. The orthodontic graduate student must be trained to deal with and to competently treat patients who present with various skeletal and dental anomalies. This course's purpose is to cover the literature on the various syndromes and developmental anomalies that affect the teeth and the face. Visiting lecturers from across the spectrum of healthcare delivery address the class and explain the intricacies of dealing with these problems from the perspective of their respective specialty.

DSCI 705 - Advanced Oral and Maxillofacial Pathology. This is a course on pathology of the jaws and contiguous soft tissues and their relationship to systemic disease. Special emphasis is placed on developing a logical approach to clinical, roentgenographic, and histopathologic diagnosis; the relationships between local and systemic disease; and consideration for appropriate treatment. July and August.

DSCI 717 - Orthodontics-Periodontics Seminar. This seminar course is conducted by members of the Orthodontics and Periodontology faculties. Included are lectures on the interrelationships of orthodontic and periodontic approaches to common treatment situations. Emphasis is placed on the basic science mechanisms underlying periodontic and orthodontic therapies. Selected literature of common interest to the students of Orthodontics and Periodontics is reviewed. Graduate students present patient records for diagnosis and treatment planning as well as the records of patients treated in an interdisciplinary manner. The purpose of this seminar is to encourage greater interaction and understanding between the orthodontist and the periodontist, including the identification of patients to be treated jointly by graduate students in orthodontics and periodontics. July through September.

ORTH 762 - Biomaterials for Orthodontics. This course provides the student with a basic knowledge of the materials used in orthodontics. New developments in materials science and their relationships to the properties of materials important for orthodontic use are reviewed. The course requires successful completion of a research project and reporting this project in a formal report. September through December.

ORTH 767 - Clinical Specialty Seminars III. This course is a companion to clinical training in orthodontics and involves faculty and student evaluations of historically significant as well as contemporary orthodontic literature. All of the current research articles in the key journals in orthodontics are reviewed as they are published. Key historical literature is presented in lecture format by the graduate students based on readings compiled by the faculty. The students are also exposed to the historical development of orthodontics, additional treatment philosophies through guest speakers, and new developments in treatment.

ORTH 895 - Independent Research. This course involves performance of an original research project leading to completion of the MS thesis.

ORTH 768 - Clinical Specialty Seminars IV. This course is a companion to clinical training in orthodontics and involves faculty and student evaluations of historically significant as well as contemporary orthodontic literature. All of the current research articles in the key journals in orthodontics are reviewed as they are published. Key historical literature is presented in lecture format by the graduate students based on readings compiled by the faculty. The students are also exposed to the historical development of orthodontics, additional treatment philosophies through guest speakers, and new developments in treatment.

ORTH 896 - Independent Research. This course involves performance of an original research project leading to completion of the MS thesis.

LBC 711 - Effective Oral Communication. Skills in oral presentation of scientific data will be developed through student reports from the appropriate literature with evaluation of performance emphasizing improvement in communication skills. Each student will make two presentations which are videotaped and critiqued by the class and instructors. Preparation of effective visuals will be required as part of each presentation. Each

student must obtain agreement from a faculty member who will serve as content expert and who must attend the student's two presentations.

DSCI 800 - Thesis. Upon achieving candidate status, this course must be elected. The preparation of the thesis is finalized, the results presented, and the oral defense is conducted under this course number.

ORTH 867 - Clinical Specialty Seminars V. This course is a companion to clinical training in orthodontics and involves faculty and student evaluations of historically significant as well as contemporary orthodontic literature. All of the current research articles in the key journals in orthodontics are reviewed as they are published. Key historical literature is presented in lecture format by the graduate students based on readings compiled by the faculty. The students are also exposed to the historical development of orthodontics, additional treatment philosophies through guest speakers, and new developments in treatment.

ORTH 868 - Clinical Specialty Seminars VI. This course is a companion to clinical training in orthodontics and involves faculty and student evaluations of historically significant as well as contemporary orthodontic literature. All of the current research articles in the key journals in orthodontics are reviewed as they are published. Key historical literature is presented in lecture format by the graduate students based on readings compiled by the faculty. The students are also exposed to the historical development of orthodontics, additional treatment philosophies through guest speakers, and new developments in treatment.

ORTH 888 - Scientific Writing: The Journal Article. Students receive instruction on writing a research article and preparing the manuscript for submission to a professional journal. Topics consist of essential tools for scientific writing, the structural components of a journal article, writing techniques, design of tables and illustrations, critical and editorial scrutiny of the manuscript, and the journal publishing process. The completed, publishable manuscript becomes an appendix to the student's thesis. Prerequisite: possession of a recently completed research project conducted in-residence (i.e., the graduate student's thesis) judged by the supervising faculty member to be worthy of publication.

## **Pediatric Dentistry Programs**

### **Certification Program in Pediatric Dentistry**

The College of Dentistry, department of pediatric dentistry offers a postdoctoral program in pediatric dentistry designed to meet the needs of practitioners who wish to specialize in the practice of dentistry for children. The course extends over 24 months of postdoctoral study in advanced techniques and clinical procedures.

Continuous fulltime attendance is a requisite of the course that leads to a Certificate of Specialty in Pediatric Dentistry. Successful completion of the program renders the student educationally qualified for specialty examination by the American Board of Pediatric Dentistry. On completion of an optional third year and fulfillment of the thesis requirement, students can receive the Master of Dental Science degree (M.D.S.). The

National Resident Match Program is utilized in the selection of residents. The curriculum for this course of study includes head and neck anatomy, dental pediatrics, cephalometrics, growth and development, genetics, biostatistics, embryology and histology, child behavior management, oral pathology, pediatrics, experimental design, dental materials, pharmacology, nutrition, microbiology and immunology, pediatric dental laboratory techniques, and clinical pediatric dentistry. The student also receives training in the treatment of non-ambulatory patients under general anesthesia at Crittendon Hospital and Le Bonheur Children's Medical Center. A one-month rotation in general anesthesia, pediatric medicine and 24 months on call in the emergency room, on a rotation basis, is also required. Each student must complete a research project and paper, with data collection and analysis, and suitable for publication, during the 24 months in the program. The clinical setting of the program is located in Crittendon Hospital, with additional clinical assignments in the College of Dentistry, St. Jude Children's Research Hospital and Le Bonheur Children's Medical Center. Students take part in many activities at all locations and are expected to enter all phases of these assignments. Six students are selected for matriculation each July 1st. Postdoctoral students pursuing the Masters Degree receive a tuition waiver.

**A Certificate of Specialty in Pediatric Dentistry will be awarded on the satisfactory completion of the 24 months of study.**

### **FIRST YEAR CURRICULUM**

#### **Summer/Fall Semester**

DSCI 600 - Anatomy  
DSCI 603 - Biostatistics  
PEDI 622 - Dental Pediatrics I  
PEDI 648 - Case Analysis and Presentation I  
PEDI 635 - Pediatric Dental Research I  
PEDI 646 - Literature Review I  
DSCI 659 - Radiology and Cephalometrics  
DSCI 713 - Microbiology and Immunology  
DSCI 705 - Advanced Oral Pathology  
DSCI 602 - Oral Embryology and Histology

#### **Winter/Spring Semester**

DSCI 609 - Pharmacology  
PEDI 623 - Dental Pediatrics II  
PEDI 636 - Pediatric Dental Research II  
PEDI 647 - Literature Review II  
PEDI 649 - Case Analysis and Presentation II  
DSCI 653 - Craniofacial Growth and Development  
PERI 604 - Experimental Design and Research Methods  
ORTH 856 - Craniofacial Anomalies

### **SECOND YEAR CURRICULUM**

#### **Summer/Fall Semester**

PEDI 722 - Dental Pediatrics III  
PEDI 746 - Literature Review III

PEDI 748 - Case Analysis and Presentation III  
PEDI 735 - Pediatric Dental Research III

### **Winter/Spring Semester**

PEDI 723 - Dental Pediatrics IV  
PEDI 746 - Literature Review IV  
PEDI 748 - Case Analysis and Presentation IV  
PEDI 735 - Pediatric Dental Research IV

## **Masters of Science Degree in Pediatric Dentistry**

For students successfully completing the certificate program interested in additional research training, a third year of full-time study (12 months) is available leading to the Master of Science Degree in Pediatric Dentistry. The degree will be awarded on completion of an original research project together with the writing of a thesis on the investigation. Although the student will maintain clinical skills through active patient care during this time, the emphasis of the third year will be gaining experience in research methodologies and interdisciplinary research activities. A wide range of latitude will be available for students during the research year in that the program will be suited to the individual research interests of each student. Students wishing to pursue the Masters Degree must inform the program director and chairman at the beginning of the second year of postdoctoral study. This will allow the student time to develop a research protocol leading to their thesis research.

### **FIRST YEAR CURRICULUM**

**(Follows the curriculum for Certificate Program in Pediatric Dentistry)**

### **SECOND YEAR CURRICULUM**

**(Follows the curriculum for Certificate Program in Pediatric Dentistry)**

### **THIRD YEAR CURRICULUM**

#### **Summer/Fall Semester**

PEDI 850 - Thesis I  
DSCI 602 - Oral Embryology and Histology

#### **Winter/Spring Semester**

PEDI 851 - Thesis II  
DSCI 610 - Oral Biology

## **Course Descriptions**

DSCI 600- Anatomy. A study of the gross structure of the head and neck by a systematic dissection, supplemented by lectures and demonstrations.

DSCI 602 - Oral Embryology and Histology. Lectures and discussions on the embryological development of the face and dental structures. Histophysiology of enamel, dentin, pulp, caries, and pulpal disease. Study of the periodontal diseases, oral mucosa and tongue.

DSCI 603 - Biostatistics. This course in biostatistics is designed to introduce the student to widely used methods for the analysis of experimental and observational data with orientation toward statistical inference from dental research.

DSCI 705 - Advanced Oral Pathology. This course deals with the nature and cause of diseases of the tissues of the mouth and teeth, thereby establishing a comprehensive background for the field of oral diagnosis and treatment as applied to Pediatric Dentistry. Etiological factors are stressed. The course is presented by lectures and slides.

DSCI 653 - Craniofacial Growth and Development. Emphasis in this course is given to exploring the basic qualitative, quantitative and integrative changes that take place during postnatal craniofacial growth and development. The Handbook of Facial Growth by D.H. Enlow is used as the text but is augmented by other reading.

PERI 604 - Experimental Design and Research Methods. This course is an introduction to research, including methods of design experiments and evaluating the experimental data.

DSCI 609 - Pharmacology. Recent advances in pharmacology particularly as related to the pediatric patient are discussed in this course.

PEDI 622 - Dental Pediatrics I. The course entails discussions pertaining to the physical, craniofacial, and oral development of the child. Fluoride therapy, and childhood injury and prevention is presented. The student is also introduced to hospital and medical emergency protocol.

PEDI 622 - Dental Pediatrics II. The course entails discussions pertaining to the emotional, cognitive, language, and social changes in the maturing child. The concepts of interceptive guidance and orthodontics are introduced. Theory regarding nonpharmacologic behavior management is presented.

PEDI 622 - Dental Pediatrics III. The course entails discussions pertaining to genetics, physically and mentally disabled patient and/or associated craniofacial syndromes. Indications and preparation for pharmacologic behavior management is introduced.

PEDI 622 - Dental Pediatrics IV. Recognition of infection, differential diagnosis for disease and treatment of infectious diseases, pediatric dental techniques and appliances for physical tissue destruction, and nutrition are presented.

DSCI 659 - Radiology and Cephalometrics. This course provides a thorough understanding of craniofacial radiographic techniques with emphasis on cephalometric roentgenography. This course is designed to acquaint the student with the use of x-rays, radiation hygiene, pathology and cephalometric techniques to assure proficiency in technical skills and in interpretation as needed for diagnostic procedures. This course includes both lecture and laboratory instruction.

PEDI 646, 647, 746, and 747 - Literature Review I, II, III, IV. The literature review is designed to keep the postdoctoral student familiar with the current scientific literature as



well as to prepare the individuals for board certification. Topics that are addressed include physical, psychological and social child development, behavior management, infant oral health, oral prevention of disease and trauma, histophysiology of pulp and oral disease, pain and anxiety control, dental materials, management of the developing dentition, management of the medically compromised patient, trauma, and medical ethics.

PEDI 648, 649, 748 and 749 - Case Analysis and Presentations I, II, III and IV. The student presents patient clinical examination records, models, radiographs and other diagnostic aids utilized to form a diagnosis and treatment plan. The diagnosis and treatment plan is presented to faculty and colleagues for critical review and analysis. Pediatric dental laboratory techniques and clinical dentistry are introduced to the postgraduate student.

PEDI 635 - Pediatric Dental Research I. The student is required to complete a research project in the field of pediatric dentistry and write a publishable research paper prior to program graduation. This course teaches the theory and practice of investigative research studies including methods for designing experiments, evaluating experimental data and writing a research proposal.

PEDI 636 - Pediatric Dental Research II. This course encompasses the activities necessary to write a formal research proposal including a full literature review, statement of material and methods, appropriate data analysis techniques and associated resource requirements.

DSCI 713 - Microbiology and Immunology. The ten hour seminar is conducted with the assistance of basic science faculty members with expertise in the areas of microbiology, allergy and immunology. Included are lectures on classification, morphology, Gram staining, attachment, structure, culture, metabolism, identification and colonization of microorganisms, periodontopathic bacteria, bacterial metabolism, virulence factors and attachment mechanisms. Host defense presentations include lectures on 'T' and 'B' cells, antigens, mitogens, antibody mediated reactions, humoral and cell mediated interactions, cytokines, laboratory immunologic assays and their clinical significance.

ORTH 856 - Craniofacial Anomalies. The pediatric graduate student must be trained to deal with patients who present with various skeletal and dental anomalies. This course's purpose is to cover the literature on various syndromes and developmental anomalies that affect the teeth and the face. Visiting lecturers from across the spectrum of healthcare delivery address the class and explain the intricacies of dealing with these problems from the perspective of their respective specialty.

PEDI 735 - Pediatric Dental Research III. This course encompasses the activities necessary to conduct a formal research investigation in the field of pediatric dentistry and prepare a publishable paper based on the findings of the investigation

PEDI 736 - Pediatric Dental Research IV. This course encompasses the activities necessary to complete a formal research investigation in the field of pediatric dentistry and prepare a publishable paper based on the findings of the investigation.

PEDI 850 - Thesis I. This course focuses on the development of a research protocol and project completion leading to the thesis required for the Master of Science Degree

PEDI 851 - Thesis II. This course focuses on the development of a research protocol and project completion leading to the thesis required for the Master of Science Degree. The preparation of the thesis is finalized and the oral defense is conducted.

DSCI 610 - Graduate Oral Biology. This course provides the graduate dental student expanded knowledge of physiological and biochemical principles in and about oral function. Topics are selected to develop an awareness of the oral environment as an integral part of a whole unit of function. Lectures are concerned with respiration, speech, deglutition, mastication, neurophysiology, bone and joint physiology and kinesiology particularly with regard to oral applications.

## **Oral and Maxillofacial Surgery Residency Program**

The UT Health Science Center, College of Dentistry offers a formal four-year Advanced Oral and Maxillofacial Surgery training program (an optional six-year program leading to an MD degree is available in specific cases) which is officially affiliated with the Memphis Veterans Affairs Medical Center and the Regional Medical Center at Memphis (THE MED). Le Bonheur Children's Medical Center, Baptist East Memorial Hospital, and Methodist University Hospital provide the other primary sites of activity for the program. The four-year program is academically divided into eight six-month terms. The Commission on Dental Education of the American Dental Association authorizes acceptance of two trainees each year. The National Resident Match Program is utilized in the selection of residents.

The faculty of the Department of Oral and Maxillofacial Surgery of the College of Dentistry is responsible for the direction and supervision of both the clinical services and didactic aspects of the program. Two generous endowment programs provide resources for additional program support. Physical facilities are exceptionally favorable for developing broad experience with balanced emphasis on the total scope of oral and maxillofacial surgery as practiced today and perceived for the near future. The facilities include a six-chair private practice module in a suite with supportive x-ray, recovery, consultation, laboratory and instrument rooms, and a seven-chair hospital outpatient clinic in a separate facility. Cases scheduled for general operating room suites follow the same protocol as other surgical specialties. Emergency services are provided in busy emergency rooms and at a regional Level I trauma center. The curriculum has been developed to relate basic science principles to clinical application through the mechanism of rotation with other disciplines, regularly scheduled seminars, and conferences. Special courses are conducted for anatomy, experimental design, oral pathology and biostatistics. Regular rotation to other disciplines includes general anesthesia, surgery, internal medicine, and trauma.

Residents are certified in Advanced Cardiac Life Support and Advanced Trauma Life Support during the program. The trainee's clinical involvement is progressive from simple to complex surgical procedures.

The first year is more heavily didactic (anatomy and physical diagnosis) with rotations on the medicine service to develop proficiency in physical diagnosis and patient evaluation. Six months of the second year are devoted entirely to general anesthesia. The remainder of the second year has increased requirements relating to advanced dentoalveolar and impaction surgery and complicated trauma. Clinical applications in these areas continue in the third year with added emphasis on orthognathic surgery, implantology and other pre-prosthetic surgery. Major operating room oral and maxillofacial surgery and administrative responsibilities of a chief resident make up the last year.

A stipend is granted the trainee commensurate with the level of post-doctoral training and equal to residents of other services at the same level at the University of Tennessee Health Science Center.

### **FIRST YEAR CURRICULUM**

OMSU 600 - Head and Neck Anatomy (927 Anat)  
OMSU 601 - Oral Pathology  
OMSU 618 - Orthognathic Case Evaluation/Conference  
OMSU 620 - Internal Medicine Rotation  
OMSU 623 - Physical Diagnosis  
OMSU 624 - Radiography  
OMSU 625 - Outpatient Clinic  
OMSU 626 - V.A. Rotation  
OMSU 627 - Dental School Clinic  
OMSU 628 - Grand Rounds  
OMSU 629 - Literature Review Seminar  
OMSU 632 - Oral and Maxillofacial Pathology Rotation  
OMSU 631 - General Oral Surgery Conference  
OMSU 603 - Biostatistics  
OMSU 604 - Experimental Design

### **SECOND YEAR CURRICULUM**

OMSU 701 - Oral Pathology  
OMSU 718 - Orthognathic Case Evaluation/Conference  
OMSU 721 - Trauma Center Rotation  
OMSU 724 - Radiography  
OMSU 725 - Outpatient Clinic  
OMSU 727 - Dental School Clinic  
OMSU 728 - Grand Rounds  
OMSU 729 - Literature Review Seminar  
OMSU 731 - General Oral Surgery Conference  
OMSU 732 - General Anesthesia Rotation

### **THIRD YEAR CURRICULUM**

OMSU 801 - Oral Pathology  
OMSU 818 - Orthognathic Case Evaluation/Conference  
OMSU 824 - Radiography  
OMSU 825 - Outpatient Clinic  
OMSU 827 - Dental School Clinic

OMSU 828 - Grand Rounds  
OMSU 829 - Literature Review Seminar  
OMSU 831 - General Oral Surgery Conference  
OMSU 850 - Otolaryngology Rotation

#### **FOURTH YEAR CURRICULUM**

OMSU 901 - Oral Pathology  
OMSU 918 - Orthognathic Case Evaluation/Conference  
OMSU 924 - Radiography  
OMSU 925 - Outpatient Clinic  
OMSU 927 - Dental School Clinic  
OMSU 928 - Grand Rounds  
OMSU 929 - Literature Review Seminar  
OMSU 931 - General Oral Surgery Conference  
OMSU 950 - Elective Surgical Rotation

#### **Course Descriptions**

OMSU 600 - Head and Neck Anatomy (927 Anat). A study of gross structures of the head and neck by systematic dissection supplemented by lectures and demonstrations oriented toward practical surgical applications.

OMSU 601 - Oral Pathology. A study of lesions and diseases of the jaws and contiguous soft tissue. A presentation of facts and concepts regarding diseases of the oral cavity and the relationships existing between local and systemic disease with consideration for appropriate treatment.

OMSU 603 - Biostatistics. This course is designed to introduce the student to widely used methods for the analysis of experimental and observational data with orientation toward statistical inference from dental and medical research.

OMSU 604 - Experimental Design. This course is an introduction to research, including methods of designing experiments and evaluating experimental data.

OMSU 701 - Oral Pathology. A study of the latest concepts of immunopathology with specific emphasis on diseases and emergencies precipitated in patients with congenitally inadequate or suppressed immunologic responses. A presentation of current understanding of the mechanism, etiology, pathogenesis, histopathology, and treatment of these clinical entities.

OMSU 801, 901 - Oral Pathology. A clinicopathology conference of actual and practical cases presented with maximum resident participation in problem solving of clinical nature.

OMSU 618, 718, 818, 918 - Orthognathic Case Evaluation/Conference. A formal conference meets weekly for one hour. Orthodontic and prosthodontic cases requiring advanced surgical assistance to obtain desired results are studied in depth.

OMSU 620 - Internal Medicine Rotation. This is a special rotation of two months duration on general medicine service. Emphasis is placed on cardiovascular evaluation and considerations that are pertinent when oral surgery procedures may be compromised by systemic disease and concomitant medications.

OMSU 721 - Trauma Center/Surgery Rotation. This four-month rotation is included in the second year curriculum. A well equipped Level I trauma center exists within the Regional Medical Center. Rotation through this facility follows the anesthesia rotation. Triage and initial management of the acutely injured patient are emphasized. Additionally, surgical and postoperative management of the patient with multiple systems injury is a portion of this rotation. Resident and teaching staff trauma surgeons provide supervision.

OMSU 623 - Physical Diagnosis. This course is taken with medical students during the fall and winter terms. It is an ongoing course of approximately 4 hours weekly and of 6 months duration. Lectures and patient evaluation on hospital wards are the methods of presentation.

OMSU 624, 724, 824, 924 - Radiography. Technological proficiency and interpretation of extra-oral radiographic procedures of the head and its temporomandibular joint as they relate to oral surgery are the goals of this course. Special intra-oral techniques are also presented. Slides and lecture format with actual resident participation are utilized.

OMSU 625, 725, 825, 925 - Outpatient Clinic. The resident is assigned to the outpatient clinic of the Regional Medical Center where his duties include patient workup for in-hospital procedures, postoperative follow-up of in-house cases done in the major operating room suite, exodontia, management of infection, and minor oral surgery procedures. By daily and weekend rotation the emergency room is covered 24 hours a day.

OMSU 626 - V.A. Rotation. This is a rotation of six months duration during the first year of residency training. Office-type surgical procedures are practiced in a clinical setting. Additionally, the resident is introduced to operating room protocol and practice.

OMSU 627,727, 827, 927 - Dental School Clinic. The resident is assigned to the dental school graduate oral surgery clinic at various times where advanced experience is gained in impaction surgery and office-type procedures in the order of alveoloplasty, cyst, and minor tumor removal.

OMSU 628, 728, 828, 928 - Grand Rounds. The resident meets this two-hour biweekly and one hour daily presentation of current cases under treatment in the hospital, while assigned to the Oral and Maxillofacial Surgery Service. Included with pre-surgical evaluation, bedside exam, and postoperative progress is long-term follow-up and recall of patients.

OMSU 629, 729, 829, 929 - Literature Review Seminar. This two-hour per month seminar extends through all eight terms. Periodically, each member of the house staff is responsible for a topic and its review in the literature commensurate with level of

training. Experience in evaluation of written material and verbal presentation before a group is the purpose of this seminar.

OMSU 631, 731, 831, 931 - General Oral Surgery Conference. This is a broad scope, general coverage conference relating to concepts, philosophies, techniques, policies and ethical considerations of oral surgery practice. It is a one-hour per week input from various staff members continuing throughout the entire program.

## **Periodontology Program**

The University of Tennessee, in conjunction with the Memphis VA Hospital, offers a residency in Periodontics providing advanced education and training in preparation for the practice of the specialty of Periodontics. The training program complies with the standards established by the Council on Dental Education of the American Dental Association and qualifies candidates for specialty examination by the American Board of Periodontology. Additionally, periodontics residents must be enrolled in the Masters of Dental Science Program of the College of Graduate Health Sciences.

The course of study extends over a period of 36 months. This period is consistent with the expanding scope and knowledge in periodontics and training requirements set forth by the American Academy of Periodontology and the American Dental Association. Continuous full-time attendance is a requisite for the course of instruction that leads to a Master of Dental Science degree. Students must complete a thesis that is based on original research, demonstrates individual thought, and is of substantive literary and scientific merit.

The curriculum has been developed to relate basic science principles meaningfully to the practice of periodontics. The program emphasis is on clinical application, with significant didactic content and research activity maintained over a thirty-six month period. Direct patient contact constitutes approximately 50% of the program activity. Special courses are conducted in anatomy, histology, oral pathology, pharmacology, biostatistics, experimental design and research methodology. Special seminars are conducted in immunology and microbiology coupled with current and topical reviews of the periodontal literature. Case presentation seminars are conducted on a regular basis at both University of Tennessee and The Veterans Administration Medical Center. Special rotations in general anesthesia and internal medicine are also included. Instruction in implant therapy is also an integral part of the didactic and clinical instruction.

Two students are selected for matriculation each summer (July). A variable stipend is granted each student commensurate with their level of post-D.D.S. training, and funding level availability. Applicants are reminded that the deadline for application to the Periodontics Graduate Program is September 1.

### **FIRST YEAR CURRICULUM**

DSCI 600 - Head and Neck Anatomy (927 Anat)

DSCI 602 - Embryology and Histology

DSCI 603 - Biostatistics

PERI 604 - Experimental Design

DSCI 609 - Pharmacology  
DSCI 610 - Graduate Oral Biology  
PERI 611 - Hospital Dentistry  
PERI 613 - Microbiology and Immunology  
PERI 614/615 - Research in Periodontal Pathobiology  
PERI 621 - Introduction to Periodontal Pathobiology  
PERI 622 - Lectures in Periodontal Surgery  
PERI 625 - Case Presentation Seminar (UT)  
PERI 626 - Clinical Periodontics (UT)  
PERI 629 - Treatment Planning Seminar (V.A.)  
PERI 632 - Clinical Periodontics (V.A.)  
PERI 635 - Sedation in the Periodontal Office  
PERI 641/642 - Topical Literature Review of Periodontology Seminar  
PERI 643/644 - Review of Current Periodontal Literature Seminar

### **SECOND YEAR CURRICULUM**

DSCI 705 - Advanced Oral Pathology  
PERI 714/715 - Research in Periodontal Pathobiology  
DSCI 717 - Periodontic-Orthodontic Seminar  
PERI 725 - Case Presentation Seminar (UT)  
PERI 726 - Clinical Periodontics (UT)  
PERI 727 - General Anesthesia Rotation (V.A.)  
PERI 729 - Treatment Planning Seminar (V.A.)  
PERI 732 - Clinical Periodontics (V.A.)  
PERI 736 - Implantology  
PERI 737 - Lectures and Rotation in Internal Medicine  
PERI 741/742 - Topical Literature Review of Periodontology Seminar  
PERI 743/744 - Review of Current Periodontal Literature Seminar

### **THIRD YEAR CURRICULUM**

DSCI 800 - Thesis  
PERI 814/815 - Research in Periodontal Pathobiology  
PERI 825 - Case Presentation Seminar (UT)  
PERI 826 - Clinical Periodontics (UT)  
PERI 829 - Treatment Planning Seminar (V.A.)  
PERI 832 - Clinical Periodontics (V.A.)  
PERI 838 - Practice Management  
PERI 843/844 - Review of Current Periodontal Literature Seminar

## **Course Descriptions**

DSCI 600 - Head and Neck Anatomy (927 Anat). This is a study of gross structures of the head and neck by systemic dissection supplemented by lectures and demonstrations oriented toward practical surgical applications.

DSCI 602 - Embryology and Histology. Lectures and discussions are given on the embryological development of the face and dental structures, the histophysiology of

enamel, dentin, pulp, caries and pulpal disease. The study of the periodontal diseases, oral mucosa and tongue is covered in this course as well.

DSCI 603 - Biostatistics. This course in biostatistics is designed to introduce the resident to widely used methods for the analysis of experimental and observational data with orientation toward statistical inference from dental research.

PERI 604 - Experimental Design. This course is an introduction to research, including methods of designing experiments and evaluating experimental data.

DSCI 609 - Pharmacology. Recent advances in pharmacology particularly as related to the graduate students in dentistry are discussed in this course.

DSCI 610 - Graduate Oral Biology. This course provides the resident with an expanded knowledge of physiological and biochemical principles in and about oral function. Topics are selected to develop an awareness of the oral environment as an integral part of a whole unit of function. Lectures are concerned with respiration, speech, deglutition, mastication, neurophysiology, bone and joint physiology and kinesiology particularly with regard to oral applications.

PERI 611 - Hospital Dentistry. This ten-hour course is designed to orient the student to situations and conditions encountered in hospital patients and procedures necessary to safely evaluate and treat this population on an inpatient or outpatient basis. Procedural topics include consent, consultation, physician's orders, admission, pre-operative, postoperative and discharge notes. Medically related topics include: hemostasis and coagulation, radiation therapy of the head and neck, medical management of patients with cardiovascular disease, diabetes, pulmonary disease, liver disease, interpretation of laboratory tests, odontogenic infections, and management of dental emergencies.

PERI 613 - Microbiology and Immunology. The ten hour seminar is conducted with the assistance of basic science faculty members with expertise in the areas of microbiology, allergy and immunology. Included are lectures on classification, morphology, Gram staining, attachment, structure, culture, metabolism, identification and colonization of microorganisms, periodontopathic bacteria, bacterial metabolism, virulence factors and attachment mechanisms. Host defense presentations include lectures on 'T' and 'B' cells, antigens, mitogens, antibody-mediated reactions, humoral and cell mediated interactions, cytokines, laboratory immunologic assays and their clinical significance.

PERI 614/615, 714/715, 814/815 - Research in Periodontal Pathobiology. This course will provide each resident with the opportunity to engage in periodontal research. It may include both clinical and laboratory research, with the emphasis in one or the other research areas. Each resident will be assigned a research mentor who is trained and experienced in research methodologies and writing of scientific papers. Instruction will be given by appropriate faculty members on an individualized basis. Resident activities will include research of relevant literature, writing of appropriate literature reviews, hands on research, gathering and analysis of data, interpretation of results, drawing conclusions and writing papers appropriate for publication. The course will be integrated with the remainder of the curriculum throughout the 36 month duration of the program.



PERI 621 - Introduction to Periodontal Pathobiology. This is an overview of periodontics in a combination textbook-literature-lecture seminar format. Subject areas covered include periodontal anatomy and histology, etiology and histopathology or periodontal diseases. Clinically related seminars include examination, diagnosis, prognosis and treatment planning for the patient with periodontal disease. A variety of approaches to treatment, as well as the importance of supportive therapy for the treated patient, is emphasized. Appropriate reading material from standard textbooks and the periodontal literature is assigned for each seminar period.

PERI 622 - Lectures in Periodontal Surgery. This twenty-four hour lecture course is devoted to the indications, advantages, limitations and contraindications, as well as the technical approach to the management of periodontal diseases and conditions using standard periodontal surgical procedures.

PERI 625, 725, 825 - Case Presentation Seminar (UT). This seminar is conducted by the postgraduate and undergraduate faculty, during the three year residency, on a weekly basis. The purpose of this seminar is to allow the resident to present all relevant findings, to formulate one or more approaches to treatment, and the evaluation of therapeutic results before a critical and knowledgeable audience.

PERI 626, 726, 826 - Clinical Periodontics (UT). Approximately fifty percent of the resident's clinical time is spent in the University of Tennessee Health Science Center dental school postgraduate periodontics clinic where advanced experience is gained in the management of all types of periodontal treatment situations. Emphasis is given to detailed case workup, analysis of all dental and periodontal problems, providing experience in a wide variety of approaches to periodontal treatment, clinical and photographic documentation of all treatment procedures performed and a careful evaluation of post-treatment results, including maintenance therapy for all patients treated in the postgraduate periodontics clinic. Experience is gained in the treatment planning, placement and maintenance of dental implants, as well as various approaches to anxiety control and sedation.

PERI 629, 729, 829 - Treatment Planning Seminar (V.A.). This one hour per week seminar is conducted during all semesters of the first two years of the residency program, by staff members from the Department of Prosthodontics, General Dentistry, Oral Surgery and Periodontology. The multi-disciplinary approach to the etiology, diagnosis, prognosis, treatment planning and therapy is the purpose of this seminar.

PERI 632, 732, 832 - Clinical Periodontics (V.A.). Approximately twenty-five percent of the resident's clinical time is spent at the Veterans Administration Hospital Dental Clinic in the first two years of the residency program. Experience is gained in the treatment of all types of periodontal conditions. Emphasis is placed on evaluation and management of periodontal conditions in the medically compromised patient. Experience is also gained in the use of intravenous sedation techniques.

PERI 635 - Sedation in the Periodontal Office. This course provides an introduction to the spectrum of various methods for anxiety control and stress reduction as an adjunct to local anesthesia in the practice of periodontics. The advantages, indications, disadvantages and limitations for psychosedation, oral, rectal, intramuscular, inhalation

and intravenous sedation are presented. A review of the nature of pain and pain perception, cardiopulmonary physiology, patient physical evaluation, the pharmacology of nitrous oxide, barbiturates, benzodiazepines, opiates and reversal agents, as well as technical aspects of inhalation and intravenous sedation procedures, and the management of untoward reactions is presented. The course serves as the core for the development of clinical experience in stress reduction and management of patient anxiety in the periodontal office. It is supplemented by the various courses, seminars and rotations in anatomy, pharmacology, internal medicine and general anesthesia.

PERI 641/642, 741/742 - Topical Literature Review Seminar. This seminar is conducted weekly throughout the first two years of the residency program under the direction of the postgraduate periodontics staff. The purpose of this seminar is exposure to classic and current concepts in various subject areas, as well as written and verbal evaluation of the literature reviewed.

PERI 643/644, 743/744, 843/844 - Review of Current Periodontal Literature Seminar. This seminar is conducted weekly throughout the three year residency period. Four of the major journals devoted to periodontics are reviewed selectively. Selected articles are also reviewed from other major journals. The purpose of this seminar is to provide experience in reading, abstracting and evaluating the most recently published ideas and concepts in the field of periodontics.

DSCI 705 - Advanced Oral Pathology. This is a study of lesions and diseases of the jaws and contiguous soft tissue and consists of a presentation of facts and concepts regarding diseases of the oral cavity and the relationships existing between local and systemic disease with consideration for appropriate treatment.

DSCI 717 - Periodontic - Orthodontic Seminar. This seminar is conducted weekly during one semester of the three year residency by members of the Orthodontics and Periodontics faculties. Included are lectures on the interrelationships of orthodontic and periodontic approaches to common treatment situations. Selected literature of common interest to the students of Orthodontics and Periodontics is reviewed. Residents present cases for diagnosis and treatment planning as well as cases treated in an interdisciplinary manner. The purpose of this seminar is to encourage greater interaction and understanding between orthodontist and periodontist, including the identification of patients to be treated jointly by residents in orthodontics and periodontics.

PERI 727 - General Anesthesia Rotation (V.A.). This is a variable rotation period during which the resident gains experience in intravenous sedation and general anesthesia for all types of operations performed by general surgery. Supervision is by staff anesthesiologists. Didactic presentations by the anesthesiology staff include medicine, technology, pharmacy, physiology and physical diagnosis.

PERI 736 - Implantology. This course serves as an introduction to clinical implant therapy provided through a series of lectures and reviews of the "classic" and current implantology literature. Included are reviews of the history of dental implants, implant materials, bone physiology, physical and psychological patient evaluation, surgical and prosthetic treatment planning, surgical and prosthetic case management, the role of occlusion and inflammation, and the importance of ongoing supportive care in long term

clinical success in implant therapy. Multiple types of implants and implant systems are presented.

PERI 737 - Lectures and Rotation in Internal Medicine. This series of lectures seminars, is combined with a variable length rotation in internal medicine to provide the resident with the opportunity to review with medical experts, certain common medical conditions which may relate directly or indirectly to the severity and management of the patient's periodontal condition. Included are presentations in transplant therapy, the pharmacologic management of the transplant patient, psychiatric conditions and their impact on management of the dental patient, hematologic considerations for the dental patient, management of the patient with a history of need for infective endocarditis prophylaxis, cardiovascular considerations in the management of the dental patient, endocrinologic consideration for the dental patient, management of the hypertensive dental patient and anaphylaxis and drug reactions.

PERI 838 - Practice Management. This seminar and demonstration course is designed to prepare the student for all phases of the "business" of periodontics as well as the responsibility of being a professional. This course essentially covers the management of private practice (office location and layout, staff policies and procedures, office forms, bookkeeping systems, case presentation, ethics, etc.), office visitations (observing the activities of community periodontists and their auxiliary personnel) and the relationship of the specialist to other professionals. Guest lecturers (lawyer, accountant, banker, investment counselor, insurance agent, estate planner, and representatives of organized dentistry) also provide information concerning business and ethics. The course is supplemented with guest lectures by practicing periodontists from various geographical areas.

## **Advanced Prosthodontics Program**

The University of Tennessee Health Science Center, in conjunction with the Memphis Veterans Affairs Medical Center, offers an advanced education program in prosthodontics leading to a Certificate of Proficiency in prosthodontics and a Master of Dental Science degree. The program provides advanced instruction and clinical training preparing students for the practice prosthodontics. To complete the program, students must demonstrate proficiency in the examination, diagnosis and reconstruction of complex edentulous, partially edentulous, and dentate oral conditions. The program complies with standards established by the Commission on Dental Accreditation of the American Dental Association and qualifies students for examination by the American Board of Prosthodontics. Continuous full time attendance for this 36-month program is required. The curriculum is consistent with the expanding scope of knowledge in prosthodontics as determined by the American College of Prosthodontists and the American Dental Association.

The curriculum relates basic science principles to the practice of prosthodontics. Clinical applications are emphasized while maintaining significant didactic and research activities throughout the course of study. Direct patient contact constitutes approximately 60% of the students' activity. Concurrently, graduate-level courses are conducted in anatomy, embryology, histology, oral biology, oral pathology,

immunology, microbiology, clinical pharmacology, human growth & development, experimental design, and biostatistics. Review of current and classic literature related to prosthodontics is accomplished on a regular basis. Interdisciplinary seminars emphasize the importance of comprehensive dental care in the treatment of complicated oral conditions. Case presentation seminars are conducted on a regular basis at both the University of Tennessee Health Science

Center and the Memphis Veterans Affairs Medical Center. In depth instruction and patient treatment involving dental implant therapy is an integral component of didactic and clinical activities. Instruction in laboratory technology is an integral part of all treatment rendered.

In accordance with mandates set forth by the American Dental Association in the Accreditation Standards for Advanced Specialty Education Programs in Prosthodontics, all students are involved in an original, independent research project. This research displays a high level of scholarship and contributes to the existing fund of professional knowledge. Strong mentorship and state-of-the-art scientific resources are readily available in the Department of Restorative Dentistry's clinical research facility, the College of Dentistry's dental research center and dental materials core facilities, and the University's College of Health Science Engineering. A Master of Dental Sciences degree is awarded by the College of Graduate Health Science upon fulfillment of all program requirements, completion of research, production and acceptance of a thesis, and successful public defense of the independent research effort.

One or two students are accepted into the Advanced Prosthodontics Program each year. One student in each resident class will receive a stipend, commensurate with level of training and funding availability. Funded residents will provide part-time clinical prosthodontic services at the Memphis Veterans Affairs Medical Center.

### **FIRST YEAR CURRICULUM**

- PROS 710 - Prosthodontic Literature Seminar
- PROS 711 - Contemporary Evidence-Based Journal Club
- PROS 800 - Thesis
- PROS 660 - Seminars in Prosthodontics
- PROS 666 - Clinical Prosthodontics (UTHSC & VAMC)
- PROS 673 - Interdisciplinary Seminar & Clinical Pharmacology (VAMC)
- PROS 677 - Dental Team (VAMC - Hospital Dentistry)
- DSCI 603 - Biostatistics
- DSCI 602 - Oral Embryology & Histology
- DSCI 705 - Advanced Oral Pathology
- DSCI 600 - Head and Neck Anatomy
- PERI 604 - Experimental Design and Research Methods
- DSCI 601 - Graduate Oral Biology

### **SECOND YEAR CURRICULUM**

- PROS 710 - Prosthodontic Literature Seminar
- PROS 711 - Contemporary Evidence-Based Journal Club
- PROS 800 - Thesis
- PROS 760 - Seminars in Prosthodontics

PROS 766 - Clinical Prosthodontics (UTHSC & VAMC)  
PROS 773 - Interdisciplinary Seminar & Clinical Pharmacology (VAMC)  
PROS 777 - Dental Team (VAMC - Hospital Dentistry)  
PERI 736 - Implantology  
DSCI 713 - Microbiology and Immunology  
DSCI 653 - Human Growth and Development

### **THIRD YEAR CURRICULUM**

PROS 710 - Prosthodontic Literature Seminar  
PROS 711 - Contemporary Evidence-Based Journal Club  
PROS 800 - Thesis  
PROS 860 - Seminars in Prosthodontics  
PROS 866 - Clinical Prosthodontics (UTHSC & VAMC)  
PROS 873 - Interdisciplinary Seminar & Clinical Pharmacology (VAMC)  
PROS 893 - Teaching Clerkship (Elective)

### **Course Descriptions**

PROS 800 - Thesis. This course provides opportunity for students to engage in research in prosthodontics and related sciences. Though involvement is arranged to suite individual needs, time commitment will be approximately 4 hours per week during each semester of the program. Students work with advisors experienced in research methodologies and scientific writing. Instruction is given by appropriate faculty on individual bases. Student activities include library research, writing a literature review, developing a research protocol, hands-on research, gathering and analyzing data, interpreting experimental results, developing conclusions, and publishing outcomes. Public defense of the research effort and publication of a thesis in accordance with regulation established by the College of Graduate Health Sciences are required. Research, public defense, and thesis accomplished during this course are in partial fulfillment of the requirements for the Master of Dental Science degree awarded by the UTHSC, College of Graduate Health Sciences.

PROS 710 - Prosthodontic Literature Seminar. This weekly seminar provides exposure to historically relevant, scientific literature in various subject areas associated with prosthodontics and related sciences. Periodic and critical abstracting of this literature is accomplished by seminar attendees in order to maintain a database of condensed, topic-oriented summaries. Students in the Advanced Prosthodontic Program participate in this seminar each semester of their three-year residency. Twenty-four broad topics pertinent to prosthodontics are covered on a rotational basis over a three-year period. Eight topics are covered during each year of the students' three-year residency program. Seminars are lead by the director of the Advanced Prosthodontic Program. Other members of the University of Tennessee Health Science Center faculty are invited to participate when their expertise with regard to the seminar topic is considered beneficial to the learning experience.

PROS 711 - Contemporary Evidence-Based Journal Club. Ongoing review of current, pertinent, professional literature is fundamental to the successful practice of prosthodontics. For postdoctoral students, knowledge of current professional literature is

essential to developing theoretical and practical patient management skills. The assessment of current literature for its evidence-based value is critical. Journal Club provides a mechanism for surveying major dental periodicals to identify important articles, reviewing those articles, and discussing each article in an open seminar format. Seminars are held twice each week for one hour throughout the three-year program. This schedule is necessary to stay abreast of the ever-expanding volume of prosthodontic literature.

DSCI 600 - Head and Neck Anatomy. This course provides a study of the gross structure of the head and neck by a systematic dissection, supplemented by lectures and demonstrations.

DSCI 601- Graduate Oral Biology. This course provides expanded knowledge of the physiologic and biochemical principles involved in oral function. Topics are selected to develop an appreciation of the oral cavity and its associated structures as an integral part of a larger functional unit. Lectures address respiration, speech, deglutition, mastication, neurophysiology, bone and joint physiology, and kinesiology as they apply to the oral environment.

DSCI 602 - Oral Embryology and Histology. This course involves a study of the embryogenesis of tissues, organs, and structures of the craniofacial region. This includes the developmental history of the facial region, derivatives of the pharyngeal arches, the chondrocranium and its derivatives, development of the teeth, histogenesis and structure of craniofacial joints, and development of the neuromuscular system. The periodontium, oral mucosa, and tongue are covered in this course as well.

DSCI 603 - Biostatistics. This course in biostatistics is designed to introduce the student to widely used methods for the analysis of experimental and observational data with orientation toward statistical inference from dental research.

PERI 604 - Experimental Design and Research Methods. This course is an introduction to research, including methods of designing experiments and evaluating experimental data.

DSCI 653 - Human Growth and Development. This course provides an overview of the events of human growth and the analytic approaches used to study growth, particularly from birth to adulthood. Discussions center around the nature of growth, mechanisms of growth, general body development, and genetic and environmental influences on growth. Emphasis is given to the head and neck region.

PROS 660, 760, 860 - Seminars in Prosthodontics. This overview of prosthodontics is presented in a variety of formats (literature/textbook review and discussion, lecture, student presentations, and seminar). Subject areas covered include anatomy and histology of prosthesis bearing tissues, etiology and pathology of disease processes related to oral prostheses, dental material science, relevant topics in bioengineering, and other subjects pertinent to the practice of prosthodontics. Clinically related seminars include examination, diagnosis, prognosis, and treatment planning for patients with prosthodontics needs. A variety of approaches to treatment and the importance of supportive therapy for treated patients are emphasized. The interrelationship between

basic sciences and clinical aspects of prosthodontics is emphasized. Appropriate reading material from standard textbooks and prosthodontic literature is assigned for each seminar period.

PROS 666, 766, 866 - Clinical Prosthodontics (UTHSC & VAMC). The residents' clinical time is principally spent at the Veterans Administration Hospital Dental Clinic in Memphis and at The University of Tennessee Health Science Center, College of Dentistry where advanced experience is gained in the management of complex edentulous and partially edentulous patients, including the restoration of dental implants. Emphasis is given to detailed diagnostic information gathering and the analysis of all dental problems. Experience is gained in a wide variety of treatment approaches to complicated prosthodontic problems. Clinical and photographic documentation of all procedures is accomplished and careful evaluation is made of all post-treatment results. Extensive experience is gained in treatment planning, coordinating multidisciplinary care, restoring, and maintaining dental implants.

PROS 673, 773, 873 - Interdisciplinary Seminar & Clinical Pharmacology (VAMC). Residents of the various dental specialties conduct this seminar course. Included are lectures on the interrelationship of the specialties and approaches to common treatment situations. Selected literature of common interest to the involved specialties presented and reviewed. Residents present cases for diagnosis and treatment planning, as well as those treated in an interdisciplinary manner. The purpose of this seminar is to encourage greater interaction between specialists, better understanding of factors associated with complex dental treatment, and identification of patients who may benefit from an interdisciplinary therapeutic approach.

PROS 677, 777 - Dental Team (VAMC - Hospital Dentistry). This course is designed to orient students to situations and conditions encountered in hospital patients and procedures necessary to safely evaluate and treat this population on an inpatient or outpatient basis. Procedural topics include consent, consultation, physician's orders, admission, pre-operative notes, post-operative notes, and discharge notes. Medically related topics include hemostasis & coagulation, radiation therapy of the head & neck, medical management of patient that have cardiovascular disease, diabetes, pulmonary disease, liver disease, interpretation of laboratory test results, odontogenic infections, and the management of dental emergencies.

DSCI 705 -Advanced Oral Pathology. This is a course on pathology of the jaws and contiguous soft tissues and their relationship to systemic disease. Special emphasis is placed on developing a logical approach to clinical, roentgenographic, and histopathologic diagnosis; the relationships between local and systemic disease; and consideration for appropriate treatment.

DSCI 713 -Microbiology and Immunology. This lecture and seminar course is conducted with the assistance of basic science faculty members with expertise in the areas of microbiology, allergy, and immunology. Included are lectures on classification, morphology, Gram staining, attachment, structure, culture, metabolism, identification and colonization of microorganisms, periodontopathic bacteria, bacterial metabolism, virulence factors, and attachment mechanisms. Host defense presentations include lectures on T and B cells, antigens, mitogens, antibody-mediated reactions, complement,

humoral and cell mediated interactions, cytokines, laboratory immunologic assays and their clinical significance.

PERI 736 -Implantology. This course serves as an introduction to clinical implant therapy. Concepts are presented using a series of lectures and reviews of classic and current dental implant literature. Included are reviews of the history of dental implants, implant materials, bone physiology, physical and psychological patient evaluation, surgical and prosthetic treatment planning, surgical and prosthetic case management, the role of occlusion and inflammation, and the importance of ongoing supportive care in long term clinical success in implant therapy. Multiple types of implants and implant systems are discussed.

PROS 893 -Teaching Clerkship (Elective). All graduate students are given the opportunity to teaching in pre-doctoral programs. Graduate students may prepare and deliver lectures, teach in the pre-clinical laboratory, and assist with treatment in pre-doctoral clinics. Graduate students that elect to participate are monitored for content and quality of teaching.

## **Continuing Dental Education Programs**

Continuing education is offered to graduates of professional programs as an ongoing commitment to professional development. The first continuing dental education program presented by the College of Dentistry was in 1953. Since then, there has been an increasing awareness of the need for continuing education to become a part of the lifelong educational experience of all health professionals. As a result, there has been a steady increase in the quality and number of courses presented by the College of Dentistry, as well as a greater distribution of meeting sites throughout Tennessee and Arkansas. Due to popular demand, the majority of courses presented are in the clinical sciences, with more emphasis now being placed upon those requiring clinical and/or laboratory participation. As resources permit, a series of courses will be planned for live video conferencing throughout the Mid-South utilizing facilities available on The University of Tennessee Health Science Center campus.

Participants of all University of Tennessee sponsored continuing education courses earn CEU (Continuing Education Units) credit, which is awarded by institutions to those who have satisfied certain regional and national accreditation requirements.

## **State Board Examinations**

The practice of dentistry in the United States, like the practice of other health professions, is subject to the laws of the state, district, or dependency. Responsibility and authority for evaluating competence and qualifications of those seeking to enter dental practice, is vested in the dental licensing board of the state, district and/or dependency. To meet this responsibility, licensing boards require specific written and clinical examinations, to evaluate candidates' knowledge and understanding of the sciences related to dentistry, and the principles of dental practice.



Each student will be contacted during the senior year by the Office of Clinical Affairs relative to application procedures and other details concerning the licensing examinations.

## **Dental Research Center**

The College of Dentistry has embarked on an effort to improve and strengthen basic and clinical research in the College with the assistance of the University Administration, the Chancellor, and the alumni. The Dental Research Center was established to provide a research base for all the clinical departments and to facilitate achievement of one of the major goals of the College, which is to serve as a referral center for practicing dentists in Tennessee and the Mid-South region. The Dental Research Center has four components: basic research, clinical research, research training, and consultation. Major program areas in dental research include periodontal disease, maxillofacial growth and development, biocompatibility of dental material, oral cancer, pain and pulp biology, cariology, and development of clinical techniques. The Center has core laboratory facilities with modern equipment for basic and clinical research. Recent emphasis has been placed upon the development of a center for oral cancer research and education, and a research program in proteomics.

## **Program Modification Statement**

In publishing these regulations, the College of Dentistry does not recognize any implied contract as having validity beyond the succeeding academic year. The faculty reserves the right to make changes in curriculum, policy and procedures when, in its judgment, such changes are in best interest of students and the College of Dentistry. Ordinarily, a student may expect to receive a degree by meeting the requirements of the curriculum, as specified in the catalogue currently in force when they first enter the college, or in any one subsequent catalogue published while they are a student. However, the College of Dentistry is not obligated to fulfill this expectation, or to offer in any particular year, a course listed in the catalogue.

## **College of Dentistry Departmental Faculty Listing**

### **Department of Biologic and Diagnostic Sciences**

*Department Chair and Professor*  
Van T. Himel, D.D.S.

*Professors Emeritus*  
Harry H. Mincer, D.D.S., Ph.D.  
Morris L. Robbins, D.D.S.  
Roy M. Smith, D.D.S., M.S.  
James E. Turner, D.D.S.

*Professors*  
John S. Covington, D.D.S., M.S.  
Marjorie A. Woods, D.D.S.

*Associate Professors*  
Eddie L. Burton, D.D.S.  
James C. Cohen, D.D.S.  
Glenn T. Hart, D.D.S.

*Assistant Professors*  
Kenneth M. Anderson, D.D.S.  
Mary A. Aubertin, D.M.D.  
H. Fred Bacon, D.D.S.  
Jahanzeb Chaudhry, D.D.S., M.S.  
Suneel C. Kandru, B.D.S., M.S.  
Kenan D. Clinton, D.D.S.  
Paul N. Gregory, D.D.S.  
Yeshwant B. Rawal, B.D.S., M.D.S.  
Robert W. Smith, D.D.S.

*Instructors*  
Jeffrey G. Phebus, D.D.S.  
Adeline Prophete, D.D.S.

### **Department of Oral and Maxillofacial Surgery**

*Department Chair and Professor*  
Lawrence W. Weeda, Jr., D.D.S.

*Professors Emeritus*  
Ben R. Hipp, D.D.S.  
Howard S. Misner, D.D.S.  
Carl L. Sebelius, Jr., D.D.S.

#### *Professors*

Jimmy E. Albright, D.D.S.  
J. Nello Giaroli, D.D.S.

#### *Associate Professors*

Richard L. Dixon, D.D.S.  
Bruce H. McCullar, D.D.S.  
J. Lawrence McRae, D.D.S.  
Daniel Reaves, D.D.S.  
G. Trent Wilson, D.D.S.

#### *Assistant Professors*

Harry M. Baddour, D.D.S.  
Daniel E. Buras, D.D.S.  
K. Marcus Hopkins, D.D.S.  
Richard D. Meekins, D.D.S.  
Stephen B. Sexton, D.D.S.  
R. Kuhen Smith, D.D.S.  
Ronald E. Staples, D.D.S.  
Darren R. Williams, D.D.S.  
Michael A. Williams, D.D.S.

### **Department of Orthodontics**

*Department Chair and Professor*  
James L. Vaden, D.D.S., M.S.

#### *Professors*

Edward F. Harris, Ph.D.  
Walter C. Sandusky, D.D.S., M.S.  
Joe L. Wasson, D.D.S., M.S.

#### *Associate Professors*

David H. Crowder, D.D.S.  
William G. Parris, D.D.S., M.S.  
Quinton C. Robinson, D.D.S., M.S.  
Richard A. Williams, D.D.S., M.S.  
Jere L. Yates, D.D.S., M.S.

#### *Assistant Professors*

David E. Bell, D.D.S., M.S.  
Jere W. Crenshaw, D.D.S., M.S.  
Cheryl DeWood, D.D.S., M.D.S.  
F. Marlin Grimes, D.D.S., M.S.  
Tommy N. Whited, D.D.S. M.S.

## **Department of Pediatric Dentistry and Community Oral Health**

*Department Chair and Professor*  
Sanford J. Fenton, D.D.S., M.D.S.

*Associate Professors Emeritus*  
Diane M. Brown, Ed.D.  
Judith Elaine Conkin, B.P.S., M.S.

*Professors*  
Kenneth R. Carruth, D.D.S., M.S.  
W. Thomas Fields, D.D.S., M.P.H.  
Harry K. Sharp, D.D.S.

*Associate Professors*  
Alka V. Cohen, D.D.S., M.S.  
Wisdom F. Coleman, D.D.S., M.P.H.A.  
Martin E. Donaldson, D.D.S.  
Carlton V. Horbelt, D.D.S.  
Billy W. McCann, Sr., D.D.S., M.S.  
Mark Scarbecz, Ph.D.

*Assistant Professor*  
Ann S. Smith, D.D.S.

*Instructors*  
Vernon C. Pennington, D.D.S.  
David C. Redmond, D. D. S.  
Mehdi Sadeghi, D.D.S.

## **Department of Periodontology**

*Department Interim Chair and Assistant  
Professor*  
Paul S. Bland, D.D.S.

*Professor Emeritus*  
Bernard L. Rainey, D.D.S., M.S.

*Associate Professor Emeritus*  
Sidney S. Friedman, D.D.S.

*Professors*  
Mustafa Kh. Dabbous, Ph.D.  
Hiram R. Fry, D.D.S., M.S.  
Jerry G. Jurand, D.D.S.  
Christopher Nosrat, D.D.S., Ph.D.  
Mark R. Patters, D.D.S., Ph.D.

Jacob Shiloah, D.M.D.  
Edwin L. Thomas, Ph.D.  
David A Tipton, D.D.S., Ph.D.

*Associate Professor*  
Jedish P. Babu, Ph.D.  
Sidney Stein, D.M.D., M.S., Ph.D.

*Assistant Professors*  
Pradeep C. Adatrow, B.D.S., M.P.H.  
Lesley H. Binkley, Jr., D.D.S.  
James R. Kimmelman, D.D.S.  
Jane Anne Blankenship, D.D.S.  
Swati Y. Rawal, B.D.S., M.D.S., M.S.  
Bryan T. Schmidt, D.D.S.  
Jeffrey L. Wingo, D.D.S.

*Instructor*  
James D. Higgason, D.D.S.

## **Department of Restorative Dentistry**

*Department Interim Chair and  
Associate Professor*  
Russell A. Wicks, D.D.S.

*Dean Emeritus*  
William F. Slagle, D.D.S., M.Ed.

*Professors Emeritus*  
William H. Jolley, D.D.S.  
Ralph E. Knowles, Jr., D.D.S.  
Thomas R. Meadows, D.D.S.  
Homer V. Reed, D.D.S.  
Fred A. Shaw, D.D.S.

*Professors*  
Robert L. Brandt, D.D.S., M.S.  
David R. Cagna, D.M.D., M.S.  
Jerry S. Cloyd, D.D.S.  
Russell O. Gilpatrick, D.D.S., Dean  
Lloyd A. George, D.D.S., M.Ed., J.D.  
James F. Simon, D.D.S., M.Ed.

*Associate Professors*  
Waldermar G. deRijk, D.D.S., Ph.D.  
Phillip O. Dowdle, D.D.S.  
Janet A. Harrison, D.D.S.  
Michael McBride, D.D.S.  
Posey G. Hedges, Jr., D.D.S.

Barry Owens, D.D.S.  
Judith A. Ross, D.M.D.  
Waletha Wasson, D.D.S., M.P.A.

*Assistant Professors*

Ned E. Alley, D.D.S.  
Steve D. Ballard, D.D.S.  
Bernard J. Blen, D.D.S.  
Roland J. Bondani, D.D.S.  
William D. Caldwell, D.D.S.  
Mojdeh Dehghan, D.D.S.  
Steve C. Futris, D.D.S.  
Robert H. Hatch, D.D.S.  
Jack W. Hoelscher, D.D.S.  
Wainscott Hollis, D.D.S.  
Ashraf Husein, D.D.S.  
Mounir Kharchaf, D.D.S., M.D.S.  
David M. Kimler, D.D.S.  
J. West Lewis, D.D.S.  
Maurice W. Lewis, D.D.S.  
Layne C. Levy, D.D.S.  
Llewellyn Powell, D.D.S.  
Michael K. Savage, D.D.S.  
Robert W. Scott, D.D.S.  
Felix O. Springfield, D.D.S.  
Darton D. Taylor, D.D.S.  
Linda O. Wible, D.D.S.

*Instructor*

Todd Smith, D.D.S.  
J. Whitley Wills, D.D.S.

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# **COLLEGE OF GRADUATE HEALTH SCIENCES**

**920 Madison, Suite 407**

**Memphis, TN 38163**

**Tel: (901) 448-5538**

**Edward G. Schneider, Ph.D., Interim Dean**

Donald B. Thomason, Ph.D., Associate Dean, Recruitment, Admissions and Students

David L. Armbruster, Ph.D., Associate Dean, Academic Affairs

Rebecca A. Brown, M.S., Assistant Dean, Administration

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# GENERAL INFORMATION

## Introduction

The College of Graduate Health Sciences of The University of Tennessee Health Science Center offers graduate instruction leading to the Master of Science, Master of Dental Science, and the Doctor of Philosophy degrees. Students may choose one of the following programs: Integrated Program in Biomedical Sciences, Biomedical Engineering, Clinical Investigation (under development), Dental Science, Epidemiology, Health Science Administration, Nursing, and Pharmaceutical Sciences. The principal aim of these graduate programs is that of education beyond the bachelor's level through participation in advanced courses, seminars, and laboratory research. Each student is expected to take full advantage of the opportunities offered in his/her chosen field and to maintain a high level of achievement in the various phases of the advanced degree program.

The procedures and regulations established to assist the student in realizing these goals are provided in the subsequent paragraphs. The regulations are established by the Graduate Faculty and the Graduate Studies Council and are administered by the Dean of the College of Graduate Health Sciences. In order to realize the maximum development and training of a graduate student, graduate programs are individualized within the guidelines and policies established by that program and the College of Graduate Health Sciences.

Each student is expected to be acquainted with the procedures and regulations of the program, the College of Graduate Health Sciences, and The University of Tennessee Health Science Center. The student should be familiar with the General Catalog, including the section on the College of Graduate Health Sciences, the Student Handbook (The Centerscope), and the special requirements of the program.

## The Graduate Studies Council

The Graduate Studies Council is responsible for review of new courses and programs in the College of Graduate Health Sciences. The Council also recommends faculty to the Dean for appointment to the Graduate Faculty.

## Graduate Faculty

### College of Graduate Health Sciences

(<http://www.utmem.edu/grad/>)

The faculty of the College of Graduate Health Sciences consists of faculty members whose primary appointments are in one of the professional colleges of The University of Tennessee Health Science Center and who are actively engaged in research. Members of the Graduate Faculty are responsible for the instruction of candidates for the academic M.S., M.D.S., and Ph.D. degrees. Appointment to the Graduate Faculty is made by the Dean upon recommendation by the program chair and the Graduate Studies Council.

## **Admission to the College of Graduate Health Sciences**

### **College of Graduate Health Sciences** **(<http://www.utmem.edu/grad/>)**

Graduates of The University of Tennessee and of other accredited institutions are eligible to apply for admission to the College of Graduate Health Sciences. The college considers applicants not only from Tennessee, but also from other states and countries if they have completed the necessary prerequisites for advanced study. Equal educational opportunity is offered to all persons without regard to race, religion, sex, age, creed, color, national origin, or physical handicap.

A student must have completed undergraduate prerequisites for graduate study, as determined by the respective graduate program. An undergraduate major in a specific discipline usually is not required as a prerequisite for admission. Only a limited number of students are accepted. Admissions are restricted to the self-determined capacities of the programs involved in graduate study.

The adequacy of preparation for graduate study may be determined from the applicant's record or by examination at the time the student makes application to the College of Graduate Health Sciences. In the case of a student whose preparation for formal graduate study is inadequate, a program of prerequisite course work may be required as determined by the graduate program accepting the student. Such courses will not be credited toward meeting the formal course requirement for an advanced degree.

### **Admission Inquiries**

Prospective graduate students should obtain forms and further information by writing to (1) the Director of Enrollment Services, The University of Tennessee Health Science Center, 910 Madison Avenue Suite 525, Memphis, Tennessee 38163, (2) the chair or director of the program in which the applicant plans to work, or (3) the Dean of the College of Graduate Health Sciences, The University of Tennessee Health Science Center, Memphis, Tennessee 38163. Information including an application is available on The University of Tennessee Health Science Center Home Page (<http://www.utmem.edu>). Other specifics may be found in The Centerscope.

### **Technical Standards for Academic Graduate Program**

The goal of the College of Graduate Health Sciences is the broad preparation of students for the practice of research. This goal is achieved in part by graduate education in preparation for life-long learning. Modern graduate education requires that the accumulation of scientific knowledge be accompanied by the simultaneous acquisition of skills, attitudes, and behavior. The faculty has the responsibility to graduate the best possible scientists; thus, admission to the college is offered to those who present the highest qualifications for graduate study.

Applicants to the college must possess the following general qualities: critical thinking, sound judgment, emotional stability and maturity, empathy, physical and mental

stamina, as well as the ability to learn and function in a wide variety of educational settings. Applicants must be able to communicate effectively in oral and written form. They must possess essential functions of conceptual, integrative, and quantitative skills, including measurement, calculation, reasoning, analysis, and synthesis. Problem solving in research requires all of these intellectual abilities. In addition, applicants should be able to comprehend three-dimensional relationships and to understand the special relationships of structures.

Applicants must exhibit behavioral and social skills and professionalism. Empathy, integrity, interpersonal skills, interest, and motivation are all personal qualities that will be assessed during the admissions process and throughout graduate education. Applicants must possess the emotional well being required for the full use of their intellectual abilities; the exercise of sound judgment; and the development of mature, sensitive, and effective relationships with their peers. Applicants must be able to tolerate the generally taxing demands of laboratory research and to function effectively when stressed. They must be able to adapt to changing environments, to display flexibility, and to learn to function in the face of the uncertainty inherent in research.

The minimum abilities for eligibility to participate successfully in educational programs and activities by students enrolled in the College of Graduate Health Sciences are listed below. All persons who wish to enter one of the programs in the college should be aware of the minimum abilities required for success. Admission decisions for the college programs do not take disabilities into consideration; students may disclose their disabilities after admission. Minimum abilities are as follows:

- 1) To make proper assessments and ethical judgments regarding research and professional decisions.
- 2) To communicate effectively with colleagues and professional staff.
- 3) To acquire necessary information developed through classroom instruction, laboratory experience, independent learning, and consultation.
- 4) To search and evaluate articles in the scientific literature.
- 5) To obtain, interpret, and accurately document research data.
- 6) To complete computer-based assignments and use computers.
- 7) To understand and carry out safety rules and precautions in the laboratory.
- 8) To handle emergencies in the laboratory, including fire, exposure to dangerous agents, and explosions.

These abilities may be accomplished through direct student response, use of prosthetic devices, or personal assistance (e.g., readers, signers, and note takers). Purchase of prosthetic devices to aid the student in meeting these requirements is the responsibility of the student. On a case-by-case basis and upon written request of the student, the college may assist in providing attending services.

Upon admission, students are invited to disclose any disabilities (with certification) to the Student Academic Support Services (SASS). The college will provide reasonable accommodations, as required by the student's documented disabilities with SASS, and at the student's written request to the Dean, College of Graduate Health Sciences. In summary, the mission of the college is to prepare students for the practice of biomedical research and teaching. The College of Graduate Health Sciences, in accord with Section



504 of the 1973 Vocational Rehabilitation Act and the Americans with Disabilities Act (ADA) (Public Law 101-336), has established the aforementioned essential functions of graduate students. The college will consider for admission applicants who demonstrate the ability to perform or to learn to perform the essential skills required for a career in biomedical research. Students will be judged primarily on their scholastic accomplishments in demanding academic courses as well as the ability to perform research and prepare a thesis or doctoral dissertation of high quality. Candidates will also be judged on physical and emotional capacities for a career in biomedical research.

## **Categories of Student Admission**

### **Regular Students**

#### **College of Graduate Health Sciences**

**(<http://www.utmem.edu/grad/>)**

Regular students are students who seek admission to one of the doctoral or master's degree programs offered by the College of Graduate Health Sciences. Regular students must register for at least nine semester hours to be considered full-time, with the exception of the final semester in which students may register for three semester hours and be considered full-time. These students must submit an official application and must fulfill the admission criteria for the college, as well as the criteria of the respective program. Application forms for regular students are available on The University of Tennessee Health Science Center Home Page (<http://www.utmem.edu>) or from the Office of Enrollment Services (910 Madison Avenue, Suite 525, The University of Tennessee Health Science Center, Memphis, TN 38163). Admission as a regular student requires a bachelor's degree or its equivalent with an undergraduate grade point average of at least 3.0 from an accredited college or university and a Graduate Record Examinations (GRE) combined score totaling at least 1000 for verbal and quantitative sections. In addition, the score on each component must be at or above the 25th percentile score for that section. Some programs may require a higher GRE score for admission. Three letters of recommendation from previous instructors or persons capable of judging the applicant's qualifications for graduate study are also required. For foreign applicants, evidence of proficiency in English or a Test of English as a Foreign Language (TOEFL) score of at least 213 (earned within 2 years prior to application) on the computer-based exam is also required.

Each graduate program may have additional requirements. Regular students may enroll on a full-time or part-time basis.

If an applicant does not enter the College of Graduate Health Sciences in the semester in which admission is requested, the student may enter at the beginning of any of the next two semesters. Once admitted and registered, students are expected to maintain continuous enrollment, unless permission is given for interrupted registration (see section on Registration).

Admission to the College of Graduate Health Sciences entitles the student to register for graduate courses, but does not mean that he/she is admitted as a candidate for an advanced degree. Candidacy for an advanced degree will be determined after the student

has satisfied criteria established by the program in which the student seeks training and by the College of Graduate Health Sciences.

### **Part-time Students**

Students who register for less than nine semester hours, with the exception of the final semester, are considered to be part-time.

### **Nondegree Students**

Nondegree students are those who wish to take courses offered by the college but who are not seeking admission to one of the degree programs. Students eligible to enroll under this mechanism are those who are employed by The University of Tennessee Health Science Center, students enrolled in other University of Tennessee Health Science Center colleges, or students who are enrolled at The University of Memphis. All others must apply for and be admitted to a program in the College of Graduate Health Sciences. A nondegree application must be completed 6 weeks prior to enrollment.

### **International Students**

#### **College of Graduate Health Sciences**

(<http://www.utmem.edu/grad/>)

International applicants must present (1) a complete and accurate chronological outline of all previous education; (2) authorized college or university records, with certified translations if the records are in a language other than English; (3) evidence of financial resources sufficient to provide the student with adequate support during the period of registration as a student; (4) evidence of proficiency in English; (5) documentation that he/she can provide transportation from his/her country to The University of Tennessee Health Science Center and return; and (6) his/her transcripts evaluated by a professional credential evaluation service that includes calculation of the GPA. Any applicant to the graduate program whose first language is not English and who has earned neither a bachelor's nor a master's degree from a college or university in the United States, Canada, Great Britain, or Australia must have achieved a TOEFL score of at least 213 (earned within 2 years prior to application) to be admitted. Any applicant to the graduate college whose first language is not English but who has earned a baccalaureate or master's degree from a college or university in the United States, Canada, Great Britain, or Australia, may be exempted from the requirement for the TOEFL. If there is cause to doubt the student's proficiency in English (as determined by the Dean), the student may be required to take an English proficiency test prior to registration. The complete file, including the application, official certificates, descriptive titles of courses taken, and detailed transcripts with marks gained in final examinations, must be submitted to the Office of Enrollment Services (910 Madison Ave., Suite 525, The University of Tennessee Health Science Center, Memphis, TN 38163) at least three months in advance of the semester in which admission is desired. Successful applicants will receive a certificate of acceptance to be presented to the United States Consul with the application for a student visa. The University of Tennessee Health Science Center will not accept visas issued for admission to other colleges or universities.

## **Health Science Fellowships and Special Programs, Financial Aid**

Students admitted to The University of Tennessee Health Science Center should have the opportunity to pursue a career in the health professions regardless of financial limitations.

The University of Tennessee Health Science Center has available Graduate Teaching Assistantships (GTA) that may be awarded to successful applicants to the various Ph.D. degree programs and to applicants to the M.S. degree Joint Program in Biomedical Engineering. Recipients of these assistantships will assist in teaching.

Graduate Research Assistantships (GRA) are also available to students; research performed by recipients of a GRA is under the direct supervision of the student's Research Advisor. In addition, a limited number of fellowships and scholarships are awarded on a competitive basis and may be continued so long as the student is making exemplary progress toward the degree.

During the first, and in some cases second, year of study, The University of Tennessee Health Science Center provides a limited number of GTA/GRA appointments with stipends to qualified students; these are accompanied by a waiver of tuition and fees for six years of study. Stipend support in subsequent years is funded from research grants, training grants, or special predoctoral fellowships awarded by outside agencies. The student makes applications for these latter fellowships directly to the awarding agency; the Dean of the graduate college will periodically announce the availability of these fellowships.

In addition, the UT Financial Aid Office is committed to helping remove the financial barriers to education for those students with limited resources. Further information can be obtained from the Financial Aid Office (The University of Tennessee Health Science Center, Memphis, TN 38163).

## **Outside Employment of Full-time Students**

Under some circumstances, full-time graduate students are permitted to supplement the stipend by employment within or outside the university. It is the responsibility of the program chair and the student's Faculty Committee to determine whether such outside employment interferes with the expectations of that program regarding the student's acceptable progress in course and research work, and in the amount of time the student is expected to spend in research and service. If the program chair determines that outside employment would interfere with the student's progress, such employment may be prohibited.

## **General Requirements for Graduate Students**

### **College of Graduate Health Sciences**

**(<http://www.utmem.edu/grad/>)**

### **Grading System**

Graduate students must maintain an average record on all graduate courses of B or above.

The grade of D is counted in computing the grade point average (GPA) but does not carry credit toward a degree. Graduate students may not repeat courses to raise the GPA.

For thesis and research work, the letters “P” are used to indicate satisfactory progress and “N” to indicate no progress; these grades do not enter into the computing of the student’s GPA.

**For information on the following topics please refer to the following site:**

### **College of Graduate Health Sciences**

**(<http://www.utmem.edu/grad/>)**

GPA Requirements

Appeal of Grades

Continuation of Student Following Admission to Candidacy

Academic Due Process

Transfer of Credits

### **Registration**

Registration must be accomplished no later than the first day of classes each semester. The academic calendar indicating these dates appears on the College of Graduate Health Science web page ([www.utmem.edu/grad](http://www.utmem.edu/grad/)). Each student should consult with the program chair or director to devise a course schedule for each semester. Each student must ascertain that his/her status is correct and is correctly noted on the registration card; tuition and fee status will be determined at the Cashier’s Office using this information.

### **Continuous Registration**

All graduate students, except those on active military duty, will enroll each semester. Students who need to leave the University during an academic semester should obtain approval for a leave of absence or withdraw. Noncompliance will result in nonpassing grades in all courses for which enrolled. To reenter the University after withdrawal, students must formally reapply.

## **Changes in Registration**

At the discretion, and with the permission, of the student's Research Advisor, courses may be dropped, added, or changed from credit to audit (or vice versa) within 15 calendar days after the beginning of the course. The course instructor's permission is not required. After this time, course changes require approval of the student's Research Advisor, the course director, and the program chair. Such course changes will be approved only under extreme circumstances and only through the end of August in the Fall Semester and end of February in the Spring Semester. After that time, no changes will be approved.

**For information on the following topics please refer to the following site:**

### **College of Graduate Health Sciences**

**(<http://www.utm.edu/grad/>)**

Master of Science Degree

Residence Requirements

Credit Hour

Language

Research

Faculty Committee

Admission to Candidacy

Examination

Doctor of Philosophy

Residence

Credit Hours

Language

Faculty Committee

Admission to Candidacy

Examination

Research

Dissertation

Attendance at Graduation

### **Combined Degree Program (D.D.S./Ph.D., M.D./Ph.D., and Pharm. D./Ph.D.)**

These programs prepare exceptionally well-qualified students for careers in the academic and research aspects of dentistry, medicine, nursing, pharmacy, and the biomedical sciences, utilizing an integrated format that allows the attainment of both the professional degree and the Ph.D.

Combined degree programs are available in the Colleges of Dentistry (D.D.S./Ph.D. degree), Medicine (M.D./Ph.D.), and Pharmacy (Pharm. D./Ph.D. degree). Students interested in any of these combined degree programs should consult the Dean's offices in the professional college and in the College of Graduate Health Sciences.

## **Exceptions**

Exceptions to these policies must be requested in writing to the Dean of the College of Graduate Health Sciences.

## **College of Graduate Health Sciences Academic Calendar**

### **College of Graduate Health Sciences**

(<http://www.utmem.edu/grad/>)

## **Programs and Course Listing**

### **Integrated Program in Biomedical Sciences**

In 2004, the programs in Anatomy and Neurobiology, Molecular Sciences, Pathology, Pharmacology, and Physiology joined to create the Integrated Program in Biomedical Sciences.

The Integrated Program in Biomedical Sciences (IPBS), a research-oriented interdisciplinary program, involves faculty from The University of Tennessee Health Science Center and affiliate faculty from nearby St. Jude Children's Research Hospital and the Veterans Affairs Medical Center. Unlike traditional, department-based graduate programs, the IPBS provides Ph.D. or M.D./Ph.D. degree-seeking students with broad-based, cross-disciplinary training that is essential in today's competitive research environment. The IPBS consists of seven tracks that cover the spectrum of contemporary biomedical science: Cancer and Developmental Biology; Cell Biology and Biochemistry; Genetics, Functional Genomics, and Proteomics; Microbial Pathogenesis, Immunology, and Inflammation; Molecular, Cellular, and Systems Physiology; Molecular Therapeutics and Cell Signaling; and Neuroscience. More than 150 participating faculty have primary appointments in one of the seven tracks. Most also have secondary appointments in other tracks. The result is a multi-tiered structure in which faculty members from several different traditional departments contribute to a single track, enhancing the interdisciplinary training of students.

Students do not formally declare a track affiliation at the time of entry. Instead, this decision is made after a series of laboratory rotations during the first year. Rotations may occur in laboratories belonging to any of the seven tracks, or students may choose to focus more narrowly on laboratories belonging to a single track.

During the first year, all students take a core curriculum providing a foundation in cell, molecular, and systems biology. Many students opt to enroll in additional elective courses in their areas of interest, while others wait until they have selected a track and research advisor.

**Foreign language requirements: none.**

**IP 800. Master's Thesis and Research.** Research performed under the direction and supervision of the respective student's advisor, in partial fulfillment of the requirements for the degree of Master of Science. Credit: variable.

**IP 801. Integrity in the Conduct of Scientific Research.** This course consists of a study of the ethical principles and related federal and state laws that govern scientific research. Through a combination of lecture and case study discussion, students learn both the substance and application to scientific research of ethical principles and related laws. Topics addressed include research with human subjects, research with animals, the use of human biological materials, privacy and confidentiality of research and medical records, conflicts of interest, scientific misconduct, ownership of research, responsible reporting of research, and ethical training practices. The grade awarded to a student is based on the student's performance on a written midterm examination and a written final examination. The grade awarded will be Pass or Fail. The minimum score required to pass the course is 70, calculated as an average of the scores achieved on the midterm and final examinations. Credit: 1.

**IP 803. Essentials of Biochemistry and Molecular Biology.** The course integrates the fundamental aspects of biochemistry and molecular biology. Topics covered include: biochemical and biophysical principles (bonding, properties of water, thermodynamics, ionization and acid-base theory, and chemical kinetics); structure, synthesis, and function of proteins; nucleic acid metabolism; DNA and chromosome structure and replication; transcription and gene regulation in prokaryotes and eukaryotes; biomembranes; intracellular organelles and membrane trafficking; and mitochondria and bioenergetics. Credit: 6.

**IP 804. Science Education and the Community.** It is the responsibility of scientists to educate the community at-large about the contributions of basic research to the health and well-being of citizens. One way to do this is to serve as role models in the classroom and community. Consequently, students will volunteer approximately 15 hours of their time during the school year to assist in science classes or workshops in area schools or after school programs. Credit: 1.

**IP 805. Essentials of Molecular Biology.** This course covers the essentials of prokaryotic and eukaryotic molecular biology. Topics include DNA and RNA structure; DNA replication, repair, and recombination; the mechanism and regulation of transcription; and protein translation. Fundamental concepts are reinforced by the discussion of human genetic diseases. Credit: 3.

**IP 806. Biochemistry.** The course presents the fundamental aspects of biochemistry including biochemical and biophysical principles (bonding, properties of water, thermodynamics, ionization and acid-base theory, and enzymology); structure, synthesis, and function of proteins and enzymes; metabolism of sugars, amino acids, nucleotides, nucleosides, vitamins, coenzymes and lipids; energy production and conversion; mitochondria and bioenergetics; photosynthesis; membrane transport proteins; cytochrome P450 and cell signaling. Credit: 3.

**IP 810. IPBS Seminars.** Assigned readings in the original literature with student presentation and critical discussion of papers. Credit: 1.

**IP 840. Special Topics.** Directed readings or special course in topics of current interest. Credit: variable 1-5.

**IP 841. Essentials of Cell Biology.** This course provides an introduction to the cell and includes topics such as: animal cell structure; membrane compartmentalization; membrane transport; nuclear structure and dynamics; protein transport and modification; receptor signaling; cell motility and migration; cell cycle regulation; extracellular matrix and cell adhesion; general principles of development; and bacterial cell structure. Credit 3.

**IP 842. Systems Biology.** The course is intended to aid the beginning graduate student to develop an understanding of 1) how each of the major organ systems functions and contributes to the body's ability to maintain its internal environment in the face of both internal and external disturbances, 2) how the body protects itself from invading pathogens, 3) how drugs affect various processes to produce alterations in cellular or organ system function, and 4) the basic causes of the major types of diseases. Credit: 10.

**IP 843. Cellular and Molecular Biology.** The course integrates the fundamental aspects of biochemistry, cell biology, and molecular biology. Topics covered include biochemical and biophysical principles (bonding, properties of water, thermodynamics, ionization and acid-base theory, and chemical kinetics); structure, synthesis, and function of proteins; nucleic acid metabolism; DNA and chromosome structure and replication; transcription and gene regulation in prokaryotes and eukaryotes; biomembranes; intracellular organelles and membrane trafficking; mitochondria and bioenergetics; cell signaling; cytoskeletal structure and function; cell cycle and cell growth; cell differentiation; extracellular matrix and cell adhesion; and genetics of human disease. Credit: 8.

**IP 844. Organ Systems and Disease.** The course is intended to allow the beginning graduate student to develop an understanding of selected organs systems, their structure, function and relationship to disease. Students will acquire a basic understanding of tissue and organ structure and function as well as the processes of immunity and infection. Diseases affecting the cardiovascular and central nervous system along with cancer are specific areas of focus and will be discussed with affected organ systems. Credit: 3.

**IP 900. Doctoral Dissertation and Research.** Credit: by arrangement.

**IP 940. Molecular Biology of Cancer.** The course will provide a comprehensive survey of cancer biology, describing the disrupted normal development processes, the altered molecular mechanisms that govern the functioning of malignant cells, the biology and



treatments of common types of cancer, and the development of therapies for treatment of resistant and metastatic cancer cells. Credit: 4.

**ANAT 611. Histology.** A study of human histology and organology, with special emphasis on the oral cavity. Credit: 5.

**ANAT 615. Human Gross Anatomy.** The gross structure of the human body, studied by means of complete dissection supplemented by lectures. Prerequisite(s): Permission of instructor. Credit: 7.

**ANAT 616. Microscopic Anatomy.** A lecture and laboratory study of general histology and organology, with emphasis on human material. Prerequisite(s): Permission of instructor. Credit: 3.

**ANAT 622. Head and Neck Anatomy.** A lecture and laboratory study of the gross structures of the head and neck, designed primarily for predoctoral dental students. Prerequisite(s): Permission of instructor. Credit: 3.

**ANAT 812. Introduction to Neuroscience.** This required course is designed to introduce new graduate students in the Neuroscience Graduate Program to the field of neuroscience. Lectures, provided by the faculty of the Neuroscience Institute, provide extensive coverage of the field from cellular and molecular neurobiology to behavioral and cognitive neuroscience. This lecture course provides a comprehensive overview of modern neurobiology and serves as a prerequisite to more advanced graduate courses in neuroscience. Prerequisite(s): Permission of instructor. Credit: 5.

**ANAT 815. Research.** Qualified students may undertake specific research projects in the laboratories of faculty members. Prerequisite(s): Permission of Program Chair. Credit: variable.

**ANAT 821. Neuroscience Seminar.** Graduate students and postdoctoral fellows are exposed to the latest concepts, techniques, and developments in basic and clinical neuroscience. Weekly seminars are presented by participating students, postdoctoral fellows, University of Tennessee Health Science Center faculty, and prominent outside speakers each year. Prerequisite(s): Permission of instructor. Credit: 1.

**ANAT 823. Cellular Neuroscience.** This course provides the student with an overview of the cellular and molecular processes by which nerve cells communicate. The course covers classical theories and concepts as a basis for appreciation of recent research advances. Lectures by the faculty will provide core material to guide students in presentation of current research topics in Neurochemistry, Neuropharmacology, and Neurophysiology. Extensive reading of the literature will supplement lectures and presentations. Prerequisite(s): Permission of instructor. Credit: 3.

**ANAT 824. Techniques in Neuroscience.** This course will train the student in the use of standard and state-of-the-art research techniques in neuroanatomy, neurophysiology, and neurochemistry. Instruction will be by faculty actively employing these techniques in their own research and who, in several cases, have contributed to the innovation and improvement of a method. It is intended to provide practical experience in the major techniques of neuroscience. This course is intended to (1) acquaint the student with the theoretical basis of each technique, (2) teach the student the laboratory skills necessary to perform each technique, (3) teach the student how to critically evaluate the results and to be aware of the pitfalls of each technique, and (4) acquaint the student with the possible combinations of any single technique with others in designing experiments. Prerequisite(s): Permission of instructor. Credit: 3.

**ANAT 825. Developmental and Molecular Neurobiology.** This one-semester course will serve as an introduction to developmental neurobiology with special emphasis on the molecular analysis of nervous system development. A brief introduction to molecular analysis will be followed by lectures and student-led discussions of research papers that focus on major epochs/events in the development of the nervous system. Prerequisite(s): Permission of instructor. Credit: 3.

**ANAT 826. Neuroscience Student Symposia.** Students make scientific presentations, and participate in the discussion of presentations by other students. Presentations are to be based on the students' own research or on research closely related to their own interests. The presentations are to be given in the style of a scientific meeting, with time allotted for individual talks and discussion. Prerequisite(s): Permission of instructor. Credit: 1.

**ANAT 827. Functional Neuroanatomy.** A lecture and laboratory course dealing with the structure and function of the mammalian central nervous system. The emphasis of the course is on human neuroanatomy, but comparisons are made with the rodent brain using the rat as a model system. The first one-third of the course provides a synopsis of core concepts and tools used in contemporary neuroanatomical research. This material focuses on an understanding of the principles underlying neuroanatomical approaches, as well as their advantages and potential pitfalls. The final two-thirds of the course covers the basic organization of the central nervous system, including in-depth consideration of its major sensory, motor, and limbic components. This part of the course includes laboratory study on the gross anatomy of the brain. An introductory course in neuroscience is highly recommended. Prerequisite(s): Permission of instructor. Credit: 3.

**ANAT 840. Special Topics.** Directed readings or special course in topics of current interest. Credit: variable 1-5.

**ANAT 841. Behavioral Neuroscience.** This elective is designed to introduce graduate students to behavioral approaches to the study of neuroscience. This course combines lectures with review of both classic and current literature in order to develop an extensive appreciation of behavioral techniques used to study neuroscience questions.

Prerequisite(s): Permission of instructor. Credit: 3.

**ANAT 900. Doctoral Dissertation and Research.** Credit: variable.

**ANAT 915. Research.** Continuation of Anatomy 815, Research. Qualified students undertake specific research projects in the laboratories of faculty members. Credit: variable.

**ANAT 922. General Cell Biology.** A lecture course covering current areas of research in cell biology with particular emphasis on correlation of the ultrastructure of cellular components with their physiological and biochemical function. Prerequisite(s): ANAT 616 Microscopic Anatomy, MSCI 812 Physical Biochemistry and Applications in Structural Biology. Credit: variable.

**ANAT 927. Special Topics in Neurobiology.** Seminars, lectures, and a laboratory experience in one or more specialized fields in the anatomical sciences, including but not limited to many aspects of neuroscience and cell biology. Prerequisite(s): Permission of instructor. Credit: variable.

**MSCI 612. Elements of Microbiology.** A course on the fundamental aspects of microbial growth, nutrition, and genetics; mechanisms of infection and resistance; and a survey of disease-producing microorganisms with emphasis on those associated with the oral cavity. Dental student course. Credit: 5.

**MSCI 621. Medical Microbiology and Immunology.** An intensive basic lecture course on the principles and concepts of microbiology and immunology, including microbial physiology and metabolism, genetics and gene regulation, mechanisms of humoral and cell-mediated immunity, animal virology, mechanisms of resistance to infection, and the specific role of microbial agents in disease. Medical student course. Credit: 6.

**MSCI 800. Master's Thesis and Research.** Research performed under the direction and supervision of the respective student's advisor, in partial fulfillment of the requirements for the degree of Master of Science Credit: by arrangement.

**MSCI 812. Physical Biochemistry and Applications in Structural Biology.** A lecture course in physical biochemistry that is divided into two parts. The first part covers the major experimental techniques used in physical biochemistry, including X-ray crystallography, NMR spectroscopy, general spectroscopy, and thermodynamics. The theoretical and experimental bases of the techniques will be emphasized. The second part addresses the structure and mechanisms of biological macromolecules, and many of the major classes of proteins will be discussed, as well as the structures of DNA and RNA. Emphasis will be on the physicochemical processes that control the folding and stability of macromolecules and on the processes that determine their unique structures and functions. The course will be accompanied by problem sets and practical sessions in the laboratory, and students will also be provided with software for viewing and

manipulating structures on personal computers. Prerequisite(s): Calculus, physics, biology, organic chemistry, biochemistry, physical chemistry, or permission of the instructor. Credit: 3.

**MSCI 813. Immunology.** A comprehensive survey course of both cellular and molecular immunology. The course analyzes the detailed mechanisms that control rearrangements and expression of genes that encode immune receptors, cell-cell communications among cells that are involved in immune responses, antigen-antibody interactions, and other topics in serology and host immune responses. Offered in alternate years. Credit: 3.

**MSCI 814. Bioinformatics I.** This course consists of eleven 2.5-hour segments. The material will be introduced in a brief lecture format for 30-45 minutes as necessary. The majority of time will be spent using computer applications of bioinformatics tools. The course is designed to provide practical training in bioinformatics methods including accessing the major public sequence databases, using the five BLAST tools to find sequences, analyzing protein and nucleic acid sequences, detecting motifs or domains in proteins, assembling protein sequences from genomic DNA, detecting exons and finding intron-exon boundaries, aligning sequences (Clustal W), and making phylogenetic trees (Phylip). Basic proteomics methods and comparative genomics will also be discussed. Students should leave the course with a working knowledge of how to carry out research using these tools. Credit: 2.

**MSCI 815. Bioinformatics II.** This course consists of six 2.5-hour segments partially as lecture and partially as computer tutorial sessions to demonstrate advanced bioinformatics methods and the use of databases. The course follows Bioinformatics I. Topics include knowledge base mining; 3D structure viewers like Cn3D, the VAST databases of 3D structure alignments; use of genome browsers like UCSC and Ensembl and NCBI's genomic biology section; gene arrays--their construction, use, and data analysis; mapping quantitative trait loci (QTLs) and radiation hybrid mapping; genome assembly and annotation. Credit: 1.

**MSCI 823. Cellular Neuroscience.** This course provides an overview of the cellular and molecular processes by which nerve cells communicate. The course covers theories and concepts as a basis for appreciation of recent research advances. Prerequisite(s): Permission of the instructor. Credit: 3.

**MSCI 825. Prokaryotic Genetics.** This course is designed to familiarize students with the structure and function of the genetic elements of bacteria and to stress the application of basic genetic principles and techniques in research. Offered in alternate years. Credit: 3.

**MSCI 827. Bacterial Pathogenesis.** A course in which the physiology and pathogenicity of selected organisms is discussed. Emphasis is placed on mechanisms of virulence. Offered in alternate years. Credit: 3.

**MSCI 828. Principles of Laboratory Instruction.** Conferences on methods of instruction and practice in supervision of students who are performing laboratory experiments. Credit: 3.

**MSCI 829. Student Literature Presentations.** Assigned readings in the original literature with presentation and critical discussion of papers. Credit: 1.

**MSCI 833. Virology.** An introductory course emphasizing bacterial and animal viruses. The nature, classification, physicochemical properties, molecular biology, multiplication, host cell relationships, immunology, and methods of propagation and quantitation of the viruses are considered. Offered in alternate years. Credit: 3.

**MSCI 840. Special Topics in Molecular Sciences.** Directed readings or special course in topics of current interest. Section 001: Biochemistry, Section 002: Immunology, Section 003: Virology, Section 004: Bacterial Pathogenesis, Section 005: Gene Expression/Regulation, Section 006: Cell Biology. Credit: variable.

**MSCI 858. Microbiology Research.** Qualified students may undertake research for which credit and hours will be arranged. Credit: variable.

**MSCI 861. Cellular Signaling.** The course will provide a comprehensive survey of cellular signaling, describing, mechanisms of signal transduction. The lectures will detail cellular signaling from the major classes of cell surface receptors to the impact on nuclear events. The class will emphasize the integration and coordination of signaling pathways in the cell and how this impacts on the fact of the cell. Prerequisite(s): IP 842 Systems Biology, IP 843 Cellular and Molecular Biology. Credit: 3.

**MSCI 900. Doctoral Dissertation and Research.** Research performed under the direction and supervision of the respective student's advisor, in partial fulfillment of the requirements for the degree of Doctor of Philosophy. Credit: and hours by arrangement.

**MSCI 910. Student Seminar.** Reports of current research are made by students for fellows and staff. Presentations are followed by general informal discussion. Under certain circumstances, topics of current interest in the field are selected and reviewed by students and staff members. Credit: 3.

**MSCI 911. Applied Proteomics.** The goal of this course will be to systematically evaluate the use of proteomics in defined experimental situations. In the first part of the course this will be accomplished by requiring students to read and present relevant articles from the proteomic literature to learn the strengths and weaknesses of different proteomic approaches. Subsequently, direct perspective of the practicality/efficiency of these approaches will be gained by applying proteomics to research projects of each student followed by class presentation, discussion, and analysis of real proteomics data

and results. These research projects may be actual components of the graduate research project, or hypothetical, correct application of current methods relevant to the students' graduate work or special interest. Credit: 2.

**MSCI 926. Proteins and Enzymes.** A course on structure of proteins and enzyme catalysis as well as regulation. Prerequisite(s): Permission of the instructor. Credit: 3.

**MSCI 928. Principles of Mass Spectrometry.** A course on the state-of-the-art techniques in the field of mass spectrometry offered in alternate years. Credit: 2.

**MSCI 929. Techniques in Molecular Biology.** The theory and practical application of commonly used laboratory techniques in molecular biology, biochemistry, cell biology, immunology, and structural biology are considered, including hybridization and microarray technology; PCR; recombinant DNA enzymes, vectors and clone detection methods; transgenic mouse technology; in vitro mutagenesis and footprinting; multiple chromatographic methods for use both with and without tags; protein purification strategies; electrophoresis and blotting; mass spectroscopy and proteomics; NMR and X-ray crystallography; generation and uses of monoclonal antibodies; flow cytometry; light and fluorescence microscopy; and cell purification. Credit: 4.

**MSCI 930. Molecular and Cellular Basis of Pathogenesis.** The course will provide a comprehensive overview of both viral and bacterial pathogenesis from the perspective of both host and pathogen. The lectures are intended to complement the immunology and pathophysiology lectures in IP 842 "Systems Biology" to provide a comprehensive and fundamental understanding of the concepts that govern host-pathogen interactions. Lectures will present in detail the molecular genetic, structural, and cellular mechanisms that viral and bacterial pathogens use to infect cells and tissues of the host and the subsequent disease consequences of infection. Prerequisite(s): IP 842 Systems Biology, IP 843 Cellular and Molecular Biology. Credit: 3.

**MSCI 931. Immunity and Inflammation.** The course will provide a comprehensive overview of resistance to infection and immunity to viral and bacterial pathogens. The lectures are intended to complement the immunology and pathophysiology lectures in IP 842 Systems Biology to provide a comprehensive and fundamental understanding of the concepts that govern host-pathogen interactions. Lectures will present in detail the molecular genetic, structural, and cellular mechanisms that determine innate and adaptive immune cell activation and effector function. The literature review will use landmark papers to document research that has elucidated innate and adaptive immune mechanisms that determine resistance to infection by bacteria and viruses. At the end of the course, students will have a comprehensive understanding of innate and adaptive immunity to viruses and bacteria. Students will understand in detail the molecular genetic, structural, and cellular basis for immune response to viruses and bacteria. Combined with the information learned in Molecular and Cellular Bases for Pathogenesis of Viruses and Molecular and Cellular Bases for Pathogenesis of Bacteria, students will have a comprehensive understanding of host-pathogen relationships that ultimately lead to the elimination of infectious agents or the establishment of productive

infections. Prerequisite(s): IP 842 Systems Biology. Credit: 2.

**MSCI 932. Viral Pathogenesis.** The goal of this course is to explore the interactions between viruses and their hosts that result in pathogenic effects and disease. The course will provide an understanding of virus structure, entry, replication and assembly which will form the basis for a comprehensive overview of the molecular and cellular mechanisms responsible for pathogenesis resulting from infection of a host by viruses. The first portion of the course consists of lectures and discussion that present in detail the molecular, structural, and cellular mechanisms that determine virus tropism, entry, replication, dissemination, and responses by the host. The second half of the course will build on information presented in MSCI 931 Immune Response to Pathogens using defined virus model systems to provide a comprehensive and fundamental understanding of the concepts that govern virus-host interactions and that lead to disease. Upon completion of the course, students will have a comprehensive understanding of the molecular and cellular bases for pathogenesis resulting from infection of a host by viruses. The topics are discussed using a format involving a series of introductory lectures followed by a second series of classes consisting of in-class discussion of pertinent research papers. The papers to be read and discussed include classical papers establishing essential concepts and current papers that add detail to the topic under discussion. Prerequisite(s): MSCI 931 Immune Response to Pathogens, IP 842 Systems Biology. Credit: 2.

**MSCI 933. Molecular Basis of Bacterial Pathogenesis.** The course will provide a comprehensive overview of bacterial pathogenesis from the perspective of both host and pathogen. The lectures are intended to complement the immunology and pathophysiology lectures in IP842 “Systems Biology” and MSCI931 “Immune Response to Pathogens” to provide a comprehensive and fundamental understanding of the concepts that govern host-pathogen interactions. Lectures will present in detail the molecular genetic, structural, and cellular mechanisms that bacterial pathogens use to infect cells and tissues of the host and the subsequent disease consequences of infection. Prerequisite: IP842 Systems Biology, IP843 Cellular and Molecular Biology, and MSCI Immune Response to Pathogens, or permission of the course director. Fall, 2 credits (2-0). At the end of the course, students will have a comprehensive understanding of bacterial virulence and pathogenesis. Students will understand in detail the molecular genetic, structural, and cellular basis for bacterial pathogenesis. Students will gain a comprehensive understanding of virulence factors, how their expression is controlled at both the molecular and cellular levels and how these bacterial factors affect cells and tissues of the host. Combined with the information learned in the prerequisite courses, students will also have a comprehensive understanding of host-pathogen relationships that ultimately lead to the elimination of infectious agents or the establishment of productive infections. Prerequisite(s): MSCI 931 Immune Response to Pathogens, IP 842 Systems Biology, IP 843 Cellular and Molecular Biology. Credit: 2.

**PATH 605. General Pathology.** Organ system pathology with emphasis on correlation of symptoms, altered function, abnormal physical findings, and clinical laboratory data with histopathologic and gross pathologic lesions. Primarily for graduate students but open to other students who have completed general pathology courses with consent of

instructor. Credit: 3.

**PATH 811. Introduction to Pathobiology.** Seminars on the general concepts of human diseases including cell adaptation, inflammation, immunopathology, cancer, degenerative diseases, and genetic diseases. Credit: 3.

**PATH 820. Techniques in Cell and Molecular Pathology.** Introduction to modern laboratory techniques in cell and molecular pathology to involve rotation through four different laboratories or research areas. Students may take two rotations concurrently. Credit: F1,S3.

**PATH 826. Cell Biology.** A course in cell biology that requires 811 BIOC as a prerequisite. The course covers introduction to the cell, cell motility/cell migration, cell cycle regulation/multiplication, nucleus/gene expression, membrane maintenance of cellular compartments, and extracellular matrix. Credit: 4.

**PATH 834. Pathology Seminars.** Topics of current interest in the field are selected and reviewed by the student. Presentations are followed by a general informal discussion. Under certain circumstances, reports of current research may be made by students. Credit: 1.

**PATH 840. Special Topics.** Directed readings or special course in topics of current interest. Credit: variable 1-5.

**PATH 900. Doctoral Dissertation.** Research performed under the direction of the student's Research Advisor in partial fulfillment of the requirements for the Ph.D. degree. Credit: variable.

**PATH 910. Advanced Topics in Molecular Pathology.** A combined lecture/seminar course to provide students with the most advanced information available concerning the molecular mechanisms that mediate normal signal transduction and what defects in these mechanisms occur during oncogenesis and other disease processes. Credit: 4.

**PATH 913. Cell and Molecular Pathology.** A combined lecture/seminar course to teach the student the in-depth aspects of selected human diseases from a clinical, pathological, and molecular perspective. Credit: variable.

**PATH 920. Advanced Topics in Virology/Immunology.** A combined lecture/seminar/journal article review course to expose students to the most recent topics in virology and immunology. Credit: 5.

**PATH 921. Special Topics in Pathology.** Specialized courses to be offered periodically when in demand. Credit: variable.



**PATH 922. Modern Methods in Forensic Pathology.** The focus of the course is the application of DNA technology to forensic identification. Various methods historically used for identification (e.g., fingerprints, anthropology, serology, hair analysis) will be discussed as to their strengths and weaknesses. The forensic utility of DNA technology will be examined and the student will be acquainted with its place in the courtroom. Prerequisite(s): Permission of the instructor. Credit: 3.

**PATH 923. Desktop Computing in Research.** This course will provide students with an in-depth introduction to the application of word processing, spreadsheet, graphics, and database computing strategies for the development of research data descriptions and analysis. Additional exposure to practical examples of methods to record, store, and analyze experimental data, including detailed demonstrations of software designed to provide instrument interfaces, movies, and scanning techniques will be explored. The Macintosh personal computer environment will be the center of focus, with exposure to other computing environments, i.e., mainframe computers, where appropriate, to provide additional Internet resources, database exploration, presentation software, and software related to molecular biology. Spring Semester. Enrollment is limited to 10 students. Credit: 2.

**PHAR 800. Master's Thesis and Research.** Research performed under the direction and supervision of the respective student's advisor, in partial fulfillment of the requirements for the degree of Master of Science. Credit: to be arranged.

**PHAR 811. Introduction to Research in Pharmacology.** Designed to orient graduate students to various areas of research in the department and to problems that may be encountered in the planning and conduct of investigations in pharmacology. Opportunity is provided for individual participation in the research program of a faculty member. Enrollment is limited to graduate students in the Department of Pharmacology. Credit: to be arranged.

**PHAR 812. Principles of Drug Action, Part I.** Lectures, comprehensive discussions, and student presentations of selected topics from the scientific literature are focused on the basic principles of drug action, pharmacokinetics, pharmacodynamics, receptor binding, pharmacologic aspects of signal transduction, cancer chemotherapy, and antimicrobial drugs. Prerequisite(s): Permission of the instructor. Credit: 5.

**PHAR 819. Pharmacology Research Seminar.** This is the weekly research seminar program in the Program in Pharmacology. Speakers include faculty from the Program in Pharmacology, other programs from The University of Tennessee Health Science Center, and from outside institutions. Enrollment is limited to graduate students in the Program in Pharmacology. Credit: 1.

**PHAR 822. Principles of Drug Action, Part II.** Lectures, comprehensive discussions, and student presentations of selected topics from the scientific literature are focused on autonomic and neuropharmacology, endocrine and metabolic pharmacology, and

cardiovascular pharmacology. Prerequisite(s): PHAR 812 Principles of Drug Action, Part I. Credit: 5.

**PHAR 823. Cellular Neuroscience.** This interdisciplinary course is offered through the Center for Neuroscience and provides the student with an overview of the cellular and molecular processes by which neurons communicate. The course covers classical theories and concepts as a basis for appreciation of recent research advances. Extensive reading of the literature will supplement lectures. Prerequisite(s): Permission of the instructor. Credit: 3.

**PHAR 840. Special Topics.** Directed readings or special course in topics of current interest. Credit: variable 1-5.

**PHAR 900. Dissertation and Research.** Research performed under the direction and supervision of the respective student's advisor, in partial fulfillment of the requirements for the degree of Doctor of Philosophy. Credit: to be arranged.

**PHAR 919. Pharmacology Journal Seminar.** The members of the faculty and graduate students meet weekly to discuss the literature in pharmacology, physiology, therapeutics, and toxicology. Credit: 1.

**PHAR 931. Special Topics in Pharmacology.** Specialized courses of study offered on a periodic basis for advanced study. Credit: to be arranged.

**PHYS 612. Physiology and Biophysics (Medical Physiology).** This course, required of physiology graduate students, consists of closely integrated series of lectures, conferences and laboratory experiences presenting the physical underpinnings and functional properties of living matter and its reactions to internal and external stimuli. The physiology of the body's various systems is detailed, and their integration into a coordinated functional unit is described. Credit: 8.

**PHYS 800. Master's Thesis and Research.** Research performed under the direction and supervision of the respective student's research advisor, in partial fulfillment of the requirements for the degree of Master of Science. Credit: variable.

**PHYS 819. Physiology Seminar.** Masters program. Presentations by visiting scientists, local faculty, fellows, or graduate students are made weekly. All students are required to attend and participate in all seminars. Credit: 1.

**PHYS 821. Physiological Research.** Masters program. Properly prepared students may undertake research for which hours and credit will be arranged. All semesters. Credit: to be arranged.

**PHYS 823. Cellular Neuroscience.** This course provides the graduate student with an overview of the cellular and molecular processes by which nerve cells operate and covers theories and concepts in the fields of neurochemistry, neurophysiology, and neuropharmacology. Electrochemical conduction, synaptic transmission, the action of transmitters and neuropeptides, and molecular mechanisms underlying sensation, motor function and higher cognitive processes, such as learning and memory, are emphasized. Credit: 3.

**PHYS 826. Cell Biology.** This course, required of physiology graduate students, provides an introduction to the cell, cell motility/migration, the cell cycle and its regulation, nucleus/gene expression, membranes, maintenance of cellular compartments, and extracellular matrix. (See 826 MSCI for availability and credit hours.) Credit: variable.

**PHYS 840. Special Topics.** Directed readings or special course in topics of current interest. Section 001: Cell Physiology, Section 002: Functional Topics in Physiology, Section 003: Biophysics, Section 004: Biomedical Research Models. Credit: variable.

**PHYS 900. Doctoral Dissertation and Research..** Research performed under the direction and supervision of the respective student's research advisor, in partial fulfillment of the requirements for the degree of Doctor of Philosophy. Credit: variable.

**PHYS 911. Advanced Topics in Physiology (Cardiovascular and Pulmonary Aspects of Perinatal Physiology).** A series of advanced courses (1-2 per semester, which may include appropriate laboratory exercises) required of physiology graduate students in endocrinology, cardiovascular physiology, gastrointestinal physiology, neurophysiology, respiratory physiology, renal physiology, etc. Prerequisite(s): PHYS 612 Physiology and Biophysics (Medical Physiology). Credit: 2.

**PHYS 912. Advanced Topics in Physiology.** A series of advanced courses (1-2 per semester, which may include appropriate laboratory exercises) required of physiology graduate students in endocrinology, cardiovascular physiology, gastrointestinal physiology, neurophysiology, respiratory physiology, renal physiology, etc. Prerequisite(s): PHYS 612 Physiology and Biophysics (Medical Physiology). Credit: 2.

**PHYS 919. Physiology Seminar.** Doctoral program. Presentations by visiting scientists, local faculty, fellows, or graduate students are made weekly. All students are required to attend and participate in all seminars. Credit: 1.

**PHYS 921. Physiological Research.** Doctoral program. Properly prepared students may undertake research for which hours and credit will be arranged. All semesters. Credit: will be arranged.

## **College-Wide Courses**

## Department of Comparative Medicine

The Department of Comparative Medicine faculty are engaged in collaborative and independent research in a variety of disciplines focusing on animal models. Areas of special interest include animal model development, experimental surgery, toxicologic and pharmacokinetic studies, pain pathophysiology, and studies on analgesics and anesthetics. Graduate courses are designed to prepare the student with appropriate knowledge of effective use of animals in biomedical research.

**CMED 711. Essentials of Animal Experimentation.** This course is designed to provide an overview of appropriate and effective use of animals in biomedical research. Topics to be covered include regulatory requirements, bi methodology, principles of experimental animal surgery, postoperative veterinary care, and animal care and use procedures. Emphasis is placed on practical experience with living animals and practice of techniques under anesthesia. No text is required. Scheduling of lecture and laboratory will be done following registration to accommodate other courses and time obligations. Credit: 2.

**CMED 712. Biology and Pathophysiology of Laboratory Animals I.** This course expands on much of the material covered in 711 COMED. Emphasis will be placed on the following species: mice, rats, guinea pigs, rabbits, and hamsters. Subjects to be covered include the taxonomy, applied anatomy and physiology, pharmacology, genetics, immunology, nutrition, behavior, husbandry, use as an animal model, and in-depth pathophysiology of significant diseases of each species. Laboratory procedures available for diagnosing these diseases will be discussed, including their limitations and how adventitious pathogens disrupt and confound experimental results derived from infected animals. Emphasis will be placed on features that make a particular species uniquely suitable for certain types of research. Prerequisite(s): CMED 711 Essentials of Animal Experimentation. Credit: 2.

**CMED 713. Biology and Pathophysiology of Laboratory Animals II.** Continuation of 712 CMED. Emphasis will be placed on the following species: dogs, cats, sheep, goats, pigs and a variety of nonhuman primates. Rarely used species, such as amphibians, reptiles, fish, avian species, and certain invertebrates will be covered to a lesser degree. Subjects to be covered include the taxonomy, applied anatomy and physiology, pharmacology, genetics, immunology, nutrition, behavior, husbandry, use as an animal model, and in-depth pathophysiology of significant diseases of each species. Laboratory procedures available for diagnosing these diseases will be discussed, including their limitations and how adventitious pathogens disrupt and confound experimental results derived from infected animals. Emphasis will be placed on features that make a particular species uniquely suitable for certain types of research. Prerequisite(s): CMED 712 Biology and Pathophysiology of Laboratory Animals I. Credit: 2.

The Department of Comparative Medicine in conjunction with the affiliated veterinary faculty at St. Jude Children's Research Hospital offers a residency in laboratory animal medicine providing advanced education and training for veterinarians in the specialty of

Laboratory Animal Medicine. The training program complies with the standards established by the American College of Laboratory Animal Medicine (ACLAM) and qualifies candidates upon completion to sit for the certification examination by ACLAM. The curriculum includes clinical rotation, applied and basic research collaboration, and didactic instruction. The program involves a 36-month period with approximately 60-70% of activity in preventive health monitoring, direct research animal health, and associated clinical service. Special work includes veterinary pathology seminars, ACUC interaction, independent research, and graduate course work in experimental animal use and diseases, biostatistics, and other basic science issues. A Certificate of Specialty in Laboratory Animal Medicine has been approved for award on the satisfactory completion of the 36 months of study. The department currently matriculates one student in the fall of each year. A variable stipend is provided based on previous experience and training.

## **Library and Biocommunications Center**

**LBC 711. Effective Oral Communication Skills.** Skills in oral presentation of scientific data are developed through student reports from the appropriate literature with evaluation of performance emphasizing improvements in communication skills. Each student will make two presentations, which are videotaped and critiqued by the class and instructors. Preparation of effective visuals is required as part of each presentation. Credit: 1.

## **Program in Biomedical Engineering and Imaging**

### **UT/UM Joint Graduate Program in Biomedical Engineering and Imaging**

The UT Department of Biomedical Engineering and Imaging, together with the Department of Biomedical Engineering at The University of Memphis, offer a Joint Graduate Program leading to the M.S. and Ph.D. degrees in Biomedical Engineering (BME). As a special field, BME applies engineering, physical sciences, and mathematical methods to problems involving health care; it demands close integration of many areas and forms of knowledge including the areas listed above, the life and health sciences, and current practice in clinical care. The program's primary faculty are divided equally between the two campuses and offer academic and research activities in four major sub-disciplines:

- 1) Biomechanics and rehabilitation engineering, including orthopedic implants, prosthetic devices and design engineering.
- 2) Cell and tissue engineering, focusing on the cardiovascular system and including artificial organs, biomaterials, and hemodynamics.
- 3) Electrophysiology, including measurement methods, modeling and computation, and signal analysis.
- 4) Imaging, including novel medical image-acquisition devices, computational image processing, and quantitative analysis techniques.

These sub-disciplines are bolstered by collaborations with secondary and adjunct faculty at the two universities and other affiliated institutions.

Applicants accepted into the Joint Program are admitted to both universities. For each student, one campus is designated as the administrative site. All actions related to assistantships, financial aid, immigration or other government forms, and graduation (e.g., application for candidacy, appointment of faculty committee, thesis or dissertation review and acceptance) are processed on and follow the policies of the administrative campus. In almost all cases, the administrative campus chosen will be that of the student's Research Advisor.

Courses in the Joint Program in BME listed below follow the calendar for The University of Memphis, including the final examination schedules and all deadline dates. BME graduate students enrolled in courses in other programs or departments at either university must abide by the respective calendars under which such courses are listed.

## **Retention Policy**

Students who have been admitted to the program on a conditional basis must make satisfactory progress toward completing all requirements of their conditional admission each semester of enrollment. Failure to make satisfactory progress may result in dismissal from the program.

All students will be required to maintain a GPA of at least 3.0. Failure to maintain the minimum GPA is considered sufficient cause for being dismissed from the program. Any student whose GPA falls below 3.0 will be allowed a period of one semester to correct the deficiency. This period may, at the discretion of the student's Faculty Committee, be extended one additional semester. If the GPA at the end of this extension is still below 3.0, the student will be dismissed from the program. Students will be permitted two grades of C in courses taken at the two universities. Students who earn a third grade of C or lower will be dismissed from the program.

## **Graduation Requirements**

### **Master of Science**

Students may elect to graduate from the Joint Program with a Master of Science in Biomedical Engineering through either a thesis or a nonthesis option. a) Thesis Option: Students must complete 30 credit hours, which includes six credits in the life sciences area, six credits in mathematics and its applications, at least 12 credits in engineering and six credits of thesis. Oral defense of the thesis to the student's Faculty Committee and an oral exam are required. b) Nonthesis Option: Students will be required to complete 33 credit hours, which includes six credits in the life sciences area, six credits in mathematics and its applications, at least 15 credits in engineering and a three-credit project course. Oral defense of the project to a committee of the graduate BME faculty and a written comprehensive exam are required.

## Ph.D. Degree Program

Students graduating with a Doctor of Philosophy degree in Biomedical Engineering must complete 90 hours of course work beyond the bachelor's degree or 57 beyond the master's degree. Of the total hours of course work, at least 12 must be in the life sciences and 12 in mathematics. Credit for the dissertation will be 24 to 30 semester hours; at least 24 credit hours are required, but up to six additional hours credited toward the required total of 90 hours may be permitted as determined by the student's Faculty Committee.

**BIOM 609. Special Topics in Biomedical Engineering.** Individual topics in biomedical engineering are covered at an introductory graduate level and open to undergraduates with senior standing. Typical uses for the listing include first offerings of new courses and special, one-time treatments of material for small groups of students. (Individual students pursuing project work with a faculty member should use other course numbers, e.g. 804 BIOM.) Credit: variable 1-3.

**BIOM 800. Master's Thesis and Research.** Research performed under the direction and supervision of the respective student's Research Advisor, in partial fulfillment of the requirements for the degree of Master of Science. Credit: by arrangement.

**BIOM 801. Biomedical Engineering Analysis I.** Analytical and numerical solution techniques used in analysis of biomedical engineering problems; introduction to software packages PV-Wave and Math CAD for experience with modern problem-solving methods. Credit: 3.

**BIOM 802. Biomedical Engineering Analysis II.** Continuation of 801 BIOM. Advanced techniques for solution of complex problems related to biomedical engineering phenomena; emphasis on use of software packages PV-Wave and Math CAD for analysis of problems arising in biomedical engineering research. Credit: 3.

**BIOM 803. Professional Development.** This course consists of three sections and is required of all students in the Joint BME Graduate Program. Section 1 is Professional Excellence in Engineering and includes computer literacy, professional presentation methods, the scientific method, report writing, problem solving techniques, and other topics. Students make one oral presentation and submit one written report using the techniques given in the course. Section 2 requires attendance at weekly research seminars given by nationally prominent speakers. Students must submit 50- to 100-word summaries of each seminar. Section 3 includes professional activities in the student's research track. The format is established by each research track and may include regular review meetings, track-based research seminars, reviews of prominent articles from research journals, and other similar activities. Credit: 3.

**BIOM 804. Master's Project I.** Independent study in biomedical engineering on a topic selected in conjunction with instructor. Oral and written reports required. Use 824 if taken twice. Credit: variable.

**BIOM 809. Special Topics in Biomedical Engineering.** Courses using this number present in-depth development of frontier topics of biomedical engineering by eminent researchers in their fields. Course material will be appropriate as background for graduate research. Particular descriptions are contained in semester course offerings. Admission by permission of the instructor. Credit: 3.

**BIOM 811. Life Sciences for BME I.** Within an introduction and application to aspects of the entire body, the course provides engineers and physical scientists with an understanding of aspects of the chemical, physical, and mechanical basis of cell shape, function, and motility. Integrated treatment of topics in cellular biochemistry, protein synthesis, energy releasing pathways, and membrane biophysics. Credit: 3.

**BIOM 813. Bioelectricity.** Introduction to electrical propagation through human tissue; membrane biophysics, action potentials, subthreshold stimuli, electrophysiology of heart, and neuromuscular junction. Credit: 3.

**BIOM 815. Biomedical Measurements and Instrumentation.** Measurement techniques applicable in biomedical engineering; data acquisition systems, mechanical instrumentation, interface systems, signal analyses, biocompatibility requirements. Credit: 3.

**BIOM 816. Mass Transport for Biomedical Engineers.** Basic principles of mass transport applied to biological systems with particular emphasis on blood surface interactions, especially related to blood coagulation and thrombosis. Credit: 3.

**BIOM 817. Advanced Cardiac Electrophysiology.** Advanced course in electrocardiography, pathology of arrhythmias with an emphasis on the acute phase of ischemia; clinical interpretation and manifestation will be discussed. Credit: 3.

**BIOM 818. Experimental Techniques in Cell and Tissue Engineering.** This course consists of both lectures and laboratory work covering basic biochemical and biophysical measurement techniques used by biomedical engineers. Topics include antibody production, light spectroscopy, dialysis, ultrafiltration, chromatography, ultracentrifugation, electrophoresis, Western blotting, protein purification, and ELISA. Credit: 3.

**BIOM 821. Life Sciences for BME II.** Continuation of 811 BIOM, Life Sciences for BME I. Credit: 3.



**BIOM 824. Master's Project II.** Independent study in biomedical engineering on a topic selected in conjunction with instructor. Oral and written reports required. Credit: 3.

**BIOM 825. Clinical/Industrial Internship in Biomedical Engineering.** Independent study for biomedical engineering students in the master's program; investigation in at least one area selected from a master list and approved by the student's advisor. Credit: 3.

**BIOM 826. Tissue Engineering.** Fundamental principles and current applications of tissue engineering in medicine and health care. Topics include bone and cartilage analogs, synthetic skin grafts, cell encapsulation systems, and biohybrid vascular grafts. Prerequisite(s): Permission of the instructor. Credit: 3.

**BIOM 827. Movement, Joint, and Implant Mechanics.** The course consists of the following sections: muscle and bone anthropometry; kinetics-the link model, mechanical work, energy, and power; kinematics and dynamics of rigid bodies; and the development of mechanically equivalent models of the human musculoskeletal system. Credit: 3.

**BIOM 828. Advanced Instrumentation and Measurements in Electrophysiology.** Advanced instrumentation and measurement techniques in electrophysiology; theory and application of noninvasive measurements of temperature, respiration, and the electrocardiogram; and invasive techniques including pacing, defibrillation, and arrhythmia induction and termination. Credit: 3.

**BIOM 829. Computational Modeling of Cellular Systems.** Modeling, representation, and analysis of various cellular systems with applications in smooth, skeletal, and cardiac cells, as well as neurons. Introduces basic concepts of mathematical modeling along with numerical methods, and discusses various biological systems and models of electrical and chemical activities within and between these biological systems (i.e., cells). Credit: 3.

**BIOM 834. Statistics.** Introduction to statistical techniques used for analysis of basic and clinical biomedical engineering data: sampling theory, hypothesis testing, ANOVA, and nonparametric techniques. Credit: 3.

**BIOM 840. Special Topics.** Directed readings or special course in topics of current interest. Section 001: Applied Biomedical Engineering, Section 002: Biomechanics and Rehabilitation Engineering, Section 003: Cell and Tissue Engineering, Section 004: Electrophysiology, Section 005: Medical Imaging, Section 006: Biocomputing. Credit: variable.

**BIOM 841. Engineering Analysis in Medical Imaging.** Basic mathematical techniques used in medical image analysis. Part I covers modality-independent analysis

including image representations, analog and digital signals, linearity and shift-invariance, imaging parameters, an overview of image reconstruction techniques, and experimental diagnostic accuracy. Part II covers modality-dependent analysis including applications of image reconstruction, examples of special analysis techniques and imaging instrumentation analysis, and simulation of photon generation and transport. Prerequisite(s): Calculus, complex variables, and integral transforms, or permission of the instructor. Credit: 3.

**BIOM 845. Biosensors.** Provides graduate and upper-level students with a deeper understanding of chemical sensors and biosensors, with special emphasis on electrochemical biosensors and their *in vivo* applications. The lectures and laboratory work will provide the theoretical basis and hands-on experience with macro and micro sensors and their fabrication. Credit: 3.

**BIOM 849. Mathematical Modeling of Biological Phenomena.** Application of mathematics to the understanding of biological systems is an important aspect of biomedical engineering and modern biology. The first part of the course presents lectures on the basic concepts of mathematical modeling formulation, implementation, and validation. During the second part, realistic examples of mathematical models in biology are presented. Credit: 3.

**BIOM 850. Medical Imaging I.** This course treats the basic mathematics and physics of medical imaging. Topics covered include theory and physics of x- and gamma-radiation, NMR and ultrasound, imaging theory and image processing techniques used in medical imaging. Prerequisite(s): Calculus, complex variables, and general physics. Credit: 3.

**BIOM 851. Medical Imaging II.** This course treats the design, operation, and analysis of medical imaging devices. Instrumentation covered includes classical digital radiography, fluoroscopy, CT, gamma cameras, SPECT, PET, magnetic resonance, and ultrasound. Prerequisite(s): BIOM 850 Medical Imaging I. Credit: 3.

**BIOM 853. Advanced Imaging Instrumentation.** The course presents a brief overview of digital radiographic principles and systems followed by a comprehensive treatment of an illustrative digital radiographic system: the kinestatic charge detector. Areas covered include the physical chemistry of noble gases, the physical and electronic mechanisms at work during the production, and transport and collection of the ionic signals that form the digital radiographic image. The electronic data acquisition system, chamber engineering and image quality and testing are also discussed. Prerequisite(s): BIOM 850 Medical Imaging I, BIOM 851 Medical Imaging II. Credit: 3.

**BIOM 855. Numerical Methods.** The course covers numerical differentiation and integration, computer solution of linear equations, multiparameter minimization, Monte Carlo methods, and the solution of ordinary and partial differential equations. Prerequisite(s): Calculus. Credit: 3.

**BIOM 860. Digital Signal Processing.** The student is introduced to the fundamentals of discrete time signals and discrete transforms including the Z-transform and Discrete Fourier Transform. Also covered are digital networks and filter design techniques, fast Fourier transforms, random signals and noise power spectrum. Prerequisite(s): Calculus. Credit: 3.

**BIOM 869. Biochemical Engineering.** Application of engineering principles to effect biochemical transformation through use of living cells, subcellular organelles or enzymes; overview of biotechnology, bioreactor design; cell energetics, enzyme kinetics, Michelis-Menton calculations, immobilized cells; biosensors and process control. Credit: 3.

**BIOM 870. Cardiovascular Fluid Dynamics.** Mechanics of blood circulation, fluid mechanics of the heart, blood flow in arteries, unsteady flow in veins, current concepts in circulatory assist devices, and other selected topics. Credit: 3.

**BIOM 871. Theory of Continuous Media.** This course studies the fundamentals of the mechanics of continua. It concerns the basic principles common to fluids and solids. A knowledge of continuum mechanics provides a foundation for studies in fluid and solid mechanics, material sciences, and other branches of science and engineering. Credit: 3.

**BIOM 873. Fluid Mechanics for Biomedical Engineers.** Elements of hydrodynamics with applications to flow in biomedical systems; basic principles of continuity and Navier-Stokes equations; ideal and viscous flow, boundary layer solutions, fluid wave behavior; viscosity of plasma, blood, and viscoelastic fluids, principles of viscometry. Credit: 3.

**BIOM 874. Artificial Organs.** Basic concepts of blood contacting devices used as replacement for natural organs. Artificial kidney, lung, heart-lung bypass, total hearts and ventricular assist devices, pancreas and liver. Credit: 3.

**BIOM 876. Biomaterials.** Introduction to materials used in biomedical engineering; biocompatibility and uses of implantable materials such as ceramics, polyethylene, metals composites and other materials. Credit: 3.

**BIOM 879. Biomechanics I.** Introduction to physiological systems with emphasis on structure and function of tissue and organs; application of continuum mechanics to understanding of tissue and organ behavior at microscopic and macroscopic levels; design analyses of surgical procedures and prosthetic devices. Credit: 3.

**BIOM 880. Computational Orthopedic Biomechanics.** The application of computational methods to analyze orthopedic biomechanics problems of the muscular skeletal system. Fundamental principles in biomechanical engineering (spatial kinetics,

Lagrangian dynamics, and solid mechanics) and appropriate numerical techniques will be employed to analyze isolated cases of the musculoskeletal system, including normal and pathological joint motions, function and design of implant hardware and trauma fixation devices, and analysis of upper and lower extremity motion. The course consists of a sequence of lectures devoted to specialized topics, namely: musculoskeletal system, development of mechanically equivalent models of human joint systems, two- and three dimensional kinematics and Lagrangian dynamics, Newtonian mechanics, and selected numerical techniques. (Paper and project). Credit: 3. (2-2).

**BIOM 881. Advances in Orthopaedic Biomechanics.** Discussion will be devoted to state-of-the-art development, computer-aided preoperative planning, sports medicine, and rehabilitation. Topics will include recent advances in musculoskeletal biomechanics, fracture healing and bone remodeling, spinal surgery, joint replacement and implant design, joint degeneration and surgical reconstructive planning, knee mechanics, and sports rehabilitation. Credit: 3.

**BIOM 886. Advanced Biomaterials.** Materials used in biomedical applications in relationship to corrosion, crack propagation, creep, and related topics; tissue ingrowth into materials. Credit: 3.

**BIOM 889. Biomechanics II.** Mechanics of body movement, the stress and strain in tissues and organs, the strength, trauma, and tolerance limits of organs; and growth and change of living organs in response to stress and strain. Credit: 3.

**BIOM 890. Nervous System Function.** The function of the nervous system with specific emphasis on applications in biomedical engineering. Topics include information handling, effector mechanics, and control systems. Credit: 3.

**BIOM 891. Skeletal Tissue Mechanics.** A conceptual framework of the field of the musculoskeletal system: the biomechanics of bone, structure and function of articular cartilage, ligaments and tendons, engineering design of biological materials, and structure and design of natural biomaterials to replace skeletal and other components. Prerequisite(s): MECH 3322 (U of M) or permission of the instructor. Credit: 3.

**BIOM 892. Introduction to Chemical Sensors and Biosensors.** Measurement techniques, recognition processes, application of chemical sensors and biosensors for analysis of real samples. Credit: 3.

**BIOM 893. Advanced Imaging Techniques.** In-depth treatment of advanced techniques of image processing and system performance analysis applied to medical image systems. Selected topics may include systematic corrections for digital image acquisition, image reconstruction in the presence of noise, feature enhancement techniques, computed tomography algorithms, and analysis of system/reader performance in diagnostic imaging. Credit: 3.

**BIOM 894. Physiological Control Systems.** Modeling, representation, analysis, and design of analog and digital feedback control systems, using control theory techniques. Applications will be modeling and control problems in cellular and general physiology. Credit: 3.

**BIOM 895. Cell Adhesion.** The course will focus on the role of cell adhesion in leukocyte trafficking, inflammation, and metastasis. Emphasis will be placed on the biological and physical aspects of cell adhesion. The past and potential uses of engineering techniques to study cell adhesion will be discussed. Credit: 3.

**BIOM 900. Doctoral Dissertation and Research.** Research performed under the direction of the student's Research Advisor in partial fulfillment of the requirements for the Ph.D. degree. Fall and Spring Semesters. Credit: by arrangement.

**BIOM 909. Special Topics in Biomedical Engineering.** Courses using this number present in-depth development of frontier topics of Biomedical Engineering by eminent researchers in their fields. Course material will be appropriate as background for doctoral research. Particular descriptions are contained in semester course offerings. Admission by permission of the instructor. Credit: 3.

## **Program in Dental Science**

The Master of Dental Science is designed to provide a contemporary research experience in the areas of orally related sciences to dentists enrolled in the clinical specialty programs of the College of Dentistry. The course and research requirements of the Master of Dental Science should provide individuals with both a traditional and contemporary knowledge of the role of research in the clinical management of orofacial abnormalities and diseases. The goal of the program is to train dental specialists to pursue several career possibilities, including specialty practice, research, or teaching, with the increased knowledge of the interrelationship among clinical dentistry, basic science, and research. The program is offered in four concentration areas: orthodontics, pediatric dentistry, periodontology, and prosthodontics. Additionally, degree training can be arranged for those pursuing a clinical certificate in pediatric dentistry.

### **Orthodontics**

The graduate program in orthodontics at the University of Tennessee Health Science Center begins each August and continues for 33 consecutive months with graduation in May. Not more than four students are selected for matriculation each year. This program provides intensive instruction and training in the biological and clinical sciences related to orthodontics. The course of instruction is designed to satisfy all requirements for eligibility for licensure as a specialist, the specialty board in orthodontics, and the Master of Dental Science degree.

Students admitted to the program are expected to demonstrate clinical proficiency in orthodontics and complete a thesis that is based on original research, demonstrates individual thought, and is of substantive literary and scientific merit. The program, fully

accredited by the American Dental Association, is well rounded and provides balanced training in clinical orthodontics, the basic sciences, and research.

## **Pediatric Dentistry**

For students who successfully complete the 24-month clinical program in pediatric dentistry and are interested in additional research training, a third year of full-time study (12 months) is available leading to a Master of Dental Science degree. The degree is awarded by the College of Graduate Health Sciences on completion of an original research project together with a written thesis. Although the student will maintain clinical skills through active patient care during this time, the third year of study emphasizes gaining experience in research methodologies and interdisciplinary research activities. Students wishing to pursue the Master of Dental Science degree must inform the department chair at the beginning of the second year of postdoctoral studies.

## **Periodontics**

Consistent with the expanding scope and knowledge in periodontics and the accreditation requirements of the American Academy of Periodontology and American Dental Association, the course of study leading to a certificate of proficiency in periodontics and a Master of Dental Science degree extends over 36 months. The curriculum has been designed to relate basic science principles to the practice of periodontics. The program emphasizes clinical application, with significant didactic and research activity maintained over the 36 months.

The research areas available for study include the broad expanse of both clinical and basic science approaches to improving the understanding of periodontal pathobiology. In general, clinical certification is not awarded until the student has fulfilled the requirements of the College of Graduate Health Sciences for the Master of Dental Science degree. Two students are accepted each year for admission and matriculation in July. Stipend support is available.

## **Prosthodontics**

The Advanced Prosthodontic Program at the University of Tennessee Health Science Center begins each July and extends for 36 consecutive months with graduation in June. The program is well rounded and provides balanced instruction in clinical prosthodontics, laboratory technology, basic sciences, and research. Upon completion, a Certificate of Proficiency in prosthodontics and a Master of Dental Science degree are awarded.

The program complies with standards established by the Commission on Dental Accreditation of the American Dental Association and qualifies students for examination by the American Board of Prosthodontics. The curriculum is consistent with the expanding scope of knowledge in prosthodontics as determined by the American College of Prosthodontists and the American Dental Association. In accordance with mandates set forth by the American Dental Association in the Accreditation Standards for Advanced Specialty Education Programs in Prosthodontics,

all students are involved in original, independent research. This research displays a high level of scholarship and contributes to the existing fund of professional knowledge. Strong mentorship and state-of-the-art scientific resources are readily available in the Department of Restorative Dentistry's clinical research facility, the College of Dentistry's dental research center and dental materials core facilities, and the University's College of Health Science Engineering. A Master of Dental Science degree is awarded by the College of Graduate Health Sciences upon fulfillment of all program requirements, completion of research, production and acceptance of a thesis, and successful public defense of the independent research effort. At present, one student is accepted into the Advanced Prosthodontics Program each year. A stipend is granted to each student in the program, commensurate with level of training and funding availability.

**DSCI 600. Head and Neck Anatomy.** Detailed study of anatomic structures fundamental to dental specialty training, principally through prosections and dissections. Emphasis is on functional (rather than architectural) relationships as they relate to growth, development, and clinical treatment. Included are lectures on osteology of the skull, innervation and blood supply of the face, muscles of facial expression and mastication, and anatomy of the oral cavity. Credit: 2.

**DSCI 602. Oral Embryology and Histology.** A study of the embryogenesis of tissues, organs, and structures of the craniofacial region. This includes the developmental history of the facial region, derivatives of the pharyngeal arches, the chondrocranium and its derivatives, development of the teeth, histogenesis and structure of craniofacial joints, and development of the neuromuscular system. The periodontium, oral mucosa, and tongue are covered in this course as well. Credit: 1.

**DSCI 603. Biostatistics.** This course in biostatistics is designed to introduce the student to widely used methods for the analysis of experimental and observational data with orientation toward statistical inference from dental research. Credit: 1.

**DSCI 610. Graduate Oral Biology.** 610 DSCI, Graduate Oral Biology. This course provides the students in specialty programs with an overview of the biology of oral tissue functions. The physiological and biochemical basis of normal and pathologic processes in oral diseases are emphasized. Topics include the role of the extracellular matrix in maintaining oral tissue functions during normal development and in the pathogenesis of oral and maxillofacial disorders; developmental aspects and cell interactions in the dentition and orthodontic tooth movement; and wound healing, joint destruction, and bone resorption. The course also provides an analysis of the conflict between oral pathogens and host defense systems; the role of saliva and cells of the immune system during infection, inflammation, healing, and repair; basic concepts in neuromuscular physiology including reflexes and pain in the oral cavity are emphasized; the role of neurotrophic factors in the development of teeth and peripheral taste system are discussed, as well as tooth innervation and the development of therapies for idiopathic dental pain. A brief exposure to oral cancer biology, the mechanism of tumor progression, and biomarkers in oral cancer are discussed. Credit: 1.

**DSCI 653. Human Growth and Development.** This course provides an overview of the events of human growth and the analytic approaches used to study growth, particularly from birth to adulthood. Discussions center around the nature of growth, mechanisms of growth, general body development, and genetic and environmental influences on growth. Emphasis is given to the head and neck region. Credit: 1.

**DSCI 654. Craniofacial Growth.** Emphasis is placed on exploring the qualitative, quantitative, and integrative changes that take place in the morphogenetic complexes of the skull during craniofacial growth and development and the development of the occlusion. Descriptions of normal growth are followed by assessments of genetic and chromosomal effects on growth, including reviews of common pharyngeal arch syndromes-with extended discussion of cleft lip and palate. A discourse on the hypothesized mechanisms controlling bone and facial growth is provided. Credit: 1.

**DSCI 659. Radiology and Cephalometrics.** The course provides a thorough understanding of craniofacial radiographic techniques with emphasis on cephalometric roentgenography. The course is designed to acquaint the student with the use of radiographs, radiation hygiene, radiographic evidence of pathology, and cephalometric techniques to assure proficiency in technical skills and in interpretation as needed for diagnostic procedures. This course consists of lecture and laboratory instruction. Credit: 2.

**DSCI 705. Advanced Oral and Maxillofacial Pathology.** This is a course on pathology of the jaws and contiguous soft tissues and their relationship to systemic disease. Special emphasis is placed on developing a logical approach to clinical, roentgenographic, and histopathologic diagnosis; the relationships between local and systemic disease; and consideration for appropriate treatment. Credit: 1.

**DSCI 709. Pharmacology.** Recent advances in pharmacology, particularly as related to the dental specialist, are discussed in this course. Spring, alternate years. Credit: 1.

**DSCI 710. Advanced Dental Applied Pharmacology.** This graduate course focuses on the clinical application of advanced pharmacologic/pharmacotherapeutic principles for specialty practitioners in dentistry. Topics covered include general pharmacology principles, alternative (herbal) products, emergency medicine drugs, drugs affecting the central & autonomic nervous systems, drugs affecting the cardiovascular system, agents used in conscious sedation, local analgesics & vasoconstrictors, chemotherapy drugs, immunosuppressant drugs, antihistamines, autacoids, and anti-inflammatory medications. Issues of age-related alterations in pharmacodynamics, the problems of poly-pharmacy, and important drug-drug interactions are highlighted and discussed. The course incorporates self-study through an online instructional instrument and seminar sessions devoted to evidence-based literature reviews covering topics of interest to dental specialists. The course is limited to graduate students currently enrolled in dental residency programs. Participants are expected to have a basic understanding of pharmacology and pharmacokinetics. Credit: 2.



**DSCI 713. Microbiology and Immunology.** This lecture and seminar course is conducted with the assistance of basic science faculty members with expertise in the areas of microbiology, allergy, and immunology. Included are lectures on classification, morphology, Gram staining, attachment, structure, culture, metabolism, identification and colonization of microorganisms, periodontopathic bacteria, bacterial metabolism, virulence factors, and attachment mechanisms. Host defense presentations include lectures on T and B cells, antigens, mitogens, antibody-mediated reactions, complement, humoral and cell mediated interactions, cytokines, laboratory immunologic assays and their clinical significance. Fall, alternate years. Credit: 1.

**DSCI 717. Orthodontics-Periodontics Seminar.** This seminar course is conducted by members of the Orthodontics and Periodontology faculties. Included are lectures on the interrelationships of orthodontic and periodontic approaches to common treatment situations. Emphasis is placed on the basic science mechanisms underlying periodontic and orthodontic therapies. Selected literature of common interest to the students of Orthodontics and Periodontics is reviewed. Graduate students present patient records for diagnosis and treatment planning as well as the records of patients treated in an interdisciplinary manner. The purpose of this seminar is to encourage greater interaction and understanding between the orthodontist and the periodontist, including the identification of patients to be treated jointly by graduate students in orthodontics and periodontics. Credit: 1.

**DSCI 800. Thesis.** Upon achieving candidate status, this course must be elected. The preparation of the thesis is finalized, the results presented, and the oral defense is conducted under this course number. Credit: variable.

**ORTH 655. Clinical Specialty Seminars I.** This Course is a companion to clinical training in orthodontics and involves faculty and student evaluations of historically significant as well as contemporary orthodontic literature. All of the current research articles in the key journals in orthodontics are reviewed as they are published. Key historical literature based on readings compiled by the faculty is presented in lecture format by the graduate students based on readings compiled by the faculty. The students are also exposed to the historical development of orthodontics, additional treatment philosophies through guest speakers, and new developments in treatment. Credit: 1.

**ORTH 667. Clinical Specialty Seminars II.** This Course is a companion to clinical training in orthodontics and involves faculty and student evaluations of historically significant as well as contemporary orthodontic literature. All of the current research articles in the key journals in orthodontics are reviewed as they are published. Key historical literature is presented in lecture format by the graduate students based on readings compiled by the faculty. The students are also exposed to the historical development of orthodontics, additional treatment philosophies through guest speakers, and new developments in treatment. Credit: 1.

**ORTH 755. Craniofacial Growth.** Topics in growth malformations and dysplasias are presented. The etiology, presentation, differential diagnosis, and orthodontic treatment

of comparatively common pharyngeal arch syndromes and sequences are described, with extended discussion of cleft lip and palate. Credit: 1.

**ORTH 762. Biomaterials for Orthodontics.** This Course provides the student with a basic knowledge of the materials used in orthodontics. New developments in materials science and their relationships to the properties of materials important for orthodontic use are reviewed. The Course requires successful completion of a research project and reporting this project in a formal report. Credit: 1.

**ORTH 767. Clinical Specialty Seminars III.** This Course is a companion to clinical training in orthodontics and involves faculty and student evaluations of historically significant as well as contemporary orthodontic literature. All of the current research articles in the key journals in orthodontics are reviewed as they are published. Key historical literature is presented in lecture format by the graduate students based on readings compiled by the faculty. The students are also exposed to the historical development of orthodontics, additional treatment philosophies through guest speakers, and new developments in treatment. Credit: 1.

**ORTH 768. Clinical Specialty Seminars IV.** This Course is a companion to clinical training in orthodontics and involves faculty and student evaluations of historically significant as well as contemporary orthodontic literature. All of the current research articles in the key journals in orthodontics are reviewed as they are published. Key historical literature is presented in lecture format by the graduate students based on readings compiled by the faculty. The students are also exposed to the historical development of orthodontics, additional treatment philosophies through guest speakers, and new developments in treatment. Credit: 1.

**ORTH 785. Scientific Writing: Thesis Protocol.** The theory and practice of preparing a sound protocol preparatory to thesis-level research is discussed in detail. Various research designs are discussed. Additionally, style and content of a grant proposal are reviewed. Credit: 1.

**ORTH 786. Scientific Writing: Thesis.** The theory and practice of writing a scientifically based thesis are presented. The purpose, structure, and style of all the parts of a thesis are described. The practical application of this series of lectures is the development of the student's thesis. Credit: 1.

**ORTH 789. Independent Research.** This Course encompasses the activities necessary to conduct an original research project pertinent to the general field of craniofacial biology or the specific discipline of orthodontics. It involves the development of a problem, the writing of a formal research proposal including a full literature review, statement of material and methods, and the execution of the research and appropriate analysis and interpretation of data. Credit: 4.

**ORTH 840. Special Topics.** Directed readings or special Course in topics of current

interest. Credit: variable.

**ORTH 856. Craniofacial Anomalies.** The orthodontic graduate student must be trained to deal with and to competently treat patients who present with various skeletal and dental anomalies. This Course's purpose is to cover the literature on the various syndromes and developmental anomalies that affect the teeth and the face. Visiting lecturers from across the spectrum of healthcare delivery address the class and explain the intricacies of dealing with these problems from the perspective of their respective specialty. Credit: 1.

**ORTH 857. TMD and Occlusal Concepts.** Orthodontic treatment has many ramifications for the stomatognathic system. The temporomandibular joint depends on proper occlusion for health and function. This Course requires the student to read the appropriate literature, understand the intricacies of the interrelationship of the occlusion and the TMJ, and apply these principles to the correction of orthodontic malocclusion. Credit: 1.

**ORTH 858. Orthodontic History and Ethics.** This Course is an introduction to the history of the development of the specialty of orthodontics, with an emphasis on the personalities involved in the development and evolution of the specialty. There are also ethical dilemmas in orthodontics that are discussed and studied. Credit: 1.

**ORTH 867. Clinical Specialty Seminars V.** This Course is a companion to clinical training in orthodontics and involves faculty and student evaluations of historically significant as well as contemporary orthodontic literature. All of the current research articles in the key journals in orthodontics are reviewed as they are published. Key historical literature is presented in lecture format by the graduate students based on readings compiled by the faculty. The students are also exposed to the historical development of orthodontics, additional treatment philosophies through guest speakers, and new developments in treatment. Credit: 1.

**ORTH 868. Clinical Specialty Seminars VI.** This Course is a companion to clinical training in orthodontics and involves faculty and student evaluations of historically significant as well as contemporary orthodontic literature. All of the current research articles in the key journals in orthodontics are reviewed as they are published. Key historical literature is presented in lecture format by the graduate students based on readings compiled by the faculty. The students are also exposed to the historical development of orthodontics, additional treatment philosophies through guest speakers, and new developments in treatment. Credit: 1.

**ORTH 888. Scientific Writing: The Journal Article.** In this Course students receive instruction on writing a research article and preparing the manuscript for submission to a professional journal. Topics to be covered include essential tools for scientific writing, the structural components of a journal article, writing techniques, design of tables and illustrations, critical and editorial scrutiny of the manuscript, and the journal publishing

process. The prerequisite includes possession of a recently completed research project conducted in-residence (i.e., the graduate student's thesis) and judged by the supervising faculty member to be worthy of publication. The completed, publishable manuscript becomes an appendix to the student's thesis. Prerequisite(s): Possession of a recently completed research project conducted in-residence (i.e., the graduate student's thesis) that is judged by the supervising faculty member to be worthy of publication. Credit: 1.

**ORTH 895. Independent Research.** This Course involves performance of an original research project leading to completion of the MS thesis. Credit: 4.

**ORTH 896. Independent Research.** This Course encompasses the activities necessary to conduct an original research project pertinent to the general field of craniofacial biology or the specific discipline of orthodontics. It involves the development of a problem, the writing of a formal research proposal including a full literature review, statement of material and methods, and the execution of the research and appropriate analysis and interpretation of data. Credit: 8.

**PEDI 622. Dental Pediatrics I.** The course entails discussions pertaining to the physical, craniofacial, and oral development of the child. Fluoride therapy and childhood injury and prevention are presented. The student is also introduced to hospital and medical emergency protocol. Credit: 1.

**PEDI 623. Dental Pediatrics II.** This course entails discussions pertaining to the emotional, cognitive, language, and social changes in the maturing child. Theory regarding nonpharmacologic behavior management is introduced. Credit: 1.

**PEDI 635. Pediatric Dental Research I.** The student is required to complete a research project in the field of pediatric dentistry and write a publishable research paper prior to program graduation. This course teaches the theory and practice of investigative research studies including methods for designing experiments, evaluating experimental data, and writing a research proposal. Credit: 1.

**PEDI 636. Pediatric Dental Research II.** This course encompasses the activities necessary to write a formal research proposal including a full literature review, statement of material and methods, appropriate data analysis techniques, and associated resource requirements. Credit: 1.

**PEDI 646. Literature Review I.** The literature review is designed to keep the postdoctoral student familiar with the current scientific literature as well as to prepare the individuals for board certification. Topics which are addressed include physical, psychological and social child development, behavior management, infant oral health, prevention of oral disease and trauma, histophysiology of pulp and oral disease, pain and anxiety control, dental materials, management of the developing dentition, management of the medically compromised patient, trauma, and medical ethics. Credit: 2.

**PEDI 647. Literature Review II.** The literature review is designed to keep the postdoctoral student familiar with the current scientific literature as well as to prepare the individuals for board certification. Topics which are addressed include physical, psychological and social child development, behavior management, infant oral health, prevention of oral disease and trauma, histophysiology of pulp and oral disease, pain and anxiety control, dental materials, management of the developing dentition, management of the medically compromised patient, trauma, and medical ethics. Credit: 2.

**PEDI 648. Case Presentation and Analysis I.** The student presents patient clinical examination records, models, radiographs, and other diagnostic aids utilized to form a diagnosis and treatment plan. The diagnosis and treatment plan are presented to faculty and colleagues for critical review and analysis. Credit: 1.

**PEDI 649. Case Presentation and Analysis II.** The student presents patient clinical examination records, models, radiographs, and other diagnostic aids utilized to form a diagnosis and treatment plan. The diagnosis and treatment plan are presented to faculty and colleagues for critical review and analysis. Credit: 1.

**PEDI 722. Dental Pediatrics III.** The course entails discussions pertaining to the physically and mentally disabled patient and/or associated craniofacial syndromes. Indications and preparation for pharmacologic behavior management are introduced. Credit: 1.

**PEDI 723. Dental Pediatrics IV.** Recognition of infection, differential diagnosis for disease and treatment of infectious diseases, pediatric dental techniques and appliances for physical tissue destruction, and nutrition are presented. Credit: 1.

**PEDI 735. Pediatric Dental Research III.** This course encompasses the activities necessary to conduct a formal research investigation in the field of pediatric dentistry and prepare a publishable paper based on the findings of the investigation. Credit: 2.

**PEDI 736. Pediatric Dental Research IV.** This course encompasses the activities necessary to complete a formal research investigation in the field of pediatric dentistry and prepare a publishable paper based on the findings of the investigation. Credit: 2.

**PEDI 746. Literature Review III.** The literature review is designed to keep the postdoctoral student familiar with the current scientific literature as well as to prepare the individuals for board certification. Topics which are addressed include physical, psychological and social child development, behavior management, infant oral health, prevention of oral disease and trauma, histophysiology of pulp and oral disease, pain and anxiety control, dental materials, management of the developing dentition, management of the medically compromised patient, trauma, and medical ethics. Credit: 2.

**PEDI 747. Literature Review IV.** The literature review is designed to keep the postdoctoral student familiar with the current scientific literature as well as to prepare the individuals for board certification. Topics which are addressed include physical, psychological and social child development, behavior management, infant oral health, prevention of oral disease and trauma, histophysiology of pulp and oral disease, pain and anxiety control, dental materials, management of the developing dentition, management of the medically compromised patient, trauma, and medical ethics. Credit: 2.

**PEDI 748. Case Presentation and Analysis III.** The student presents patient clinical examination records, models, radiographs, and other diagnostic aids utilized to form a diagnosis and treatment plan. The diagnosis and treatment plan are presented to faculty and colleagues for critical review and analysis. Credit: 1.

**PEDI 749. Case Presentation and Analysis IV.** The student presents patient clinical examination records, models, radiographs, and other diagnostic aids utilized to form a diagnosis and treatment plan. The diagnosis and treatment plan are presented to faculty and colleagues for critical review and analysis. Credit: 1.

**PEDI 835. Pediatric Dental Research V.** This course encompasses the activities necessary to conduct a formal research investigation in the field of pediatric dentistry and prepare a publishable paper based on the findings of the investigation. Credit: 4.

**PEDI 840. Special Topics.** Directed readings or special course in topics of current interest. Credit: variable.

**PERI 604. Experimental Design.** This course is an introduction to research, including methods of designing experiments and evaluating experimental data. Credit: 1.

**PERI 614. Research in Periodontal Pathobiology I.** This course will provide each first-year student with the opportunity to engage in periodontally related research for 4 hours per week during the fall semester. It may include both clinical and laboratory research. Each student will be assigned a research mentor who is trained and experienced in research methodologies and writing of scientific papers. Instruction will be given by appropriate faculty members on an individualized basis. Student activities will include research of relevant literature, writing of appropriate literature reviews, hands-on research, gathering and analysis of data, interpretation of results, drawing conclusions, and writing papers appropriate for publication. Credit: 2.

**PERI 615. Research in Periodontal Pathobiology II.** This course will provide each first-year student with the opportunity to engage in periodontally related research for 4 hours per week during the spring semester. It may include both clinical and laboratory research. Each student will be assigned a research mentor who is trained and experienced in research methodologies and writing of scientific papers. Instruction will

be given by appropriate faculty members on an individualized basis. Student activities will include research of relevant literature, writing of appropriate literature reviews, hands-on research, gathering and analysis of data, interpretation of results, drawing conclusions, and writing papers appropriate for publication. Credit: 2.

**PERI 621. Introduction to Periodontal Pathobiology.** This is an overview of periodontics in a combination textbook-literature-lecture-seminar format. Subject areas covered include periodontal anatomy and histology, etiology, and histopathology of periodontal diseases. Clinically related seminars include examination, diagnosis, prognosis, and treatment planning for the patient with periodontal disease. A variety of approaches to treatment, as well as the importance of supportive therapy for the treated patient, are emphasized. The interrelationship between basic sciences and the pathobiology of periodontal diseases is emphasized. Appropriate reading material from standard textbooks and the periodontal literature is assigned for each seminar period. Credit: 3.

**PERI 641. Topical Literature Review of Periodontology Seminar I.** This seminar is conducted weekly throughout the first two years of the residency program under the direction of the postgraduate periodontics staff. The purpose of this seminar is exposure to classic and current scientific literature in various subject areas related to periodontal pathobiology, as well as written and verbal evaluation of the literature reviewed. Credit: 4.

**PERI 642. Topical Literature Review of Periodontology Seminar II.** This seminar is conducted weekly throughout the first two years of the residency program under the direction of the postgraduate periodontics staff. The purpose of this seminar is exposure to classic and current scientific literature in various subject areas related to periodontal pathobiology, as well as written and verbal evaluation of the literature reviewed. Credit: 4.

**PERI 643. Review of Current Periodontology Literature Seminar I.** This seminar is conducted weekly throughout the three-year residency period. Four of the major journals devoted to periodontics are reviewed selectively. Selected articles are also reviewed from other major journals. The purpose of this seminar is to provide experience in reading, abstracting, and evaluating the most recently published ideas and concepts in the field of periodontal biology. Credit: 2.

**PERI 644. Review of Current Periodontology Literature Seminar II.** This seminar is conducted weekly throughout the three-year residency period. Four of the major journals devoted to periodontics are reviewed selectively. Selected articles are also reviewed from other major journals. The purpose of this seminar is to provide experience in reading, abstracting, and evaluating the most recently published ideas and concepts in the field of periodontal biology. Credit: 2.

**PERI 714. Research in Periodontal Pathobiology III.** This course will provide each

second-year student with a continuing opportunity to engage in periodontally related research for 6 hours per week. It may include both clinical and laboratory research. Each student will be assigned a research mentor who is trained and experienced in research methodologies and writing of scientific papers. Instruction will be given by appropriate faculty members on an individualized basis. Student activities will include research of relevant literature, writing of appropriate literature reviews, hands-on research, gathering and analysis of data, interpretation of results, drawing conclusions, and writing papers appropriate for publication. Credit: 3.

**PERI 715. Research in Periodontal Pathobiology IV.** This course will provide each second-year student with a continuing opportunity to engage in periodontally related research for 6 hours per week. It may include both clinical and laboratory research. Each student will be assigned a research mentor who is trained and experienced in research methodologies and writing of scientific papers. Instruction will be given by appropriate faculty members on an individualized basis. Student activities will include research of relevant literature, writing of appropriate literature reviews, hands-on research, gathering and analysis of data, interpretation of results, drawing conclusions, and writing papers appropriate for publication. Credit: 3.

**PERI 737. Lectures in Internal Medicine.** This series of lectures-seminars is combined with a variable-length rotation in internal medicine to provide the resident with the opportunity to review with medical experts certain common medical conditions which may relate directly or indirectly to the severity and management of the patient's periodontal condition. Included are presentations in transplant therapy, the pharmacologic management of the transplant patient, psychiatric conditions and their impact on management of the dental patient, hematologic considerations for the dental patient, management of the patient with a history of need for infective endocarditis prophylaxis, cardiovascular considerations in the management of the dental patient, endocrinologic consideration for the dental patient, management of the hypertensive dental patient, and anaphylaxis and drug reactions. Spring alternate years. Credit: 1.

**PERI 741. Topical Literature Review of Periodontology Seminar III.** This seminar is conducted weekly throughout the first two years of the residency program under the direction of the postgraduate periodontics staff. The purpose of this seminar is exposure to classic and current scientific literature in various subject areas related to periodontal pathobiology, as well as written and verbal evaluation of the literature reviewed. Credit: 4.

**PERI 742. Topical Literature Review of Periodontology Seminar IV.** This seminar is conducted weekly throughout the first two years of the residency program under the direction of the postgraduate periodontics staff. The purpose of this seminar is exposure to classic and current scientific literature in various subject areas related to periodontal pathobiology, as well as written and verbal evaluation of the literature reviewed. Credit: 4.

**PERI 743. Review of Current Periodontology Literature Seminar III.** This seminar



is conducted weekly throughout the three-year residency period. Four of the major journals devoted to periodontics are reviewed selectively. Selected articles are also reviewed from other major journals. The purpose of this seminar is to provide experience in reading, abstracting and evaluating the most recently published ideas and concepts in the field of periodontal biology. Credit: 2.

**PERI 744. Review of Current Periodontology Literature Seminar IV.** This seminar is conducted weekly throughout the three-year residency period. Four of the major journals devoted to periodontics are reviewed selectively. Selected articles are also reviewed from other major journals. The purpose of this seminar is to provide experience in reading, abstracting, and evaluating the most recently published ideas and concepts in the field of periodontal biology. Credit: 1.

**PERI 814. Research in Periodontal Pathobiology V.** This course will provide each third-year student with a continuing opportunity to engage in periodontally related research for 8 hours per week during the fall semester. It may include both clinical and laboratory research. Each student will be assigned a research mentor who is trained and experienced in research methodologies and writing of scientific papers. Instruction will be given by appropriate faculty members on an individualized basis. Student activities will include research of relevant literature, writing of appropriate literature reviews, hands-on research, gathering and analysis of data, interpretation of results, drawing conclusions, and writing papers appropriate for publication. Additionally, this research will be described in a thesis submitted in partial fulfillment of a Master of Dental Science degree. Credit: 4.

**PERI 815. Research in Periodontal Pathobiology VI.** This course will provide each third-year student with a continuing opportunity to engage in periodontally related research for 8 hours per week during the spring semester. It may include both clinical and laboratory research. Each student will be assigned a research mentor who is trained and experienced in research methodologies and writing of scientific papers. Instruction will be given by appropriate faculty members on an individualized basis. Student activities will include research of relevant literature, writing of appropriate literature reviews, hands-on research, gathering and analysis of data, interpretation of results, drawing conclusions, and writing papers appropriate for publication. Additionally, this research will be described in a thesis submitted in partial fulfillment of a Master of Dental Science degree. Credit: 4.

**PERI 840. Special Topics.** Directed readings or special course in topics of current interest. Credit: variable 1-5.

**PERI 843. Review of Current Periodontology Literature Seminar V.** This seminar is conducted weekly throughout the three-year residency period. Four of the major journals devoted to periodontics are reviewed selectively. Selected articles are also reviewed from other major journals. The purpose of this seminar is to provide experience in reading, abstracting, and evaluating the most recently published ideas and concepts in the field of periodontal biology. Credit: 2.

**PERI 844. Review of Current Periodontology Literature Seminar VI.** This seminar is conducted weekly throughout the three-year residency period. Four of the major journals devoted to periodontics are reviewed selectively. Selected articles are also reviewed from other major journals. The purpose of this seminar is to provide experience in reading, abstracting, and evaluating the most recently published ideas and concepts in the field of periodontal biology. Credit: 2.

**PROS 710. Prosthodontic Literature Seminar.** This weekly seminar provides exposure to historically relevant, scientific literature in various subject areas associated with prosthodontics and related sciences. Periodic and critical abstracting of this literature is accomplished by seminar attendees in order to maintain a database of condensed, topic-oriented summaries. Students in the Advanced Prosthodontic Program participate in this seminar each semester of their three-year residency. Twenty-four broad topics pertinent to prosthodontics are covered on a rotational basis over a three-year period. Eight topics are covered during each year of the residency program. Seminars are led by the director of the Advanced Prosthodontic Program. Other members of the University of Tennessee Health Science Center faculty are invited to participate when their expertise with regard to the seminar topic is considered beneficial to the learning experience. Credit: variable.

**PROS 711. Contemporary Evidence-Based Journal Club.** Ongoing review of current, pertinent, professional literature is fundamental to the successful practice of prosthodontics. For postdoctoral students, knowledge of current professional literature is essential to developing theoretical and practical patient management skills. The assessment of current literature for its evidence-based value is critical. Journal Club provides a mechanism for surveying major dental periodicals to identify important articles, reviewing those articles, and discussing each article in an open seminar format. Twice weekly, one-hour seminars are conducted throughout the three-year program. This schedule is necessary to stay abreast of the ever-expanding volume of prosthodontic literature. Credit: 2.

**PROS 800. Thesis.** This course provides opportunity for students to engage in research in prosthodontics and related sciences. Though involvement is arranged to suit individual needs, time commitment will be approximately 4 hours per week during each semester of the program. Students work with advisors experienced in research methodologies and scientific writing. Instruction is given by appropriate faculty on individual bases. Student activities include library research, writing a literature review, developing a research protocol, hands-on research, gathering and analyzing data, interpreting experimental results, developing conclusions, and publishing outcomes. Public defense of the research effort and publication of a thesis in accordance with regulations established by the College of Graduate Health Sciences are required. Research, public defense, and thesis accomplished during this course are in partial fulfillment of the requirements for the Master of Dental Science degree award by the UTHSC College of Graduate Health Sciences. Credit: variable.

## **Program in Epidemiology**

Epidemiology is the study of the distribution and determinants of health and disease in populations. Its role has expanded over the past 20 years to involve all facets of health care, disease prevention, and health promotion. In addition to being the basic science of public health, epidemiology has emerged as an important discipline for nursing, allied health, and clinical medicine, especially in the managed-care environment. The Master of Science program (36 credit hours minimum) is designed to provide the necessary methodological skills for students to be able to independently pursue epidemiological research in their chosen areas. As part of the program, students receive training in epidemiology, biostatistics, health research methods, and health behavior and promotion. The program is offered to qualified applicants holding a baccalaureate, master's, or professional degree in a variety of disciplines, including physical, biological, and social sciences, health and medical sciences. The program emphasizes training current health professionals to develop and enhance their knowledge of epidemiology, research design, and data analysis skills. Students holding an advanced degree at the master's or doctoral level may opt for a nonthesis track in which the student prepares a quantitatively based research article, approved by the student's committee, which must be submitted for publication in a professional epidemiology-related, peer-reviewed journal. Track selection should be made by the end of a student's first year in the program. Regardless of track, students present their thesis or submitted article in an announced forum with subsequent defense before the student's committee.

### **Core Required of All Students (21 credit hours):**

- 800 BIOE, Master's Thesis and Research or 804 BIOE Master's Project (6 credit hours)
- 813 BIOE, Fundamentals of SAS for Epidemiology (2 credit hours)
- 811 BIOE, Biostatistics for the Health Sciences I (3 credit hours)
- 812 BIOE, Fundamentals of Epidemiology (3 credit hours)
- 821 BIOE, Biostatistics for the Health Sciences II (3 credit hours)
- 822 BIOE, Advanced Epidemiology (4 credit hours)

### **Departmental Electives (12-15 credit hours):**

- 810 BIOE, Independent Study (3 credit hours toward degree)
- 814 BIOE, Health Behavior Theory and Intervention Design (3 credit hours)
- 815 BIOE, Introduction to Public Health and Preventive Medicine (3 credit hours)
- 816 BIOE, Epidemiologic and Clinical Methods in Bone Assessment (3 credit hours)
- 817 BIOE, Epidemiology of Aging (3 credit hours)
- 818 BIOE, Mixed Linear Models in Epidemiology (3 credit hours)
- 819 BIOE, Master's Seminar: Survival and Self-Reliance in the Computer Age (1 credit hour)
- 823 BIOE, Randomized Clinical Trials (3 credit hours)
- 824 BIOE, Genetic Epidemiology: Methods and Applications (3 credit hours)
- 825 BIOE, Bioinformatics for Epidemiologists (1 credit hour)
- 826 BIOE, Women's Health Seminar (3 credit hours)
- 831 BIOE, Measurement in Epidemiology (3 credit hours)
- 840 BIOE, Special Topics (credit Variable, 1-5 credit hours)
- 851 BIOE, Introduction to Health Services Research (3 credit hours)
- 861 BIOE, Pharmacoepidemiology (3 credit hours)

862 BIOE, Advanced Categorical Data Analysis Techniques for Epidemiology (3 credit hours)

**BIOE 714. Special Topic: Public Health Leadership.** Principles and practices of leadership within public health and community settings. Leadership and the core public health functions of assessment, policy development, and assurance. Enhancing communication, decision-making, team building, and conflict resolution skills. Leadership for planning process and organizational change. Review of case studies and skill building exercises. Prerequisite(s): Admission into Certificate Program of the Tennessee Consortium for Public Health Workforce Education or permission of the instructor. Credit: 3.

**BIOE 715. Environmental Risk Assessment.** This is an elective course in environmental risk assessments, applied to public health problems. Prerequisite(s): Admission into Certificate Program of the Tennessee Consortium for Public Health Workforce Education or permission of the instructor. Credit: 4.

**BIOE 716. Zoonotic Diseases.** This is an elective, web-based course in zoonotic diseases with focus on identification and description of zoonosis and prevention and control within public health. Prerequisite(s): Admission into Certificate Program of the Tennessee Consortium for Public Health Workforce Education or permission of the instructor. Credit: 3.

**BIOE 717. Public Health Policy and Law.** This course is designed to explore the major governmental and legal forces that shape public health policy in the United States. These include the roles of the branches of the federal, state, and local governments, the media, the public and courts in placing issues on the policy agenda and in developing, implementing and assessing public policy related to the design, delivery and financing of public health services. The course will be taught using on-line internet-based methods and will utilize case studies to exemplify key principles. Prerequisite(s): Admission into Certificate Program of the Tennessee Consortium for Public Health Workforce Education or permission of the instructor. Credit: 3.

**BIOE 718. Program Evaluation for Public Health.** This course will teach basic public health skills necessary to evaluate a community health program. The course will focus on the overviews of community evaluation approaches and their direct application to efforts within health department settings. Evaluation planning, design, determining evaluation questions, goals and program outcomes will constitute the primary content of this course. Process evaluation as well as impact/outcome evaluation will be covered. Course content will introduce both qualitative and quantitative methods of data collection and analysis. The course will apply practical examples of potential problems typically encountered in the community health evaluation process as well as potential solutions. The course will be evaluated by participation in weekly discussion boards, mid-term exams, weekly homework assignments, and the creation of a public health program evaluation plan. Prerequisite: Admission into the Certificate Program of the Tennessee Consortium for Public Health Workforce Education or permission of the instructor. Prerequisite(s): Admission into Certificate Program of the Tennessee

Consortium for Public Health Workforce Education or permission of the instructor. Credit: 3.

**BIOE 719, Concepts of Health Systems and Policy. Part I.** This course will provide an introduction to basic concepts of health systems functions and health policy for students enrolled in the MD-MS Program in Health Systems Studies. It is part of a three-semester sequence that lays the ground work for an intensive year of graduate studies leading to a Master of Science degree in conjunction with an MD degree. Topics for this course include the basic structural and functional characteristics of health care systems, the features and rationale for health-related public policy, the determinants of healthcare use, and methods to assess the functions of a health care system. Credit: 1.

**BIOE 720. Biostatistics for Public Health.** This course provides an introduction to the use of statistical techniques in biomedical and public health research. The course will cover common descriptive statistics including the mean, median, and standard deviation as well as techniques for testing hypotheses (analysis of variance, t-tests, regression, nonparametric methods) and issues in sampling and design of experiments. The class will be taught using online methods and is open only for students enrolled in programs of the Tennessee Consortium for Public Health Workforce Education. Section 700: for students in the Tennessee Consortium for Public Health Workforce Education, Section 701: for students in the Certificate in Clinical Research program. Prerequisite(s): Admission into Certificate Program of the Tennessee Consortium for Public Health Workforce Education or permission of the instructor. Credit: 3.

**BIOE 722. Principles of Epidemiology for Public Health Workforce Professionals.** The course introduces the basic principles and methods of epidemiology and demonstrates their applicability in the field of public health. Topics to be covered include the historical perspective of epidemiology, measures of disease occurrence and of association, clinical epidemiology, disease screening, causal inference, and study design. The class will be taught using online methods and is open only for students enrolled in programs of the Tennessee Consortium for Public Health Workforce Education. Prerequisite(s): Admission into Certificate Program of the Tennessee Consortium for Public Health Workforce Education or permission of the instructor. Credit: 3.

**BIOE 723. Overview of Public Health.** This course provides an introduction to public health concepts and practice by examining the philosophy, purpose, history, organization, functions, tools, activities, and results of public health practice at the national, state, and community levels. The course also addresses important health issues and problems facing the public health system. Case studies and a variety of practice-related exercises serve as a basis for learner participation in real world public health problem-solving simulations. The class will be taught using online methods and is open only for students enrolled in programs of the Tennessee Consortium for Public Health Workforce Education. Prerequisite(s): Admission into Certificate Program of the Tennessee Consortium for Public Health Workforce Education or permission of the instructor. Credit: 3.

**BIOE 724. Environmental Epidemiology/Occupational Epidemiology.** This course introduces students to epidemiologic investigations of environmental health problems. Topics include both traditional and innovative subjects and strategies, such as the health effects associated with air and water contaminants, toxic waste sites, lead, and radiation, as well as environmental exposures that have received attention only recently, such as Agent Orange and electromagnetic fields. The course emphasizes epidemiologic methods, particularly exposure assessment, modeling, cluster analysis, and source of bias. Students gain experience in the critical review and design of related epidemiologic studies. The class will be taught using online methods and is open only for students enrolled in programs of the Tennessee Consortium for Public Health Workforce Education. Prerequisite(s): Admission into Certificate Program of the Tennessee Consortium for Public Health Workforce Education or permission of the instructor. Credit: 3.

**BIOE 725. Statistical Software for the Health Professional.** Multiple computer software packages will be examined for their utility in health data analysis. Sample health data sets are analyzed using similar procedures from different packages. Strengths and weaknesses of the various packages are contrasted as they are applied to the needs of health data analysis. The class will be taught using online methods and is open only for students enrolled in programs of the Tennessee Consortium for Public Health Workforce Education. Prerequisite(s): Admission into Certificate Program of the Tennessee Consortium for Public Health Workforce Education or permission of the instructor. Credit: 3.

**BIOE 726. Advanced Epidemiology for Public Health Workforce Professionals.** The purpose of this course is to further develop the methodological concepts underlying the science of epidemiology. The material covered is intended to broaden and extend the student's understanding of the elements of study design, data analysis, and inference in epidemiologic research, including issues related to causation, bias, and confounding. The primary aims of the course are to provide a working knowledge of the fundamentals of epidemiology as well as to serve as a foundation for more advanced study of epidemiologic methods with a strong emphasis on quantitative aspects. The course consists of online lectures and laboratories using statistical software. The workshop sessions are designed to reinforce the concepts/topics covered in the lectures. The class will be taught using online methods and is open only for students enrolled in programs of the Tennessee Consortium for Public Health Workforce Education. Prerequisite(s): Admission into Certificate Program of the Tennessee Consortium for Public Health Workforce Education or permission of the instructor. Credit: 3.

**BIOE 727. Principles of Epidemiology.** This online course, which is part of the Certificate in Clinical Research Program, introduces the basic principles and methods of epidemiology and demonstrates their applicability in the fields of public health and clinical research. Topics to be covered include the historical perspective of epidemiology, measures of disease occurrence and association, study design, disease screening, and causal inference. Study design content will cover experimental, cohort and case-control studies as well as challenges in design and analysis including bias, confounding and random error. Students will be expected to participate in discussion

boards, complete weekly homework assignments, and take a mid-term and final exam. Prerequisite(s): This is an online course for students in the Certificate in Clinical Research program. Students should be enrolled in the Certificate program before taking this course. Credit: 3.

**BIOE 730. Practicum in Public Health Leadership.** This course represents a capstone experience for students enrolled in the Public Health Leadership Certificate program of the Tennessee Consortium for Public Health Workforce Development ("the Tennessee Consortium"). It provides an opportunity for students to experience the practice of public health leadership in a real world setting and to apply the knowledge and skills developed in other Leadership Certificate courses to real public health leadership challenges under the preceptorship of an experienced public health leader. Students are assigned to a senior leader in a local, metropolitan, regional or state-level Department of Health and complete a project negotiated among the student, the Preceptor and the Course Director. Students will be expected to submit a report detailing the project as well as journal describing the activities undertaken during the course. These tasks will be supplemented by assigned readings and periodic conference calls with other students, Preceptors and faculty. Prerequisite(s): BIOE 714 Special Topic: Public Health Leadership, BIOE 717 Public Health Policy and Law, BIOE 718 Program Evaluation for Public Health, BIOE 723 Overview of Public Health, Enrollment in the Public Health Leadership Certificate program of the Tennessee Consortium for Public Health Workforce Development, or permission of the Course Director. Credit: 3.

**BIOE 740. Ethical and Legal Issues in Clinical Research.** This course will examine ethical and legal principles and issues in clinical research, including attention to topics such as the Nuremberg Code, Belmont Report, federal standards for protection of human subjects, FDA guidelines for drug and device development, good clinical practice standards, and how these guidelines may be applied to the development, conduct, and reporting of clinical research. Prerequisite(s): This is an online course for students in the Certificate in Clinical Research program. Students should be enrolled in the Certificate program before taking this course. Credit: 3.

**BIOE 750. Fundamentals of Clinical Investigation.** This course will present an introduction to the different types of clinical research and practical methods that investigators can use in the conduct of multidisciplinary clinical research. Observational cohort studies, case-control studies, and Phase I-IV intervention-based randomized controlled clinical trials will be presented. Design distinctions, sampling and randomization procedures, data integrity, data-analysis concerns, and practical conduct for these investigative approaches will be examined. This course will also review ethical issues in conducting research in people, federal guidance for the conduct of clinical research, and the dynamic influence of behavior on the conduct of clinical research. This is an online course for the web-based Certificate in Clinical Research program. Prerequisite(s): permission of instructor. Credit: 3.

**BIOE 800. Master's Thesis and Research.** Credit: by arrangement.

**BIOE 804. Master's Project.** Independent study in a community-health topic selected in conjunction with project advisor. Oral and written reports required, including oral presentation and defense of project. Course enrollment is restricted to those students in the Community Health track with project option for the MS in Epidemiology. Prerequisite(s): Consent of the project advisor. Credit: variable.

**BIOE 810. Independent Study.** An in-depth study of some aspect of epidemiology in which the student has special interest. Study is done independently with faculty approval and supervision. Prerequisite(s): Permission of instructor. Credit: variable.

**BIOE 811. Biostatistics for the Health Sciences I.** The first semester material includes descriptive statistics, estimation, and one and two sample hypothesis testing, including paired and unpaired situations. Instruction includes assisting the student attain mastery-level skill in data entry and use of SAS software system for statistical analysis of data on the UT VAX. Credit: 3.

**BIOE 812. Fundamentals of Epidemiology.** The course introduces the basic principles and methods of epidemiology and demonstrates their applicability in the field of public health. Topics to be covered include the historical perspective of epidemiology, measures of disease occurrence and of association, clinical epidemiology, disease screening, causal inference, and study design. Credit: 3.

**BIOE 813. Fundamentals of SAS for Epidemiology.** This course provides the foundation computing skills for independent analysis of epidemiologic data. Topics to be covered include an introduction to SAS as a research tool; SAS programming concepts; data preparation for SAS; getting data into SAS from other programs; elementary SAS Data Step programming; combining datasets; an introduction to SAS procedures, especially those that produce descriptive statistics, perform simple inferential tests, or create datasets; recoding and labeling within SAS; handling character data; and advanced Data Step programming. The course includes a mandatory SAS computing laboratory. Limited to 12 students. Consent of instructor required. Credit: 2.

**BIOE 814. Health Behavior Theory and Intervention Design.** Understanding health behavior and community approaches to health promotion is vital to designing public health interventions to reduce behavioral risk factors and to increase health care utilization. This course provides students the opportunity to learn major theories of individual behavior such as reasoned action, health belief models, and social learning, as well as community approaches such as media advocacy, social marketing, and community organization and to apply these theories to designing community interventions. Credit: 3.

**BIOE 815. Introduction to Public Health and Preventive Medicine.** The course introduces students to the identification, understanding, and application of preventive and public health approaches to the wide range of infectious diseases and chronic disease epidemics. Methods to conduct an outbreak investigation will be included in the



course. The infectious disease epidemics used as examples will be AIDS and TB. Chronic diseases will mainly focus on cardiovascular disease and methods to assist students in understanding the causal pathways from behavior to morbidity. Students will develop research proposals for identifying, understanding, and intervening on public health problems that are common in urban America. These written proposals, as well as midterm and final written exams, will prepare the students for Master's thesis and research. Prerequisite(s): BIOE 811 Biostatistics for the Health Sciences I, BIOE 812 Fundamentals of Epidemiology. Credit: 3.

**BIOE 816. Epidemiologic and Clinical Methods in Bone Assessment.** This course provides the basic scientific principles necessary for proposing, evaluating, or undertaking research in the area of bone metabolism. Topics to be covered include the natural history of bone mass; fracture epidemiology and risk assessment; treatment and prevention of osteoporosis; basic principles of bone biology and mineral metabolism; methods of bone assessment including ultrasound, x-ray absorptiometry, quantitative computed tomography, and magnetic resonance image for clinical and epidemiological research; and biochemical markers of bone metabolism. Also included will be in-depth discussion of quality assurance programs and data management issues pertinent for bone-related research protocols and clinical assessment of bone metabolism. Credit: 3.

**BIOE 817. Epidemiology of Aging.** This course provides an epidemiological perspective on the health of older people in the American population. Major topics include population factors and trends related to aging, health risks and aging, and epidemiological research concepts and methods in aging. Credit: 3.

**BIOE 818. Mixed Linear Models in Epidemiology.** This course provides the advanced skills necessary for independent statistical analysis of epidemiologic and clinical data containing clustered observations and random effects. Topics to be covered include unrestricted and restricted maximum likelihood estimation, Akaike's information criterion, standard general linear models, linear random effects models, linear covariance pattern models, and linear random coefficient models. The course focuses on applications requiring flexible modeling of variance and covariance structures for clustered data when observations from a common cluster are correlated. The approaches covered in the course are particularly relevant for analysis of hierarchical and longitudinal data having Gaussian distributed error. Prerequisite(s): BIOE 821 Biostatistics for the Health Sciences II, BIOE 822 Advanced Epidemiology, instructor's consent. Credit: 3.

**BIOE 819. Master's Seminar: Survival and Self-Reliance in the Computer Age.** This seminar is designed to expose students to a wide variety of topics of professional relevance including discussions on current work in the field, presentations on specific topic areas within epidemiology, the use of tools important to epidemiologic research, and presentations of on-going master's research. Credit: 1.

**BIOE 820. Master's Seminar: Clinical Research in Special Populations.** This course will expose students to issues pertaining to clinical research in special populations

including children, pregnant women, normal healthy subjects, and groups that may include international participants. Existing federal and international guidelines and the medical literature will be used in this course. Course grading will be pass/fail. Credit: 1.

**BIOE 821. Biostatistics for the Health Sciences II.** Second semester content pertains to methods of regression for observational and experimental data. Methods of analysis and hypothesis testing for three or more treatments are presented for various experimental designs and treatment combinations for normally distributed and ordinal data. Instruction includes helping the students attain mastery-level skill in programming with the SAS software system for statistical analysis of data on the UT VAX. Credit: 3.

**BIOE 822. Advanced Epidemiology.** This course provides the foundation skills for independent analysis of epidemiologic data. Topics to be covered include the analysis of vital statistics data, statistical analysis of simple epidemiologic measures, identification and control of confounding in epidemiologic data, model building using epidemiologic data, logistic regression, and proportional hazards modeling. At the end of the semester, students will be able to analyze data from matched and unmatched case-control studies, case-cohort studies, and traditional cohort designs. The course includes a mandatory statistical computing laboratory. Prerequisite(s): BIOE 811 Biostatistics for the Health Sciences I, BIOE 812 Fundamentals of Epidemiology. Credit: 4.

**BIOE 823. Randomized Clinical Trials.** This course will allow the student to understand and analyze the many critical facets of the most precise design for clinical studies in humans: randomized clinical trials. Using a case-based approach, students will learn the importance of precise hypothesis description, selection of an at risk cohort for study, and the power of randomization in helping balance the study groups on a number of known and unknown confounding factors. Important issues with regard to subject recruitment, patient management, and data quality control will be emphasized. Students will learn to perform their own sample size calculations and use actual statistical packages to outline real clinical trial results data. Prerequisite(s): BIOE 811 Biostatistics for the Health Sciences I, BIOE 812 Fundamentals of Epidemiology. Credit: 3.

**BIOE 824. Genetic Epidemiology: Methods and Applications.** This course provides the concepts and methods of genetic epidemiology that are relevant to studying the causes of complex human diseases and the impact of human genetic variation on disease prevention and treatment. The course includes methods of population- and family-based studies of genotype-phenotype associations; statistical techniques related to segregation analysis; linkage analysis and transmission disequilibrium test (TDT); approaches for assessing gene-gene and/or gene-environment interaction; and procedures for evaluating ethical, legal, and social issues, and public health implications of research and interventions. Emphasis is placed on distinguishing the appropriate applications, underlying assumptions, and reasonable interpretations of the methods presented. Prerequisite(s): BIOE 821 Biostatistics for the Health Sciences II, BIOE 822 Advanced Epidemiology. Credit: 3.

**BIOE 825. Bioinformatics for Epidemiologists.** This course describes concepts and

methods in bioinformatics in application to the needs of an epidemiologist. After providing an overview of concepts in molecular biology, genetics, and molecular evolution, this course covers various methods of computational genetic analysis and available databases and software resources. Students learn about DNA and protein sequence analysis, gene mapping, phylogenetic analysis, molecular biology databases and software packages, expression data analysis, and protein analysis resources. Prerequisite(s): BIOE 824 Genetic Epidemiology: Methods and Applications. Credit: 1.

**BIOE 826. Women's Health Seminar.** This course will include review and discussion of recent trends and current topics in women's health on the national scene. This information, along with an introduction to community diagnosis methods, will be used to prioritize women's health issues of local interest for student projects. Students will analyze locally available data to conduct a community needs assessment in the area of women's health in Memphis. Results of the analysis will be presented to the class in a podium-style presentation. Classroom discussion of the results of the analyses will culminate in creating of a plan for action steps and policy changes needed to improve the health of women in Memphis. The action steps and policy changes will be included in a written report suitable for publication. Credit: 3.

**BIOE 827. Introduction to Patient-Oriented Research.** This course will present the different types of patient-oriented research, including observational cohort studies, case-control studies, and Phase I-IV intervention-based clinical trials. Attention to design issues, practical conduct, and analytic considerations for each will be reviewed. This course will also examine the ethical issues in research and will review the evolution of federal guidance for conduct of research. Credit: 3.

**BIOE 831. Measurement in Epidemiology.** An introduction to measurement methods in epidemiology, including consideration of measurement error and accuracy, reliability and validity, and response rates. Prerequisite(s): BIOE 811 Biostatistics for the Health Sciences I, BIOE 812 Fundamentals of Epidemiology. Credit: variable.

**BIOE 832. Implementing Change in Healthcare Organizations.** This course provides evidence-based guidelines for improving the implementation of change in healthcare organizations. Epidemiological research prescribes and assesses interventions for improving medical care that can necessitate changes in organizational routines and procedures. For example, interventions may involve a change in clinicians' practices; this is an instance of implementing change in a healthcare organization. However, when hospitals and other healthcare organizations introduce new clinical practices, these efforts all too frequently result in poor compliance and incomplete implementation. Understanding the barriers to change (and how to overcome them) may assist clinical investigators in analyzing why some interventions fail due to lack of compliance, while other similar interventions succeed. Drawing on organizational theory and health services research, this course will analyze some of the barriers to implementing change and present some methods for reducing the resistance to change. Credit: 2.

**BIOE 833. Design of Clinical Research.** This course will focus on methods and issues

of clinical research study design. Appropriate research design will be emphasized, whether the research is to be conducted in a laboratory; a clinic; a controlled, randomized, clinical trial setting, or will be an observational study in a natural setting. Attention will be paid to broad aspects of creating a research protocol, with emphasis on issues of formulating high-quality research questions, establishing the significance of such questions, developing testable hypotheses, determining appropriate sample size and performing power calculations, handling missing data, defining recruitment and retention techniques, and designing high-quality, cost-effective, powerful research with safeguards for internal and external validity. Prerequisite(s): BIOE 811 Biostatistics for the Health Sciences I, Consent of instructor. Credit: 3.

**BIOE 834. Epidemiology of Childhood Diseases.** This course will provide an overview of the epidemiology of selected conditions and diseases affecting children as well as demonstrate the childhood origins of some adult chronic disease. For most of these conditions, information about the pattern of occurrence, data about risk factors and effectiveness of various preventive or therapeutic interventions will be discussed. Public use sources of information such as the National Health and Examination Survey (NHANES), National Ambulatory Medical Care Survey (NAMCS), CDC “Pink Book”, Child and Adolescent Health Measurement Initiative (CAHMI) and Youth Risk Behavior Surveillance System (YRBSS) will be introduced and discussed. Additionally, some of the unique and challenging aspects of research in pediatric epidemiology such as issues of childhood growth and development, maternal (intrauterine) origins of disease and parental role in disease diagnosis and treatment will be introduced. In the last weeks of the course, students will be asked to synthesize the information presented in the course by identifying, presenting and evaluating the available epidemiological information on a childhood disease or condition of their choice. Prerequisite(s): BIOE 812 Fundamentals of Epidemiology, BIOE 812 is a prerequisite of this course unless waived by the instructor. Credit: 1.

**BIOE 835. Resampling Methods for Biostatistical Analysis Using R Software.** This course provides essential skills for independent statistical analysis of epidemiologic and clinical data using permutation and bootstrap procedures. Course topics will incorporate introduction to permutation and rearrangement methods, Monte Carlo procedures for discrete and continuous distributions, percentile and parametric bootstrap, bias-corrected nonparametric bootstrap and an introduction to the R environment. The methods covered in the course are particularly relevant for data for which analyses based upon asymptotic statistics are not readily available or are of questionable validity. Prerequisite(s): BIOE 811 Biostatistics for the Health Sciences I, Consent of instructor. Credit: 1.

**BIOE 836. Design of Community-based Research.** This course will focus on providing students with the skills necessary to design community-based research that will improve the quality and scientific power of data collected in the community setting. Attention will be given to components of community-based research designs, methodological issues, and challenges inherent in developing and conducting such research. Prerequisite(s): BIOE 811 Biostatistics for the Health Sciences I, Consent of instructor. Credit: 3.

**BIOE 837. Clustered Data Models for Community Research.** This course will examine the complexity of conducting observational, experimental, and quasi-experimental research in natural settings and will emphasize methods for analysis of data where persons are aggregated into naturally formed clusters and/or are followed through time (often with highly irregular time intervals between observations). Such data are typical of community research environments and invariably seriously undermine classic analytic models that rest on assumptions of either independence of observations or at least compound symmetry in error structure. The course is aimed at providing students with practical skill in selecting and applying the right statistical modeling approach, given a wide array of clustered situations often encountered in community settings. Prerequisite(s): BIOE 811 Biostatistics for the Health Sciences I, BIOE 821 Biostatistics for the Health Sciences II, BIOE 811 and BIOE 821 (Biostatistics for the Health Science I and II) and the instructor's consent are prerequisites for this course. Credit: 3.

**BIOE 840. Special Topics.** Directed readings or special course in topics of current interest. Section 001: Independent Study, Section 002: NIH Grant Writing in the Behavioral Sciences, Section 003: Fundamentals of Molecular Genetics for Clinical Research, Section 004: Bayesian Approaches in Biostatistics. Prerequisite(s): instructor's consent. Credit: variable.

**BIOE 851. Introduction to Health Services Research.** This course will review key research studies related to the delivery and financing of health care services. Topics to be studied will center on research topics that have had significant influence on national health care policy. These include the role of research in policy formulation, health care financing and cost control, health manpower planning, local variations in health care practice, physician payment systems, access to care, measuring quality of care, alternative delivery systems, and technology assessment. Emphasis will be on study methodology and on policy implications of research data. Prerequisite(s): BIOE 812 Fundamentals of Epidemiology. Credit: 3.

**BIOE 861. Pharmacoepidemiology.** This course provides the fundamentals for studying the frequency and determinants of unintended, unexpected, and expected effects of drugs. Postmarketing studies of the patterns of medication utilization, cost-effectiveness analyses, and investigation of the distribution of diseases possibly amenable to medical intervention represent important additional themes. The course focuses on both theoretical principles and their practical application. Prerequisite(s): BIOE 811 Biostatistics for the Health Sciences I, BIOE 812 Fundamentals of Epidemiology. Credit: 3.

**BIOE 862. Advanced Categorical Data Techniques for Epidemiology.** This course begins by examining the sampling models and the associated distributions that are most closely identified with categorical data. Next are reviewed the most common chi-square tests and measure of association for standard contingency tables or sets of stratified contingency tables. The generalized linear model is introduced as the backbone for

building models that focus on the estimation of effects, model inference, and model checking. Specific topics for the modeling of categorical data include logistic regression for dichotomous and polytomous response, conditional logistic regression, generalized estimating equations, and generalized linear mixed modeling for models with random effects. In addition, the course will explore loglinear modeling for count data and life estimation and Cox proportional hazards model for categorized time to event data. The relation of the various approaches and procedures using SAS will be demonstrated. The course focuses on application of the above approaches to observational and clinical trial data sets. Prerequisite(s): BIOE 812 Fundamentals of Epidemiology, BIOE 821 Biostatistics for the Health Sciences II. Credit: 3.

**BIOE 901. Measurement Considerations for Community Research.** This course will examine measurement considerations that are unique to community research versus clinical research. While community data resources abound, there are few common definitions or methods for measuring a specific community issue; hence, reliability becomes an issue that pervades community research, which is a very complex endeavor. This course will cover fundamentals of measurement, reliability and community measures, qualitative and quantitative measures, identification of appropriate units of measure, psychometric evaluation of instruments, common data resources and their limitations, indirect measurement, and ethical issues. Prerequisite(s): BIOE 811 Biostatistics for the Health Sciences I, Consent of instructor. Credit: 3.

**Elective courses are also available from the University of Memphis.**

## **Program in Health Outcomes and Policy Research**

The Master of Science (M.S.) degree in Pharmaceutical Sciences (with a concentration in pharmacy administration) and the Doctor of Philosophy (Ph.D.) degree programs in Health Outcomes and Policy Research develop skills and knowledge in evaluating the appropriate use of drugs, economic and epidemiological aspects of health care, and the outcomes of pharmaceutical care. Specific areas of research include studies of healthrelated quality of life; patient compliance, methods of education, disease state knowledge and satisfaction with care; pharmacist compensation and reimbursement; pharmacy services in a managed care environment; and the impact of educational changes and program models on pharmacist performance.

**HOPR 800. Master's Thesis and Research.** Research performed under the direction and supervision of the respective student's advisor in partial fulfillment of the requirements for the degree of Master of Science. Credit: variable.

**HOPR 801. Research in Health Outcomes and Policy Research.** This course emphasizes the development and conduct of health science administration research. The course is required in conjunction with or prior to thesis/dissertation work. The goal is to assist students in acquiring a breadth of knowledge of theory, concepts, principles, processes, and skills necessary for the health science research endeavor. Students will use and build upon knowledge gained in prerequisite courses as they learn to carry out each step of the research process. The course will be taught in small group discussions

using information available in the literature and research-based analysis. Prerequisite(s): BIOE 811 Biostatistics for the Health Sciences I, BIOE 812 Fundamentals of Epidemiology, Permission of the instructor. Credit: 3.

**HOPR 810. Fundamentals of Health Care Systems and Policy.** This course is designed to provide a comprehensive knowledge and understanding of the origin and functions of major themes in U.S. health care policy and health care delivery systems. Major topics include the assessment of population health, models of health care delivery, the current U.S. health care delivery and finance systems, and access and quality of care issues. The course will use a mix of Internet-based self-learning and classroom-based discussion groups. Credit: 3.

**HOPR 811. Fundamentals of Health Policy.** This course provides an introduction to the field of health policy, primarily in the United States. This survey course is taught through collaboration of the faculties of the colleges of Medicine, Nursing, Pharmacy, Allied Health Sciences, and Social Work to explore health policy issues from a multidisciplinary perspective. Students are expected to learn theories, methods, and skills needed for policy development and analysis and to apply those skills to selected health issues. Credit: 3.

**HOPR 812. Research Techniques in Pharmacoeconomics I.** Minor projects in pharmacoeconomics for students whose interests and needs are not adequately met in other scheduled classes or in the masters or doctoral research program. Prerequisite(s): Permission of the instructor. Credit: variable.

**HOPR 813. Informatics for Health Outcomes and Policy Research.** This course is designed to introduce the student to health informatics from a health outcomes and policy research perspective. Basic concepts in informatics, information systems in healthcare, and Internet-enabled informatics will be presented. Credit: 3.

**HOPR 814. Research Methods in Pharmacoeconomics.** This course develops theoretical knowledge and applied skills in designing and conducting research in pharmacoeconomics. Students will utilize and build upon knowledge gained in prerequisite courses as they learn to carry out each step of the research process. In doing so, they will study textbooks and articles, present reports to the class in a seminar setting, and complete a number of assignments which, taken together, contribute to the experience of pharmacoeconomic research design and analysis. An important component of the course is developing an understanding of factors which, unless planned and accounted for, sometimes result in serious flaws in the research product. Drawing upon the fields of psychology, sociology, biostatistics, epidemiology, and economics, students will utilize theory in developing study hypotheses and designs, as well as reliable and valid measurement methods for the variables of interest. They will learn about working with data sets and working up results of studies. Credit: 3.

**HOPR 816. Applied Pharmacoeconomics I.** This is the second in a two-course

sequence and must be taken in sequence. These two coupled courses are an advanced study in economic principles and outcomes measures as applied to pharmacy and health care. The objective is to expand the student's appreciation of the nature of applied economic evaluation and its relevance to health care decision-making and policy formulation through didactic lectures and case study analysis. Emphasis will be on the application of methodological principles of economic evaluation and appraisal of current concepts and research in pharmacoeconomics. The student will participate in the development, implementation, and evaluation of a group pharmacoeconomic project, which focuses on the evaluation of a defined economic problem in health care. Prerequisite(s): HOPR 825 Strategies for Health Policy Formulation and Planning, HOPR 877 Health Care Economics, HOPR 878 Advanced Health Economics, BIOE 812 Fundamentals of Epidemiology, BIOE 821 Biostatistics for the Health Sciences II. Credit: 2.

**HOPR 822. Research Techniques in Pharmacoeconomics II.** Advanced projects in pharmacoeconomics for students whose interests and needs are not adequately met in other scheduled classes or in the masters or doctoral research program. Prerequisite(s): Permission of the instructor. Credit: variable.

**HOPR 823. Health Care Marketing.** This course is advanced study in marketing principles as applied to the delivery of health care. The objective is to expand the student's appreciation of the nature of marketing and its relevance to health care decision making. Emphasis will be on the application of methodological principles of marketing research and appraisal of current concepts and research. The student will create and organize a project which focuses on the marketing of a health care program. Prerequisite(s): Permission of the instructor. Credit: 3.

**HOPR 825. Strategies for Health Policy Formulation and Planning.** This course focuses on the development of health care policy, issues which impact the formulation of health care policy, and the planning process. The objective is to enhance the student's appreciation of the decision process in formulating health policy, the relationship of health policy development and health financing, the evaluation of current local, state, and national policy as related to health care. The student will evaluate current policy and develop alternatives to current policy. Prerequisite(s): BIOE 812 Fundamentals of Epidemiology, Health Care Economics ECON 8/7710 (U of M). Credit: 3.

**HOPR 827. Applied Pharmacoeconomics II.** This is the second in a two-course sequence and must be taken in sequence. These two coupled courses are an advanced study in economic principles and outcomes measures as applied to pharmacy and health care. The objective is to expand the student's appreciation of the nature of applied economic evaluation and its relevance to health care decision-making and policy formulation through didactic lectures and case study analysis. Emphasis will be on the application of methodological principles of economic evaluation and appraisal of current concepts and research in pharmacoeconomics. The student will participate in the development, implementation, and evaluation of a group pharmacoeconomic project, which focuses on the evaluation of a defined economic problem in health care. Prerequisite(s): HOPR 825 Strategies for Health Policy Formulation and Planning,



HOPR 877 Health Care Economics, HOPR 878 Advanced Health Economics, BIOE 812 Fundamentals of Epidemiology, BIOE 821 Biostatistics for the Health Sciences II. Credit: 3.

**HOPR 828. Data Management for Pharmacoeconomics and Outcomes Research.**

This course is designed to provide practical knowledge of the benefits and limitations of the application of statistical techniques as applied to the analysis of pharmacoeconomic and outcomes data through the actual use of SPSS, SAS, SYSTAT, EQS, Amos, and SUDAAN. The objective is to expand the student's appreciation of the benefits and limitations of the various statistical software packages and build a firm base of practical experience with pharmacoeconomic and outcomes data analysis. Emphasis will be on the practical applied use of statistical software for the analysis of pharmacoeconomic and outcomes data. The student will learn how to select reliable and valid measurements, choose the appropriate program, use it correctly, and interpret the output. Students are encouraged to develop an analysis plan for their dissertation research projects as a part of the course final project. Prerequisite(s): HOPR 877 Health Care Economics, BIOE 812 Fundamentals of Epidemiology, BIOE 821 Biostatistics for the Health Sciences II. Credit: 2.

**HOPR 829. Data Analysis Methods in Health Outcomes and Policy Research.**

Building upon the first research methods course (HOPR 801), this course seeks to help students lay a solid foundation in their understanding of basic data analysis methods, develop basic quantitative analytical skills, understand the application of basic data analysis methods, and develop a healthy skepticism toward the use of statistical techniques in research studies. Prerequisite(s): Permission of the instructor. Credit: 3.

**HOPR 840. Special Topics.** Directed readings or special course in topics of current interest. Section 001: Pharmacoeconomics, Section 002: Health Policy, Section 003: Humanistic Outcomes, Section 004: Medication Management System, Section 005: Research Methods, Section 006: Technology Assessment, Section 007: Health Services Research. Credit: variable.

**HOPR 850. Leadership Effectiveness in Health Care.** This course focuses on identifying leadership traits; attributes of leaders; differences between leadership and management; identifying each student's leadership style; small-group dynamics; and examining the literature of leadership. The course meets weekly for 2 hours in a seminar discussion. Students will evaluate leadership case studies in health care, as well as the current literature of leadership. Self-assessment tools will be used to identify leadership preferences. Students will review and discuss empirically based studies from the leadership literature during each session. Prerequisite(s): Permission of the instructor. Credit: 2.

**HOPR 870. Managerial Epidemiology.** This course provides an opportunity for the student to apply epidemiological methods and reasoning to health problems as well as health care managerial decisions. The course will enable the student to understand what is meant by epidemiology as the basic science for community health and health care

management, provide information needed for disease prevention, treatment of disease, and management of health systems that work to prevent and treat diseases. Emphasis will be on the evaluation and comprehension of health literature as related to epidemiology. Credit: 3.

**HOPR 871. Law of Health Administration.** The course undertakes a survey of the health care systems focusing on the four ultimate concerns: quality, cost, equitable access, and autonomy or personhood. Coverage includes professional liability, the relationship of physician and patient, reform of the tort system for medical injuries, health care institutions, and access to health care. The course should enhance sensitivity, not only to those needing health care, but also for the contributions, problems, and limitation of the disciplines and professional that formulate, contribute to, and administer medical care and health policy. A principle objective of the course is for students to acquire the ability to recognize, describe, discuss, and apply the significant issues in the law of health administration. Credit: 3.

**HOPR 872. Health Planning and Marketing.** The course exposes students to the theoretical aspects of health care marketing and strategic planning. Students become familiar with empirical techniques associated with marketing and planning. Skills in analyzing data, critically reviewing case studies, and making professional presentations are enhanced. Credit: 3.

**HOPR 873. Health Administration (Finance).** The course is designed as an overview of techniques for financial management in health care settings. The course blends theory and practices through lecture and case analysis to give students an opportunity to apply theory presented in class in practical examples of financial decisions faced by the manager in today's health care market. Throughout the course, students are provided hands-on experience with computer spreadsheet programs. Credit: 3.

**HOPR 874. Health Ethics.** The course provides an introduction to ethical issues and decision-making models in health administration. Students will be introduced to a broad array of ethical theories and methodologies, including traditional normative approaches, descriptive ethical models, case-driven methods, and models based on social problem-solving. Emphasis will be placed on an understanding of the utility, strengths and weaknesses, and underlying logic of various models and theories in health administration. Credit: 3.

**HOPR 875. Public Human Resources Administration.** The course seeks to develop knowledge of the major components and emerging issues in personnel/human resources management (recruitment and selection, training and development, compensation and benefits, appraisal and career management, and labor relations). Students build an understanding of the public/political context of human resources management and become familiar with basic tools and techniques used in the practice of human resources management. Credit: 3.

**HOPR 876. Public and Nonprofit Organizational Processes and Leadership.** The course examines strategies for managing human resources for greater organizational productivity. Using an experiential participative format, the course emphasizes the knowledge of methods and techniques relevant to developing effectiveness in individuals, work teams, and organizations. Both theoretical and practical perspectives of organization behavior and human resources management will be emphasized. Upon completion of the course, the student will possess critical understanding of the major theories that underpin the field of organization behavior and current strategies for increasing organization productivity. Credit: 3.

**HOPR 877. Health Care Economics.** The course is concerned with the economics of health care delivery. The main objectives are 1) to learn, understand, and appreciate the distinctive economic characteristics of the health service industry, 2) to analyze and evaluate, from the standpoint of economics, the American systems of health care financing and delivery, and 3) to discuss various current health reform issues such as health care costs, access to health care, health human resource surpluses and shortages, health laws and regulations, reimbursement methods, competitions, and alternative delivery systems. Credit: 3.

**HOPR 878. Advanced Health Economics.** Microeconomics tools are applied to the study of key health care policy issues. Behavior and performance of the major health care institutions, hospitals, physicians, nursing homes, and the pharmaceutical industry are examined. Economic impacts and implications of key issues in health care are scrutinized. A working knowledge of basic microeconomics tools is required. Credit: 3.

**HOPR 879. Pharmacoeconomics I.** This course is designed to provide students with the basic concepts and language of pharmacoeconomics. The course is divided into three sections. The first, Concepts of Pharmacoeconomics, introduces the principles, techniques, and methods of economic and humanistic outcomes assessment. The second, Assessment of Economic Outcomes, details the methodology of pharmacoeconomics. Specifically, it covers economic outcome evaluation techniques, with pertinent examples and problem exercises. Third, Assessment of Humanistic Outcomes, covers the methodologies for patient-based assessment, such as quality of life and patient satisfaction. Credit: 3.

**HOPR 880. Health Systems Pharmacy Management I.** This course is designed with emphasis in health systems pharmacy management. This course is the first in a two-semester sequence. The objective of this course is to provide the student with an in-depth knowledge of the concepts, principles, processes, skills, and systems necessary for the leadership and management of a contemporary health system pharmacy practice. The course will be taught in small-group discussion using information available in the literature and case-based analysis. Credit: 3.

**HOPR 890. Health Systems Pharmacy Management II.** This course is designed with emphasis in health systems pharmacy management. This course is the second in a two-semester sequence. The objective of this course is to provide the student with an in-

depth knowledge of the concepts, principles, processes, skills, and systems necessary for the leadership and management of a contemporary health system pharmacy practice. The course will be taught in small-group discussion using information available in the literature and case-based analysis. Credit: 3.

**HOPR 892. Health Policy and Politics.** This course is designed to explore, assess, and evaluate, in depth, the major governmental and political forces that shape health care policy in the United States. These include the roles of the branches of the federal, state, and local governments; the media; and the public in placing issues on the policy agenda and in developing, implementing, and assessing public policy related to health care services and financing. The course will utilize case studies to exemplify key principles and as a basis to apply these principles to current and future health and health policy problems. Prerequisite(s): HOPR 810 Fundamentals of Health Care Systems and Policy. Credit: 3.

**HOPR 900. Doctoral Dissertation and Research.** Research performed under the direction and supervision of the respective student's Research Advisor in partial fulfillment of the requirements for the degree of Doctor of Philosophy. Fall and Spring Semesters. Credit: variable.

**HOPR 919. Seminar.** Topics of current interest in the field are selected and reviewed by the students for their peers and faculty. Presentations followed by general informal discussion. In certain circumstances, reports of current research may be made by students and faculty. Credit: 1.

**HSA 800. Master's Thesis and Research.** Research performed under the direction and supervision of the respective student's advisor in partial fulfillment of the requirements for the degree of Master of Science. Credit: variable.

**HSA 801. Research in Health Science Administration.** This course emphasizes the development and conduct of health science administration research. The course is required in conjunction with or prior to thesis/dissertation work. The goal is to assist students in acquiring a breadth of knowledge of theory, concepts, principles, processes, and skills necessary for the health science research endeavor. Students will use and build upon knowledge gained in prerequisite courses as they learn to carry out each step of the research process. The course will be taught in small group discussions using information available in the literature and research-based analysis. Prerequisite(s): BIOE 811 Biostatistics for the Health Sciences I, BIOE 812 Fundamentals of Epidemiology, Permission of the instructor. Credit: 3.

**HSA 810. Fundamentals of Health Care Systems and Policy.** This course is designed to provide a comprehensive knowledge and understanding of the origin and functions of major themes in U.S. health care policy and health care delivery systems. Major topics include the assessment of population health, models of health care delivery, the current U.S. health care delivery and finance systems, and access and quality of care issues. The course will use a mix of Internet-based self-learning and classroom-based discussion

groups. Credit: 3.

**HSA 811. Fundamentals of Health Policy.** This course provides an introduction to the field of health policy, primarily in the United States. This survey course is taught through collaboration of the faculties of the colleges of Medicine, Nursing, Pharmacy, Allied Health Sciences, and Social Work to explore health policy issues from a multidisciplinary perspective. Students are expected to learn theories, methods, and skills needed for policy development and analysis and to apply those skills to selected health issues. Credit: 3.

**HSA 812. Research Techniques in Pharmacoeconomics I.** Minor projects in pharmacoeconomics for students whose interests and needs are not adequately met in other scheduled classes or in the masters or doctoral research program. Prerequisite(s): Permission of the instructor. Credit: variable.

**HSA 813. Informatics for Health Science Administration.** This course is designed to introduce the student to health informatics from a health science administration perspective. Basic concepts in informatics, information systems in healthcare, and Internet-enabled informatics will be presented. Credit: 3.

**HSA 814. Research Methods in Pharmacoeconomics.** This course develops theoretical knowledge and applied skills in designing and conducting research in pharmacoeconomics. Students will utilize and build upon knowledge gained in prerequisite courses as they learn to carry out each step of the research process. In doing so, they will study textbooks and articles, present reports to the class in a seminar setting, and complete a number of assignments which, taken together, contribute to the experience of pharmacoeconomic research design and analysis. An important component of the course is developing an understanding of factors which, unless planned and accounted for, sometimes result in serious flaws in the research product. Drawing upon the fields of psychology, sociology, biostatistics, epidemiology, and economics, students will utilize theory in developing study hypotheses and designs, as well as reliable and valid measurement methods for the variables of interest. They will learn about working with data sets and working up results of studies. Credit: 3.

**HSA 816. Applied Pharmacoeconomics I.** This is the second in a two-course sequence and must be taken in sequence. These two coupled courses are an advanced study in economic principles and outcomes measures as applied to pharmacy and health care. The objective is to expand the student's appreciation of the nature of applied economic evaluation and its relevance to health care decision-making and policy formulation through didactic lectures and case study analysis. Emphasis will be on the application of methodological principles of economic evaluation and appraisal of current concepts and research in pharmacoeconomics. The student will participate in the development, implementation, and evaluation of a group pharmacoeconomic project, which focuses on the evaluation of a defined economic problem in health care. Prerequisite(s): HSA 825 Strategies for Health Policy Formulation and Planning, HSA 877 Health Care Economics, HSA 878 Advanced Health Economics, BIOE 812 Fundamentals of

Epidemiology, BIOE 821 Biostatistics for the Health Sciences II. Credit: 2.

**HSA 822. Research Techniques in Pharmacoeconomics II.** Advanced projects in pharmacoeconomics for students whose interests and needs are not adequately met in other scheduled classes or in the masters or doctoral research program. Prerequisite(s): Permission of the instructor. Credit: variable.

**HSA 823. Health Care Marketing.** This course is advanced study in marketing principles as applied to the delivery of health care. The objective is to expand the student's appreciation of the nature of marketing and its relevance to health care decision making. Emphasis will be on the application of methodological principles of marketing research and appraisal of current concepts and research. The student will create and organize a project which focuses on the marketing of a health care program. Prerequisite(s): Permission of the instructor. Credit: 3.

**HSA 825. Strategies for Health Policy Formulation and Planning.** This course focuses on the development of health care policy, issues which impact the formulation of health care policy, and the planning process. The objective is to enhance the student's appreciation of the decision process in formulating health policy, the relationship of health policy development and health financing, the evaluation of current local, state, and national policy as related to health care. The student will evaluate current policy and develop alternatives to current policy. Prerequisite(s): BIOE 812 Fundamentals of Epidemiology, Health Care Economics ECON 8/7710 (U of M). Credit: 3.

**HSA 827. Applied Pharmacoeconomics II.** This is the second in a two-course sequence and must be taken in sequence. These two coupled courses are an advanced study in economic principles and outcomes measures as applied to pharmacy and health care. The objective is to expand the student's appreciation of the nature of applied economic evaluation and its relevance to health care decision-making and policy formulation through didactic lectures and case study analysis. Emphasis will be on the application of methodological principles of economic evaluation and appraisal of current concepts and research in pharmacoeconomics. The student will participate in the development, implementation, and evaluation of a group pharmacoeconomic project, which focuses on the evaluation of a defined economic problem in health care. Prerequisite(s): HSA 825 Strategies for Health Policy Formulation and Planning, HSA 877 Health Care Economics, HSA 878 Advanced Health Economics, BIOE 812 Fundamentals of Epidemiology, BIOE 821 Biostatistics for the Health Sciences II. Credit: 3.

**HSA 828. Data Management for Pharmacoeconomics and Outcomes Research.** This course is designed to provide practical knowledge of the benefits and limitations of the application of statistical techniques as applied to the analysis of pharmacoeconomic and outcomes data through the actual use of SPSS, SAS, SYSTAT, EQS, Amos, and SUDAAN. The objective is to expand the student's appreciation of the benefits and limitations of the various statistical software packages and build a firm base of practical experience with pharmacoeconomic and outcomes data analysis. Emphasis will be on

the practical applied use of statistical software for the analysis of pharmaco-economic and outcomes data. The student will learn how to select reliable and valid measurements, choose the appropriate program, use it correctly, and interpret the output. Students are encouraged to develop an analysis plan for their dissertation research projects as a part of the course final project. Prerequisite(s): HSA 877 Health Care Economics, BIOE 812 Fundamentals of Epidemiology, BIOE 821 Biostatistics for the Health Sciences II. Credit: 2.

**HSA 829. Data Analysis Methods in Health Science Administration.** Building upon the first research methods course (HSA 801), this course seeks to help students lay a solid foundation in their understanding of basic data analysis methods, develop basic quantitative analytical skills, understand the application of basic data analysis methods, and develop a healthy skepticism toward the use of statistical techniques in research studies. Prerequisite(s): Permission of the instructor. Credit: 3.

**HSA 840. Special Topics.** Directed readings or special course in topics of current interest. Section 001: Pharmacoeconomics, Section 002: Health Policy, Section 003: Humanistic Outcomes, Section 004: Medication Management System, Section 005: Research Methods, Section 006: Technology Assessment, Section 007: Health Services Research. Credit: variable.

**HSA 850. Leadership Effectiveness in Health Care.** This course focuses on identifying leadership traits; attributes of leaders; differences between leadership and management; identifying each student's leadership style; small-group dynamics; and examining the literature of leadership. The course meets weekly for 2 hours in a seminar discussion. Students will evaluate leadership case studies in health care, as well as the current literature of leadership. Self-assessment tools will be used to identify leadership preferences. Students will review and discuss empirically based studies from the leadership literature during each session. Prerequisite(s): Permission of the instructor. Credit: 2.

**HSA 870. Managerial Epidemiology.** This course provides an opportunity for the student to apply epidemiological methods and reasoning to health problems as well as health care managerial decisions. The course will enable the student to understand what is meant by epidemiology as the basic science for community health and health care management, provide information needed for disease prevention, treatment of disease, and management of health systems that work to prevent and treat diseases. Emphasis will be on the evaluation and comprehension of health literature as related to epidemiology. Credit: 3.

**HSA 871. Law of Health Administration.** The course undertakes a survey of the health care systems focusing on the four ultimate concerns: quality, cost, equitable access, and autonomy or personhood. Coverage includes professional liability, the relationship of physician and patient, reform of the tort system for medical injuries, health care institutions, and access to health care. The course should enhance sensitivity, not only to those needing health care, but also for the contributions, problems, and

limitation of the disciplines and professional that formulate, contribute to, and administer medical care and health policy. A principle objective of the course is for students to acquire the ability to recognize, describe, discuss, and apply the significant issues in the law of health administration. Credit: 3.

**HSA 872. Health Planning and Marketing.** The course exposes students to the theoretical aspects of health care marketing and strategic planning. Students become familiar with empirical techniques associated with marketing and planning. Skills in analyzing data, critically reviewing case studies, and making professional presentations are enhanced. Credit: 3.

**HSA 873. Health Administration (Finance).** The course is designed as an overview of techniques for financial management in health care settings. The course blends theory and practices through lecture and case analysis to give students an opportunity to apply theory presented in class in practical examples of financial decisions faced by the manager in today's health care market. Throughout the course, students are provided hands-on experience with computer spreadsheet programs. Credit: 3.

**HSA 874. Health Ethics.** The course provides an introduction to ethical issues and decision-making models in health administration. Students will be introduced to a broad array of ethical theories and methodologies, including traditional normative approaches, descriptive ethical models, case-driven methods, and models based on social problem-solving. Emphasis will be placed on an understanding of the utility, strengths and weaknesses, and underlying logic of various models and theories in health administration. Credit: 3.

**HSA 875. Public Human Resources Administration.** The course seeks to develop knowledge of the major components and emerging issues in personnel/human resources management (recruitment and selection, training and development, compensation and benefits, appraisal and career management, and labor relations). Students build an understanding of the public/political context of human resources management and become familiar with basic tools and techniques used in the practice of human resources management. Credit: 3.

**HSA 876. Public and Nonprofit Organizational Processes and Leadership.** The course examines strategies for managing human resources for greater organizational productivity. Using an experiential participative format, the course emphasizes the knowledge of methods and techniques relevant to developing effectiveness in individuals, work teams, and organizations. Both theoretical and practical perspectives of organization behavior and human resources management will be emphasized. Upon completion of the course, the student will possess critical understanding of the major theories that underpin the field of organization behavior and current strategies for increasing organization productivity. Credit: 3.

**HSA 877. Health Care Economics.** The course is concerned with the economics of



health care delivery. The main objectives are 1) to learn, understand, and appreciate the distinctive economic characteristics of the health service industry, 2) to analyze and evaluate, from the standpoint of economics, the American systems of health care financing and delivery, and 3) to discuss various current health reform issues such as health care costs, access to health care, health human resource surpluses and shortages, health laws and regulations, reimbursement methods, competitions, and alternative delivery systems. Credit: 3.

**HSA 878. Advanced Health Economics.** Microeconomics tools are applied to the study of key health care policy issues. Behavior and performance of the major health care institutions, hospitals, physicians, nursing homes, and the pharmaceutical industry are examined. Economic impacts and implications of key issues in health care are scrutinized. A working knowledge of basic microeconomics tools is required. Credit: 3.

**HSA 879. Pharmacoeconomics I.** This course is designed to provide students with the basic concepts and language of pharmacoeconomics. The course is divided into three sections. The first, Concepts of Pharmacoeconomics, introduces the principles, techniques, and methods of economic and humanistic outcomes assessment. The second, Assessment of Economic Outcomes, details the methodology of pharmacoeconomics. Specifically, it covers economic outcome evaluation techniques, with pertinent examples and problem exercises. Third, Assessment of Humanistic Outcomes, covers the methodologies for patient-based assessment, such as quality of life and patient satisfaction. Credit: 3.

**HSA 880. Health Systems Pharmacy Management I.** This course is designed with emphasis in health systems pharmacy management. This course is the first in a two-semester sequence. The objective of this course is to provide the student with an in-depth knowledge of the concepts, principles, processes, skills, and systems necessary for the leadership and management of a contemporary health system pharmacy practice. The course will be taught in small-group discussion using information available in the literature and case-based analysis. Credit: 3.

**HSA 890. Health Systems Pharmacy Management II.** This course is designed with emphasis in health systems pharmacy management. This course is the second in a two-semester sequence. The objective of this course is to provide the student with an in-depth knowledge of the concepts, principles, processes, skills, and systems necessary for the leadership and management of a contemporary health system pharmacy practice. The course will be taught in small-group discussion using information available in the literature and case-based analysis. Credit: 3.

**HSA 892. Health Policy and Politics.** This course is designed to explore, assess, and evaluate, in depth, the major governmental and political forces that shape health care policy in the United States. These include the roles of the branches of the federal, state, and local governments; the media; and the public in placing issues on the policy agenda and in developing, implementing, and assessing public policy related to health care services and financing. The course will utilize case studies to exemplify key principles

and as a basis to apply these principles to current and future health and health policy problems. Prerequisite(s): HSA 810 Fundamentals of Health Care Systems and Policy. Credit: 3.

**HSA 900. Doctoral Dissertation and Research.** Research performed under the direction and supervision of the respective student's Research Advisor in partial fulfillment of the requirements for the degree of Doctor of Philosophy. Fall and Spring Semesters. Credit: variable.

**HSA 919. Seminar.** Topics of current interest in the field are selected and reviewed by the students for their peers and faculty. Presentations followed by general informal discussion. In certain circumstances, reports of current research may be made by students and faculty. Credit: 1.

## **Program in Nursing**

The purpose of the Doctoral Program in Nursing is to produce nursing research scientists and scholars. That purpose will be achieved through an educational program that emphasizes (1) developing and testing theories and models of nursing care; (2) clinical nursing research; and (3) social, political, legal, and economic implications of health care policies and practices. This is a cooperative program with the University of Tennessee, Knoxville.

**Foreign language requirements: None.**

**NSG 840. Special Topics.** Directed readings or special course in topics of current interest. Section 001: Chronic Health Issues, Section 002: Acute Health Issues, Section 003: Lifespan Issues. Credit: variable.

**NSG 900. Doctoral Dissertation.** Research performed under the direction and supervision of the respective student's faculty committee and resulting in a dissertation that meets the requirements for the degree of Doctor of Philosophy. Credit: and hours by arrangement.

**NSG 911. Philosophy of Science.** A course focusing upon development of science in the Western world and epistemology. Ways of knowing and ways of thinking as they relate to the advancement of science will be covered. Credit: 3.

**NSG 912. Theory Construction and Analysis.** A course providing emphasis on the discovery of knowledge related to nursing and health care and the development of nursing theories. The course is aimed at assisting the student to develop the ability to evaluate existing knowledge critically and to engage in the use and creation of knowledge specifically applicable to nursing. Credit: 3.

**NSG 913. Qualitative Research Methods.** One of a series of courses designed to

provide the student a firm grounding in research methodologies and approaches to data analysis and interpretation. Focuses on qualitative research methodology. Credit: 3.

**NSG 919. Nursing Science Seminar.** A seminar with student and faculty participation that focuses on current topics such as issues, trends, and research in nursing and nursing care delivery. Credit: 1.

**NSG 923. Quantitative Research Methods.** One of a series of courses designed to provide the student firm grounding in research methodologies and approaches to data analysis and interpretation. Focuses on quantitative research methodology. Credit: 3.

**NSG 933. Research Seminar for Doctoral Students.** A seminar with student and faculty participation, designed for intensive study of selected research topics. Credit: 2.

**NSG 960. Directed Study.** A course designed to provide the doctoral student with the opportunity to undertake additional guided study, research, and/or clinical experience in an area of the student's choice under faculty supervision. Credit: variable.

## **Program in Pharmaceutical Sciences**

The Pharmaceutical Sciences Program offers both the M.S. and Ph.D. degrees, with an emphasis in either Medicinal Chemistry or Pharmaceutics. Specific areas of focus include the design and synthesis of organic compounds with potential therapeutic activity; exploration of the relationships between the chemical constitution and physicochemical properties of synthetic entities, and the pharmacodynamic response elicited by them; the design, formulation, and evaluation of novel drug delivery systems; and the disposition and pharmacokinetics of drugs and metabolites in model in vitro and in vivo systems.

### **Medicinal Chemistry**

**MEDC 612. Organic Medicinal Chemistry I.** In addition to lectures attended jointly with professional students (Medicinal Chemistry 112, 122), advanced concepts are discussed in conference sessions, limited to graduate students. Prerequisite(s): Two semesters of organic chemistry or equivalent. Credit: 4.

**MEDC 622. Organic Medicinal Chemistry II.** Continuation of Medicinal Chemistry I. Credit: 4.

**MEDC 800. Master's Thesis and Research.** Research performed under the direction and supervision of the respective student's Research Advisor, in partial fulfillment of the requirements for the degree of Master of Science. Credit: by arrangement.

**MEDC 812. Advanced Medicinal Chemistry.** This course will present concepts in

medicinal chemistry with emphasis on application of these concepts to rational drug design. Classical and contemporary approaches to the design of small molecules for interaction with macromolecular targets such as receptors, enzymes, and DNA will be discussed. Spring on alternate years. Credit: 3.

**MEDC 813. Research Techniques in Medicinal Chemistry.** An introduction to current trends in the design and synthesis of potential medicinal agents. The course includes recent techniques applicable to the isolation and characterization of organic compounds, as well as contemporary methodology for the study and chemical and physical properties influencing biological response. The course content is tailored to the specific needs of students majoring in this field. Offered every other year. Credit: 3.

**MEDC 814. Computer-Aided Molecular Design in the Development of Chemotherapeutic Agents I.** This course is designed to teach students the essential elements of computer-aided drug design. It will cover (1) molecular models of small molecules, proteins, and nucleic acids and the validity of models created via computer of chemotherapeutic agents and/or lead drug agents; (2) use of protein and nucleic acid models in the development of lead drug agents; and (3) development of lead compounds or second-generation drugs using computational methodologies. Prerequisite(s): One year of organic chemistry (or equivalent), one semester of biochemistry (or equivalent), one year of calculus and/or physical chemistry (or equivalent), or permission of the instructor. Credit: 3.

**MEDC 816. Bioorganic Chemistry and Drug Design.** The focus of this course is determination of the detailed chemical mechanism of action of medicinal agents and how such information can be exploited for the iterative design of new agents with improved activities as well as bioorganic tools to answer remaining mechanistic questions. Concepts are reinforced through numerous specific examples taken from recent literature in medicinal and bioorganic chemistry. Offered Spring, alternating with MEDC 812. Credit: 2.

**MEDC 819. Seminar in Medicinal Chemistry.** Participation in the presentation and exhaustive discussion of topics directly or indirectly pertinent to medicinal chemistry. Each semester for two semesters. Credit: 1.

**MEDC 823. Research Techniques in Medicinal Chemistry II.** Continuation of 813 MEDC. Credit: 3.

**MEDC 824. Computer-Aided Molecular Design in the Development of Chemotherapeutic Agents II.** This course is a combined lecture and computer laboratory sequel to MEDC 814. It is designed for students to learn the essential elements of quantitative structure-activity relationship (QSAR) modeling and its applications in therapeutic agent design and drug development. It will cover both traditional 2D QSAR methods comprising property-based and 2D molecular structure-based techniques, as well as more recent 3D molecular structure-based QSAR methods

like comparative molecular field analysis (CoMFA) and comparative molecular similarity indices analysis (CoMSIA). The use of multivariate analysis methods such as multiple linear regression (MLR), partial least squares (PLS), artificial neural networks (ANN), and genetic algorithms in QSAR will also be covered. Prerequisite(s): MEDC 814 Computer-Aided Molecular Design in the Development of Chemotherapeutic Agents I. Credit: 3.

**MEDC 840. Special Topics.** Directed readings or special course in topics of current interest. Credit: variable 1-5.

**MEDC 891. Combinatorial Chemistry and Molecular Diversity in Drug Discovery.** This course is designed to teach students the essential elements of combinatorial chemistry and molecular diversity in drug discovery. It will cover (1) combinatorial and parallel synthesis techniques and instrumentation, (2) solid and solution phase library synthesis, (3) molecular diversity, (4) computational aspects of combinatorial chemical drug design, and (5) high throughput screening of combinatorial libraries. Credit: 3.

**MEDC 900. Doctoral Dissertation and Research.** Research performed under the direction and supervision of the respective student's advisor, in partial fulfillment of the requirements for the degree of Doctor of Philosophy. Credit: by arrangement.

**MEDC 919. Seminar in Medicinal Chemistry.** Participation in the presentation and exhaustive discussion of topics directly or indirectly pertinent to medicinal chemistry. Each semester for three semesters. Credit: 1.

## **Pharmaceutics**

**PHAC 620. Principles of Quality Control and Regulatory Factors.** Quality Control and Regulatory Factors as they relate to industrial pharmacy will be covered in detail. The course begins with a regulatory overview and the effect regulations have on pharmaceutical operations. All areas of quality control are addressed, including CGMPs, procedures, analysis, inspection, facilities, complaints, stability, and microbiology. In addition, the student will actually experience how these areas blend together through lecture tours. Automation, process control, statistics, and documentation will be demonstrated through actual working models. Credit: 2.

**PHAC 800. Master's Thesis and Research.** Research performed under the direction and supervision of the respective student's advisor. Credit: and hours to be arranged.

**PHAC 810. Research Techniques in Pharmaceutics.** An introductory course designed to acquaint the beginner with the principal research techniques and procedures in the physical, chemical, and biological evaluation of therapeutic agents. Content is tailored to the specific needs of students majoring in this field. Credit: and hours to be arranged 1-3.

**PHAC 812. Research Techniques in Pharmaceutics.** Continuation of 810 PHAC. Credit: variable 1-3.

**PHAC 813. Advanced Pharmacokinetics.** Advanced analysis and modeling techniques in pharmacokinetics and pharmacodynamics relevant to preclinical and clinical drug development. Includes didactic lectures and practical analysis and interpretation of pharmacokinetic/pharmacodynamic data. Prerequisite(s): One year of calculus (or equivalent), permission of the instructor. Credit: 4.

**PHAC 814. Parenteral Medications.** Didactic instruction and laboratory exercises in the use of techniques in the management of problems associated with the preparation, production, and distribution of medicinal agents in parenteral dosage forms. Credit: 2.

**PHAC 816. Physical-Chemical Interpretation of Drug Systems.** An introduction to physicochemical principles encountered in pharmaceutical systems. Ionic equilibria and the study and quantitation of complex formation will be emphasized. Laboratory exercises will illustrate the use of concepts and calculations presented in the didactic part of the course. Credit: 2.

**PHAC 817. Drug Metabolism.** Fundamental principles underlying human drug metabolism and the major drug metabolizing enzymes will be reviewed. One-third of the course will cover kinetic models, factors regulating drug metabolism, and methods for studying human enzymes. Two-thirds of the course will cover the biochemistry, substrate specificity, tests of phenotype and/or genotype in vitro and in vivo, population distribution, regulation, tissue distribution, and clinical and biologic significance for the P450s and several other important phase I and phase II enzymes. Offered every other year. Prerequisite(s): MSCI 929 Techniques in Molecular Biology, Pharmacokinetics, biochemistry, and permission of the instructor. Credit: 3.

**PHAC 818. Physical-Chemical Interpretation of Polyphasic and Disperse Drug Systems.** This course covers the physicochemical principles basic to the study and evaluation of pharmaceutical disperse systems. Studies are directed at a consideration of the impact of surface effects on the design of dosage forms. Included in the study are rheology, colloidal systems, adsorption, and surface and interfacial phenomena. Prerequisite(s): Physical chemistry. Credit: 3.

**PHAC 819. Seminars in Pharmaceutics.** Seminar presentation required of M.S. student candidates. A total of 2 credits required. Credit: 1.

**PHAC 820. Physical-Chemical Interpretation of Solid Drug System.** This course will present physicochemical principles as they relate to solid dosage form development. The material will be presented in three sections, namely characterization of particles and powders, diffusion and dissolution of solid systems, and drug product design. The overall objective of the course is to provide sufficient basic information on the concepts and principles relative to solids to provide a rational approach to solid dosage form

design. Credit: 3.

**PHAC 821. Drug Stability and Chemical Kinetics.** This course is designed to teach students fundamentals of kinetic approaches to drug stability. It will cover how to develop reaction models, determine kinetic parameters, and calculate shelf-life of pharmaceuticals. Students will also be introduced to current principles and practices concerning drug stability from the viewpoint of industry and regulatory agencies. Prerequisite(s): One year of calculus, one year of physical chemistry, or permission of the instructor. Credit: 3.

**PHAC 824. Principles of Formulation.** A major emphasis in this course will be the application of theory and use of basic physicochemical principles in the development of dosage forms. The course will provide a basic understanding of the design and evaluation of dosage forms and the use of basic principles in the development process. It will include the following subject areas: External considerations, technical considerations, tablets, capsules, liquids, sustained release systems, novel delivery systems, pilot plant scale up. Credit: 3.

**PHAC 826. Pharmaceutical Analysis.** This course will present students with the principles necessary to perform analysis of drugs, metabolites, and degradation products and to quantitatively interpret the accumulated data from a thorough study. It is intended to give background in the theoretical aspects of several modes of chromatography, as well as provide examples of applications for each type of chromatography. Fall in alternate years. Credit: 3.

**PHAC 828. Principles of Radionuclide Methodology.** Principles of working with radionuclides in the research environment with emphasis on instrumentation and safe handling practices and procedures Credit: 1.

**PHAC 830. Drug Delivery Systems.** An introduction to the principles of formulation, development, and evaluation of controlled-release drug delivery systems. Specific topics will include oral, transdermal, and injectable or implantable drug delivery systems. Fall Semester in alternate years. Minimum of four students. Credit: 2.

**PHAC 840. Special Topics.** Directed readings or special course in topics of current interest. Section 001: Instructional Design and Delivery, Section 002: Educational Assessment, Section 003: Drug Stability, Section 004: Surface Modification of Adenoviral Vectors, Section 005: Site-Specific Delivery of Triplex Forming Oligonucleotides, Section 006: Research Techniques in Pharmaceutical Technology, Section 007: Research Techniques in Pharmacokinetics, Pharmacodynamics, and Pharmacogenetics, Section 008: Population Pharmacokinetics. Credit: variable.

**PHAC 900. Doctoral Dissertation and Research.** Research performed under the direction and supervision of the respective student's Research Advisor. Credit: to be arranged.

**PHAC 911. Delivery and Biocompatibility of Protein and Nucleic Acid Drugs.** This course is designed to teach students about the use of biomaterials for delivery and biocompatibility of proteins, peptides, and various nucleic acid drugs. It will cover (1) design, synthesis, and characterization of polymers; (2) biocompatibility; (3) various approaches to proteins and peptide delivery; (4) introduction to different types of nucleic acid drugs; and (5) antisense and nonviral gene therapy. Prerequisite(s): One year of organic, medicinal, or physical chemistry, or B.S. in Pharmacy, Bioengineering, Biotechnology, Biochemistry, Pharmacology, or Medical Sciences, or permission of the instructor. Credit: 3.

**PHAC 919. Seminar.** Seminar presentation required of Ph.D. student candidates. A total of 3 credits required. Credit: 1.



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# COLLEGE OF MEDICINE

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Executive Associate Dean, Office of Medical Education

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# **GENERAL INFORMATION**

## **Historical Perspective**

The University of Tennessee College of Medicine traces its origin to 1851 as the Medical Department of the University of Nashville. In 1909, the Medical Department of the University of Tennessee and the Medical Department of the University of Nashville were consolidated as The University of Tennessee Department of Medicine. The Department continued in the Nashville location for two years. In 1911, the University of Tennessee Department of Medicine moved to Memphis and merged with the College of Physicians and Surgeons, founded in 1906, and with the Memphis Hospital Medical College, founded in 1876, to become The University of Tennessee College of Medicine. Later that same year, the name of the campus was changed to The University of Tennessee Medical Units, and the Colleges of Medicine, Pharmacy, and Dentistry were established. In the early 1970's, the College moved toward a statewide system of medical education with the development of clinical education centers external to the Memphis campus. Since the opening of the Clinical Education Center in Knoxville in 1973, additional centers have been established in Chattanooga, Jackson, and Nashville. These centers have enabled the College to provide quality health care, education, and research throughout the State of Tennessee. The designation of the campus as The University of Tennessee, Memphis -The Health Science Center was adopted in 1985 by The University of Tennessee Board of Trustees and was changed to The University of Tennessee Health Science Center in 1999. The College has an enrollment of 150 students per class currently.

## **Degrees Offered**

The University of Tennessee College of Medicine offers an educational program leading to the Doctor of Medicine (M.D.) degree. The College of Medicine also participates in the Doctor of Medicine (M.D.)/Doctor of Philosophy (Ph.D.) combined degree program, with the College of Graduate Health Sciences.

## **Accreditation**

The College of Medicine is a member of the Association of American Medical Colleges (AAMC) and is accredited by the Liaison Committee on Medical Education (LCME), which represents the Council on Medical Education of the American Medical Association and the AAMC.

## **Educational Objectives and Competencies**

Graduates of the University of Tennessee College of Medicine will complete a medical education program that prepares them for entry into a variety of advanced, differentiated physician training programs. To enable graduates to attain this objective, the medical education program will facilitate the development of the requisite knowledge, skills, attitudes, and beliefs. Graduating students will be expected to adhere to the STEEEP

Principles, providing care that is safe, timely, effective, efficient, equitable and patient-centered, and will be expected to demonstrate competency in the following areas:

**Patient Care** that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of optimal health.

Students are expected to:

- provide compassionate treatment for all patients, respecting their privacy and dignity;
- conduct patient-centered encounters, perform and document both complete and focused histories and physical examinations appropriate for the level of training;
- evaluate data, identify problems, and plan proper action using scientific evidence and clinical judgment;
- apply principles of health promotion and disease prevention;
- work effectively with other health professionals in order to provide patient-focused care;
- demonstrate basic skills in routine technical procedures;
- demonstrate literacy in the use of computers, medical informatics, and other technology to support patient care decisions.

**Medical Knowledge** about established and evolving biomedical, clinical, and cognitive (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care.

Students are expected to:

- identify the principles that underlie normal human development and aging;
- demonstrate knowledge of disease processes, including symptoms, diagnosis, and treatment;
- recognize that health and illness involve psychological, biological, cultural, ethnic, gender, age, and socio-economic components;
- develop an analytical approach to problem solving and clinical reasoning;
- understand the scientific basis, indications, and interpretation of common diagnostic modalities;
- demonstrate knowledge of therapeutics and therapeutic decision-making;
- recognize patients with immediately life threatening conditions and be able to institute appropriate initial actions;
- know the principles of preventive medicine, health maintenance and how environment affects health and disease;
- demonstrate awareness of both traditional and non-traditional modes of care.

**Practice-Based Learning and Improvement** involving the investigation and evaluation of patient care practices, appraising and assimilating scientific evidence, and improving patient care practices.

Students are expected to:

- use information technology to access on-line medical information, and support their own education;
- use evidence-based medicine approaches, knowledge of study designs and statistical methods to appraise clinical studies on diagnostic and therapeutic effectiveness;
- understand continuous quality improvement practices.

**Interprofessional and Communication Skills** resulting in effective information exchange and teaming with patients, patients' families, and professional associates.

Students are expected to:

- demonstrate interpersonal skills that build rapport and empathic communication with patients and their families across socioeconomic, ethnic, and cultural boundaries;
- counsel and educate patients and their families;
- communicate effectively in oral and written formats with health care team members.

**Professionalism** based on a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

Students are expected to:

- advocate at all times the interests of one's patients over one's own interest;
- demonstrate the qualities of integrity, compassion, reliability, and dependability in interactions with colleagues, patients, and patients' families;
- recognize ethical issues relating to a physician's responsibilities and obligations to patients, colleagues, and society (e.g., end -of-life issues);
- demonstrate a sensitivity to the religious, mental, emotional, cultural, socioeconomic and physical needs of patients and their families; and maintain confidentiality of patient information;
- understand the importance of a commitment to excellence through the continuation of one's own professional education and growth, acceptance of scrutiny by peers and others, and dealing openly and honestly with professional mistakes;
- demonstrate a commitment to teach;
- understand the potential for personal impairment resulting from the high-stress environment of the practice of medicine, and recognize the availability of support resources.

**Systems-Based Practice** that demonstrates an awareness of and responsiveness to the larger context and system of health care and the ability to effectively utilize system resources to provide optimal care.

Students are expected to:

- develop a sense of social responsibility;

- understand the role of managed care and health care delivery systems and possess a knowledge of cost-effective and quality health care practices;
- identify weaknesses in the health care delivery system and the causes of medical errors, and be able to develop a plan of action to correct them;
- demonstrate knowledge of and respect for the overlapping roles and distinct competencies of different health professionals.

## **Admissions**

### **Application for Admission**

The University Tennessee College of Medicine admits a class of 150 students in August each year. Applicants must be citizens or permanent residents of the United States at the time of application. Applications are accepted from:

- 1) Tennessee residents;
- 2) residents of the eight states contiguous to Tennessee - Mississippi, Arkansas, Missouri, Kentucky, Virginia, North Carolina, Georgia, and Alabama; and
- 3) children of UT System alumni regardless of their state of residence.

As a state supported institution, qualified Tennesseans are given priority in each entering class. A maximum of ten percent of the matriculants may be non-residents; therefore, nonresidents must possess superior qualifications to be seriously considered for admission. The College of Medicine uses the American Medical College Application Service (AMCAS). Applications must be received by AMCAS no later than November 15 of the year prior to admission. Upon initial review of AMCAS application, a supplemental application is forwarded to applicants considered competitive for further review by the Committee on Admissions. Pre-professional evaluations and letters of recommendation should be sent after the supplemental application has been returned.

### **Technical Standards for Medical Students**

The goal of The University of Tennessee College of Medicine is the broad preparation of students for the practice of medicine. This goal is achieved in part by undergraduate medical education, postgraduate medical education, and preparation for life-long learning. Modern medical education requires that the accumulation of scientific knowledge be accompanied by the simultaneous acquisition of skills and professional attitudes and behavior. Our faculty has the responsibility to graduate the best possible physicians; thus, admission to medical school is offered to those who present the highest qualifications for the study and practice of medicine.

Applicants to the College of Medicine must possess the following general qualities: critical thinking, sound judgment, emotional stability and maturity, empathy, physical and mental stamina, and the ability to learn and function in a wide variety of educational settings. In all phases of medical education, students of medicine must use their intellectual ability and must maintain emotional stability, particularly when under stress.

Graduates of the College must have the knowledge and skills to function in a wide variety of clinical situations and to render a broad spectrum of patient care. Prospective students must meet certain minimum technical standards.

Candidates for the M.D. degree must have the following essential functions: motor skills; sensory and observational skills; communication skills; conceptual, integrative, and quantitative skills; behavioral and social skills; and professionalism.

- 1. Motor Skills:** Candidates should have sufficient motor function to elicit information from patients by palpation, auscultation, percussion, and other diagnostic maneuvers. Candidates should be able to execute motor movements necessary to provide general care and emergency treatment to patients.
- 2. Sensory and Observational Skills:** Candidates must be able to observe demonstrations and participate in experiments as required in the curriculum. They must be able to observe a patient accurately at a distance as well as close at hand and be able to obtain a medical history directly from the patient, while observing the patient's medical condition. This observation necessitates the functional use of the sense of vision, hearing, and other sensory modalities.
- 3. Communication Skills:** Candidates must be able to communicate effectively and sensitively in oral and written form with patients. These skills must be demonstrated at times in clinical settings when the time available for communication may be limited.
- 4. Conceptual, Integrative, and Quantitative Skills:** These skills include measurement, calculation, reasoning, analysis, and synthesis. Problem-solving and diagnosis, the critical skills demanded of physicians, require all of these intellectual abilities. In addition, candidates must be able to comprehend three-dimensional relationships and to understand the spatial relationships of structures.
- 5. Behavioral and Social Skills, and Professionalism:** Empathy, integrity, concern for others, interpersonal skills, interest, and motivation are all personal qualities that will be assessed during the admissions process and throughout medical education. Candidates must possess the emotional well-being required for the full use of their intellectual abilities; the exercise of sound judgment; the prompt completion of all responsibilities attendant to the diagnosis and care of patients; and the development of mature, sensitive, and effective relationships with patients. Candidates must be able to tolerate physically taxing workloads and to function effectively when stressed. They must be able to adapt to changing environments, to display flexibility, and to learn to function in the face of the uncertainty inherent in the clinical problems of many patients.

In summary, the mission of the faculty is to prepare students for the comprehensive practice of medicine. The Committee on Admissions and the College of Medicine, in accordance with Section 504 of the 1973 Vocational Rehabilitation Act and the Americans with Disabilities Act (ADA) {Public Law 101 -3367}, has established the aforementioned essential functions of medical students and physicians. The Committee on Admissions will consider applicants for admission who demonstrate the ability to perform or to learn to perform the essential skills listed in this document. The College must ensure that patients are not placed in jeopardy by students or physicians with substantially impaired intellectual, physical, or emotional functions. Students will be judged not only on their scholastic accomplishments, but also on their physical and

emotional capacities to meet the full requirements of the school's curriculum and to graduate as skilled and effective practitioners of medicine.

## Admissions Requirements

Three major areas are considered in admissions decisions: undergraduate academic preparation and achievement; personal qualities as assessed from interviews with members of the Committee on Admissions, the pre-professional evaluation, recommendations, and the personal statement included in the application; and scores on the Medical College Admissions Test (MCAT). Each of these areas is important with no one area seen as more significant in the admission decision than another. Criminal background checks are required prior to matriculation.

## Undergraduate Academic Preparation

Because the College of Medicine recognizes the importance of a broadly based undergraduate education in the liberal arts and sciences, no specific major is required for medical school admission. Prospective candidates are encouraged to major in their area of greatest interest; and regardless of choice of major, are encouraged to pursue a course of study which achieves a balance between both science and non-science course work. Further, because of the relevance of a broadly based education to success in medical school, the Committee is particularly impressed by students whose education has provided a range of intellectual experience, including opportunities for analytical thinking and independent study. With rare exception, the completion of an undergraduate degree will be necessary in order to fulfill educational expectations. In addition to the pattern and content of courses taken, consideration is given to achievement in these courses. Generally, the average grade point average for entering classes is 3.6 overall and in prescribed course work. In support of this philosophy of education, the following are the only courses required for admission:

## Required Courses

<b>Subjects .....</b>	<b>Semester Hours</b>
Biology .....	8
General Chemistry .....	8
Organic Chemistry .....	8
Physics .....	8
English Composition/Literature .....	6
Electives .....	<u>52</u>
<b>TOTAL .....</b>	<b>90</b>

### Chemistry

A minimum of sixteen semester hours of chemistry is required, eight semester hours of organic chemistry and eight semester hours of inorganic chemistry, which may include analytical chemistry. Each of these courses must be a complete, standard, college-level course utilizing full laboratory facilities. In instances where students feel uncertain of their preparation in chemistry and wish to take additional course work, biochemistry is recommended.

## **Physics**

Acceptable courses in physics must include laboratory credits and must adequately cover mechanics, heat, light, sound, electricity, and magnetism. Survey types of courses will not satisfy this requirement.

## **Biology**

Eight semester hours in modern concepts of mammalian biology, including laboratory are required. Courses in botany do not meet this requirement. Applicants, particularly non-science majors, are strongly encouraged to pursue upper level coursework in the biological sciences beyond the minimum requirement. Such courses might include biochemistry, cell biology, comparative anatomy, embryology, general genetics, histology, immunology, mammalian physiology, microbiology or related courses.

## **English Composition**

Facility in the use of both oral and written English is considered highly essential to the successful study of medicine. Introductory freshman English (six semester hours) will meet the admission requirement. Students who qualify for advanced placement credit in English will not be required to take additional English courses, although they are encouraged to do so.

## **Electives**

In as much as the medical curriculum is devoted largely to the biological and physical sciences, a student should acquire a broad cultural background in the pre-medical preparation. The behavioral sciences, including psychology, sociology, etc., are considered valuable. Additional dimensions are derived from higher mathematics, computer sciences, languages, literature, philosophy, history, political science, economics, etymology and statistics.

Advanced placement credit or other non-traditional credit in prescribed science courses will be honored in fulfilling requirements for the College of Medicine, provided such placement has been followed by a more advanced course in the same discipline. (Example: A student granted credit for biology will be required to complete the eight semester hour requirement by taking advanced courses in that discipline.) The Committee on Admissions will consider grade averages attained in both prescribed and elective courses. A grade of "C" or better in each of the prescribed pre-medical courses is required. If a prospective student is uncertain of the acceptability for premedical credit of a proposed course of study, and if the pre-professional advisor cannot advise in the matter, the prospective student is invited to make inquiry to the Office of Admissions, College of Medicine, The University of Tennessee, Memphis, TN 38163.

## **Personal Qualities and Motivation Toward Medicine**

An applicant's interest in and motivation toward the medical profession is an important factor in the admissions decision. In order to assess the motivation and personal qualities of an applicant, selected individuals are invited to campus for interviews with members of the Committee on Admissions. Both academic achievement and MCAT scores are



considered by the Committee in determining who will be invited to interview. Each year, 450-500 applicants are invited for admission interviews. Interviews take place between October and March.

The personal statement on the application and recommendations submitted on behalf of the candidates allow further insight into the values and motivation of the candidates. A recommendation from the official Pre-professional Advisory Committee (where such a committee exists), or recommendation letters from three faculty members, is required.

A maximum of three additional recommendations may be submitted.

## **Medical Experience**

The Committee of Admissions considers it vital that prospective students enhance their knowledge of medicine through direct, patient-centered clinical experience in a variety of settings. Such experience, which is frequently gained through volunteer work, should provide a greater understanding of the realities of medicine as well as an opportunity for service.

## **Medical College Admission Test (MCAT)**

Candidates admitted to the College of Medicine must achieve a satisfactory score on the MCAT. Average scores for recent entering classes have been 9's and 10's. The MCAT is offered over 20 times a year on a national basis by the Association of American Medical Colleges (AAMC). Registration for the MCAT is done online through the AAMC at [www.aamc.org](http://www.aamc.org). The test must be taken no later than September of the year preceding the desired date of admission.

## **Deferred Matriculation**

Students who are accepted for admission are offered the opportunity of deferring their matriculation for one year, with a guaranteed position in the following class. During the intervening period, students may earn money to finance their medical education, take advantage of additional educational experiences they may not have pursued otherwise, or take care of personal or family obligations. Those who desire to delay their entrance must notify the Chair of the Committee on Admissions of the College of Medicine in writing by July 1, prior to the originally scheduled enrollment date.

## **Advanced Standing**

Transfer or advanced standing applications will be considered for the third year only. Regardless of availability of spaces, only students clearly demonstrating outstanding academic and personal achievement will be considered for transfer into the third year of the College of Medicine curriculum. The selection of transfer students is on a competitive basis. Deadline for application is April 1. In order to be considered by the Committee on Admissions, a candidate must supply evidence of the following:

1. The completion of the basic requirements for admission to the College of Medicine, including Tennessee residency\* at the time of admission to the medical school in which the student has been enrolled.
2. Satisfactory completion of the equivalent of the biomedical sciences portion of the College of Medicine curriculum at an LCME accredited institution.
3. A passing score on the Step 1 United States Medical Licensing Examination.
4. Evidence of circumstances necessitating a transfer.

\* By right of official affiliation with the UT College of Medicine, immediate family members of UT faculty and interns or residents selected for UT programs may apply for admission with advanced standing regardless of state of residence. However, as always, the candidates' credentials will be the sole determinant of admission.

## **Special Programs**

### **Underserved Areas Clinical Scholars Program**

Applicants for the Underserved Areas Program must be accepted for admission to the UT College of Medicine in order to be eligible for consideration in the Underserved Areas Program. Additional information may be found at:

<http://www.utmem.edu/Medicine/StudentAffairs/index.php?doc=inc/uap.html>

### **NIH Medical Student Research Fellowship Program**

The Research Program offers opportunities for medical students who have a serious interest in biomedical investigation to conduct research projects under the supervision of research faculty. A grant from the National Institutes of Health provides 24 fellowships per year including stipends for a maximum appointment of three months. Fellowship grants are available on a competitive basis to all College of Medicine students in good academic standing. A number of other research training programs are available in the Clinical Research Center, the University of Tennessee College of Medicine, St. Jude Children's Research Center, the Graduate School of Medicine at the University of Tennessee Medical Center, Knoxville, and through various private foundations. For further information on research training opportunities, please contact the College of Medicine Research Office, Suite 825, 920 Madison Building, 448-5528 or [stom@utmem.edu](mailto:stom@utmem.edu). The COM also offers students other research opportunities. Additional program information can be found at

[http://www.utmem.edu/research/edu\\_training/](http://www.utmem.edu/research/edu_training/)

### **M.D./Ph.D. Program**

The M.D./Ph.D. Program provides highly motivated and unusually qualified students with an integrated clinical and basic biomedical training program leading to both an M.D. and Ph.D. degree. The program's goal is to prepare graduates with the skills needed to function independently in both clinical and basic research environments. The first and last two-year periods of the program contain the medical curriculum. The intervening two or three years are devoted to graduate study in a selected program of the

College of Graduate Health Sciences. Students must be accepted to the College of Medicine to be considered for admission to the M.D./Ph.D. Program.

## **MD/MS Health Systems Studies**

The Master of Science program in Health Systems Studies at the University of Tennessee Health Science Center is designed specifically for UT medical students interested in future leadership roles in health policy and health systems. Students will complete graduate studies in the broad disciplines of health system leadership and health policy analysis integrated into the medical school curriculum. The program requires an additional, intensive year of graduate studies interposed between the second and third years of the medical school curriculum. Participants will be awarded an MS degree in addition to the MD degree upon graduation from the College of Medicine.

## **Information for Underrepresented Minorities**

The University of Tennessee College of Medicine actively encourages applications from members of minority groups underrepresented in medicine. The Committee on Admissions evaluates nonacademic, as well as, academic factors in the selection process with consideration being given to the unique backgrounds and challenges of these applicants. Among American medical schools, The University of Tennessee Health Science Center College of Medicine is a national leader in the admission, matriculation and graduation of students from groups underrepresented in medicine.

## **Financial Aid**

The University of Tennessee Health Science Center offers a comprehensive financial aid program to qualified students on the basis of need and ability. Financial aid is available to students in the form of grants, scholarships, loans, and part-time work. The University of Tennessee Health Science Center believes that the cost of education is the primary responsibility of the student and/or the student's family. The purpose of aid is to reduce the difference between the cost of education and what a family can reasonably be expected to pay. A limited number of aid programs are available that do not require that students establish need. Personnel in the Financial Aid Office are available to help students explore possible financial aid sources to meet their individual needs. The goal of the office is to see that students do not forego an education because of financial need.

Careful and realistic financial planning is a necessary part of college preparation. Other services offered by the Financial Aid office include budget counseling, debt management information, and pre-loan counseling.

The Free Application for Federal Student Aid (FAFSA) is the only application required for financial aid at the University of Tennessee Health Science Center. Further information concerning the application process for financial aid and specific financial aid programs may be found at [www.utmem.edu/finaid](http://www.utmem.edu/finaid).

## **Policy on Employment**

The College of Medicine supports the view that a successful medical school experience requires a full time commitment on the part of most students. Medical students' primary responsibility must be to scholarship and to their academic pursuits. The College of Medicine recognizes that financing the cost of medical training may require, under very compelling circumstances, that some medical students seek employment during the academic year.

Any student considering employment is encouraged to contact the Office of Student Affairs to seek voluntary counseling. Students will be advised on (1) alternative employment options, especially those which promote further professional growth and development, (2) the impact that employment may have on academic performance, and (3) the availability of other sources of income.

Under no circumstances should the nature of the student's work experience misrepresent the level of professional skill or knowledge. In addition, the work experience should not require a level of time commitment which could adversely affect academic performance. It should be clearly understood that the minimal standards for progress and promotion must be met by all students, regardless of employment.

## **Academic Policies and Procedures**

### **Honor Code**

The Honor Code of The University of Tennessee Health Science Center (UTHSC) is promulgated so that student academic affairs are conducted under the highest standards of individual responsibility. Students are bound by this Honor Code and pledge to act in accordance with the highest principles of ethical and professional conduct. These principles condemn any act of dishonor relating to the academic, clinical, research, and professional programs at UTHSC. The pledge states that any knowledge of a violation shall be reported in accordance with the provisions and procedures of the Honor Code. The College's Honor Code has been in effect for more than 30 years. It is a tradition of which we are proud. Additional information may be found at:

<http://www.utmem.edu/Medicine/StudentAffairs/index.php?doc=inc/honor.html>

Excerpts from the Honor Council Statement, College of Medicine, written by members of the Honor Council are as follows:

“Upon admission to the University of Tennessee College of Medicine, each student accepts the responsibility of acting with honor in course work, clinics and research, and requires the same of his peers. We have an Honor Code, a system based on the idea of personal integrity and the belief that we share a common responsibility to our profession. The success of this system rests firmly with each individual . . . rather than accept outside monitoring of our actions, we elected to monitor ourselves. During our four years here, we face significant intellectual and personal challenges. The ethical challenges of medicine are just as

important and just as demanding. If the University of Tennessee College of Medicine seeks to train good physicians and to promote a sense of honor and professional responsibility, then the Honor Code is a valuable institution. The medical undergraduate years are not too early to begin training ourselves to act with integrity and to expect the same from our peers.”

## **Student Records**

A student’s official or permanent record pertains to academic progress, promotion and graduation, and is maintained in the Office of the Registrar. Academic, health, and disciplinary records are kept separately. Confidential records of all misconduct reports, investigations, and disciplinary actions are kept in the University of Tennessee Health Science Center Student Affairs Office. Medical records are maintained by the University Health Service, and financial aid records are maintained in The Office of Financial Aid. Transcripts of academic records are available to the individual student or his/her legal representative and to authorized members of the administration and faculty. Academic and health records are not available to others except by student request.

The University of Tennessee Health Science Center is in compliance with all provisions of the Family Educational Rights and Privacy Act (FERPA) of 1974, which provides enrolled students and former students the right to review the contents of certain student records which are maintained by the University. Students have the right of access to their permanent record maintained in the Registrar’s Office. Students do not have the right to access financial records of parents, or the personal memory notes of a University official or faculty member.

## **Student Evaluation**

### **Biomedical Science (Years One and Two)**

Examinations are given at periodic intervals during this portion of the curriculum. The content of each examination is established by the course director. The questions are generally multiple choice and computer graded. Each student’s individual examination score report is returned promptly through the student mailbox system. Scores are usually recorded in the course Blackboard site for student access.

It is the responsibility of each course director to establish the criteria for awarding course grades and the role of examinations in the determination of those grades. Any concerns relative to individual examination questions, criteria for course evaluation, or final grades should be directed to the appropriate course director. Laboratory performance, participation in small group activities, special projects, etc., may also influence the final grade in each course. Each course director is responsible for communicating this information on the first day of class.

Students are expected to take examinations as scheduled. Those unable to take a scheduled examination because of illness or emergency situations must notify the Office of Medical Education and the appropriate course director prior to the examination.

All students must take the United States Medical Licensing Examination (USMLE) Step 1 and pass at the national standard in order to be officially promoted to the clinical portion of the curriculum. This examination is taken by all students following the sophomore year, unless specifically deferred by the Office of Medical Education.

## **Clinical Clerkships (Years Three and Four)**

Student evaluation in the clerkships portion of the curriculum includes written examinations as well as an increased emphasis on other forms of evaluation. The clerkship examinations are normally multiple-choice and computer graded. Oral examinations are utilized in some clerkships and are administered by faculty and house staff. In addition, clinical performance is evaluated by attending faculty and house staff in such areas as:

- fund of information
- interest in learning and intellectual aggressiveness
- history taking
- physical examination
- technical skills
- organization of data/formulation of hypothesis
- ability to relate to patients
- thoroughness, consistency, and reliability with responsibilities

The methods of evaluation are established by each clerkship director and are communicated to students during each clerkship orientation. Student evaluation reports are filed with records located in the Office of Student Affairs and are available for review by the student. Student evaluations are also maintained by departmental offices.

## **General Guidelines for Professional Behavior and Conduct in the Third- and Fourth-Year Clerkships**

The clinical rotations in the third and fourth years of medical school place demands and requirements on the students that go significantly above and beyond academic achievement as measured by performance on tests and by the ability to field questions learned through didactic instruction and reading. The student also is accountable for his or her behavior in each of the following areas:

- **Professional and Ethical Conduct:** The welfare of patients and their families is of foremost concern. Students must show respect and courtesy for patients and their families, even under difficult situations such as being challenged or provoked. Students must safeguard their patients' confidentiality in compliance with the Health Insurance Portability and Accountability Act (HIPAA). For example, there are to be no casual communications regarding patients in public places, such as hallways, elevators, cafeterias, gyms, etc.

- **Punctuality, Responsibility and Reliability:** Students are expected to be available and present for all scheduled clerkship activities. Any absences must be approved by the clerkship director in advance. Make-up assignments will be determined by the clerkship director; absences due to illness may require a physician's statement. Tardiness is unacceptable. Students are expected to conform to the prevailing schedule at the sites where they are assigned for their clinical instruction.
- **Getting Along with Other Members of The Medical Team:** Good relationships with nurses, aides, ward clerks, and anyone else involved in the care of the patient are absolutely essential. Students are expected to be courteous to all medical staff at the sites where they are assigned for their clinical instruction.
- **Getting Along with Staff:** Students need to be polite and respectful to the patients, faculty and residents, and all hospital employees. Much of the daily work in keeping a clerkship going falls on the shoulders of administrative assistants, secretaries, receptionists, and other staff that deserve respect. Students are expected to be considerate of and courteous to all of these employees.
- **Getting Along with Peers:** Students are expected to have pleasant working relationships with their fellow students. This includes an equitable sharing of the workload and helping and supporting each other.

If clerkship directors receive consistent complaints about a student in any of these areas, the student's grade may be affected. Serious documented problems with unprofessional or unethical behavior, in the judgment of the clerkship director, may result in a failing grade even if the student has passed the written or oral examinations and has otherwise satisfactory clinical ratings. Also, consistent or serious complaints about unprofessional or unethical behavior may be reflected in the Medical Student Performance Evaluation (MSPE) or Dean's Letter.

There may be times when a student has a personal problem or a personality conflict that impairs his or her ability to function properly on the clerkship. It is the student's responsibility to promptly notify the clerkship director when this first occurs and not after the fact.

## **General Policy on Retaking Examinations in the Core Clerkships**

Students who fail the written examination but have passed the clinical portion of a core clerkship can retake the written exam once. The student will be assigned a letter grade of "R" until the written examination is retaken. The retake must be done by the end of Block 8, the year prior to graduation. A second failing score on the exam, or failure to retake the exam on time, will result in the assignment of a failing grade for the clerkship. A student unable to take a clerkship examination due to illness or other emergency situation must notify the director of that clerkship. Concerns affecting individual examination questions or other forms of evaluation, as well as final grades, should be directed to the appropriate clerkship director.

## Grading System

The faculty evaluates the academic achievement, acquisition of skills, and attitudes of medical students and uses the marks of A, B, C, D, F, W, WP, WF, I, and R in all official reports. In certain instances, some courses may be graded on a PASS/FAIL basis. The performance level and quality value assigned to performance are outlined in the following table:

<b>Grade</b>	<b>Performance Level</b>	<b>Quality Points</b>
A.....	Consistently outstanding .....	4
B.....	Exceeds expectations .....	3
C .....	Satisfactory .....	2
D .....	Marginal .....	1
P .....	Pass .....	0
F .....	Failure .....	0
WP .....	Withdrew Passing .....	0
WF .....	Withdrew Failing .....	0
W .....	Withdrew Before Evaluation .....	0
I .....	Incomplete .....	0
R .....	Retake of Written Clerkship Exam .....	0

The letters “WP” or “WF” are recorded to indicate pass or failure in those instances in which a student withdraws from a course/clerkship before completion, and is either passing or failing, respectively. The letter grade of “W” will be recorded when a student withdraws from a course/clerkship before there has been evaluation of the student to determine whether he/she is passing or failing.

The designation of “I” (Incomplete) will be used when a student is unable to complete the course/clerkship at the regular time. In such cases, arrangements will be made by the course/clerkship director for the student to complete the requirements, and the “I” will then be replaced by whatever grade the student earns. It is the responsibility of the student to work with the course/clerkship director in determining when and under what circumstances the “I” grade can be changed.

The designation of “R” will be recorded in those instances in which a student completes all requirements in a clerkship and passes the clinical portion but fails the written examination. The student will retake the written examination and the appropriate grade will be assigned by the clerkship director.

## Role and Calculation of the Cumulative Grade Point Average

The cumulative grade point average (GPA) recorded on the transcript from the Registrar is used by the Progress and Promotions Committee (P&P), in part, to make recommendations about the promotion and continuation of students in the curriculum. For a student who must retake either courses or clerkships to correct academic deficiencies, the cumulative GPA is calculated by averaging the final grades attained in all courses or clerkships in which he/she has been enrolled for academic credit. This includes those courses or clerkships repeated at the University of Tennessee Health



Science Center and those courses approved by the P&P to be taken at other AAMC institutions.

## **Repeating First- and Second-Year Courses**

A student withdrawing from courses in the first or second year will receive either a “W”, or “WP”, or “WF”, as appropriate, on his/her official transcript. When a student does not complete a first- or second-year course at the University of Tennessee Health Science Center, he/she must repeat the course at the Health Science Center. The Progress and Promotions Committee has the option of recommending that a student who completes but fails first- or second-year courses, or a student who has “D” grades with a cumulative GPA less than 2.0 at the end of the first or second academic years, may correct the academic deficiency or unacceptable cumulative GPA requirement by successfully completing courses taken at other institutions, courses repeated at the University of Tennessee Health Science Center, or both. Any student earning the grade of “D” in two or more courses in any of the first two academic years irrespective of cumulative GPA will have his/her academic record reviewed by the designated Progress and Promotions Committee. The Committee may make one of the following recommendations concerning this student: a) re-evaluation in specified course(s); b) repeat part or all of the particular academic year; and c) no recommendation. All courses taken for academic credit are recorded on the official transcript and computed in the GPA.

## **Promotion**

A Progress and Promotions Committee (P&P) is appointed for each matriculating class. The committee is charged by the Executive Dean of the College of Medicine with monitoring and making recommendations concerning the results of individual student performance in the curriculum until graduation. Special requirements for promotion during each year are outlined below:

### **Freshman and Sophomore Years:**

1. Each student must obtain a passing grade (“D” or better) in each course. Students having a grade of “D” in two or more courses will have their academic record reviewed regardless of GPA.
2. Each student must obtain an overall cumulative grade point average (GPA) of 2.0 (on a 4.0 scale) at the end of each year.
3. Each student must obtain a passing score at the national standard on the USMLE Step 1 before matriculating into the clinical program.

### **Junior and Senior Years:**

1. Each student must obtain a “C” or better, or “P” grade in each clerkship.
2. Each student must obtain a “C” or better, or “P” in each elective.
3. Each student must obtain a passing score at the national standard on the USMLE Step 2CK Examination before graduating.
4. Each student must obtain a passing score on the USMLE Step 2CS Examination before graduating.

## **Requirements for the Degree of Doctor of Medicine**

The College of Medicine offers an educational program leading to the Doctor of Medicine (M.D.) degree. The program is designed so that the student can complete this academic program over four calendar years.

The M.D. degree is awarded after completion of degree requirements at the next regularly scheduled commencement, which is held in May and December of each year. The diploma, as well as each student's official transcript, reflects the awarding of the M.D. degree.

The transcript will be posted with the date of completion of all degree requirements for those students who complete requirements for the Doctor of Medicine degree out of phase. However, the degree will not be awarded until the next regularly scheduled commencement.

## **United States Medical Licensure Examinations (USMLE)**

Each individual state determines requirements for licensure to practice medicine in that state and maintains the standards of medical practice in accordance with its own rules and regulations. To this end, each state has a medical licensure board charged with maintaining the standards for licensure in that state and in evaluating credentials submitted to them for licensure. Regulations of state licensing boards are subject to change without notice and each board should be contacted concerning the specific requirements for licensure in that state.

The Federation of State Medical Boards of the United States (FSMB) and the National Board of Medical Examiners (NBME) have established a single common uniform examination for medical licensure in the United States, the United States Medical Licensing Examination (USMLE). The USMLE is a single examination program with three complementary steps. Step 1 assesses whether an examinee understands and can apply key concepts of basic biomedical science, with an emphasis on principles and mechanisms of health, disease, and modes of therapy. The USMLE Step 2 has two components. Step 2 CK (Clinical Knowledge) assesses whether an examinee possesses the medical knowledge and understanding of clinical science considered essential for the provision of patient care under supervision, including emphasis on health promotion and disease prevention. The Step 2 CS (Clinical Skills) assures that examinees have the information gathering and communication skills necessary to enter supervised postgraduate education and for subsequent licensure.

A passing score on the Step 1, 2 CK, and 2CS examinations is a requirement for the MD degree at the University of Tennessee College of Medicine. A student will normally sit for the Step 1 examination at the end of the sophomore year and will sit for the Step 2 examinations by December 1st of the senior year. USMLE Step 3 assesses whether an examinee possesses the medical knowledge and understanding of biomedical and clinical science considered essential for the unsupervised practice of medicine, and is taken during residency training.

To be eligible for the Step 3 Examination, an individual must obtain the MD degree and must have completed successfully Step 1, Step 2 CK, and Step 2 CS examinations. The USMLE Step 1 and Step 2 exams are administered by the National Board of Medical Examiners (NBME) for all eligible examinees. Further information can be found at [www.nbme.org](http://www.nbme.org). The Step 3 examination is administered by licensing authorities for the State of Tennessee. Information can be obtained from the Tennessee State Board of Medical Examiners.

## **Curriculum and Course Listing**

### **Four-year Curriculum at a Glance — The University of Tennessee College of Medicine**

#### **STATUS**

#### **FIRST YEAR**

Doctoring: Recognizing Signs and Symptoms (DRS)  
Prevention, Community and Culture (PCC)  
Molecular Basis of Disease (MBOD)  
Physiology  
Gross Anatomy

#### **SECOND YEAR**

DRS  
PCC  
Microbiology  
Neurosciences  
Pathology  
Pathophysiology  
Pharmacology  
Step 1 - United States Medical Licensing Examination (USMLE)

#### **THIRD YEAR**

DRS/PCC - 2 weeks  
Family Medicine - 8 weeks  
Medicine - 8 weeks  
Obstetrics & Gynecology - 8 weeks  
Pediatrics - 8 weeks  
Psychiatry/Neurology - 8 weeks  
Surgery - 8 weeks

#### **FOURTH YEAR**

DRS/PCC - 1 week  
Ambulatory Medicine - 4 weeks  
JI - Any - 4 weeks  
JI - Medicine - 4 weeks  
Specialty Clerkship - 4 weeks  
Surgery Specialties - 4 weeks  
Patient Safety/Quality Improvement Clerkship (PS/QI) - 4 weeks

Electives - 16 weeks

Optional Blocks - 12 weeks

**Step 2 - United States Medical Licensing Examinations (USMLE)— CK (Clinical Knowledge) Exam and CS (Clinical Skills) Exam.**

**Begin Residency Training as M.D.**

**First Year**

The biomedical sciences portion of the curriculum is approximately 72 weeks in duration. The first year curriculum runs from August through March, and is devoted to the courses of Prevention, Community and Culture; Doctoring: Recognizing Signs and Symptoms; Gross Anatomy; Molecular Basis of Disease; and Physiology.

The first year format consists primarily of basic science activities in the General Education Building. Approximately twenty hours weekly are devoted to scheduled activities.

<b>Required Courses</b>	<b>Lecture Hours</b>	<b>Conferences/ Small Group/Lab Hours</b>	<b>Total Hours</b>	<b>Semester Hours</b>
Doctoring: Recognizing Signs and Symptoms	10	53	63	3
Prevention, Community, and Culture	22	12	37	3
Gross Anatomy	87	101	188	7
Molecular Basis of Disease	113	15	128	9
Physiology	112	69	181	9

**Fall and Spring Semesters**

111 DRS- Doctoring: Recognizing Signs and Symptoms (3 credit hours). This introductory course in the art and science of patient care is presented in five block weeks throughout the fall and spring semesters. DRS is a hands-on course that introduces skills such as patient communication, medical history-taking, physical examination, case presentation, and chart documentation. Also presented are basic skills in recognition and interpretation of signs and symptoms of health and disease. Learning activities include interactive small group sessions with upper class students and clinical faculty, and a community preceptor experience with a practicing physician in the Memphis area. Assessment of clinical skills is by participation in learning activities, written assignments modeling patient charting, and ratings on observed standardized patient encounters at the end of the spring semester.

111 PCC- Prevention, Community, and Culture (3 credit hours). This curriculum introduces patient care through cases structured along a preventive medicine theme. The course includes preventive medicine, epidemiology, human behavior issues, nutrition, ethics, cultural medicine, alternative and complementary medicine, health systems,

patient safety and quality improvement, palliative care/end-of-life care and professionalism. The case discussions occur in small groups facilitated by clinicians and require self-directed learning, synthesis of information, and presentation skills. The course is taught in five week-long blocks spanning the first year.

PCC and DRS are components of a longitudinal curriculum that spans all four years.

111 GA- Human Gross Anatomy (7 credit hours). A study of the gross anatomical structure of the human body by means of complete dissection supplemented by lectures and the study of cross sections. Human embryology is included in the program.

111 MBD - Molecular Basis of Disease (9 credit hours). MBOD is an integrated course covering the principles of biochemistry, cell biology, genetics, and molecular biology, with an emphasis on clinical applications. The course focuses on the basic interdisciplinary concepts underlying modern biomedical science. The principles of medical genetics are woven throughout the course giving the student a basic and practical fund of knowledge that can be used in the clinical clerkships. The course is a blend of lectures, clinical correlations (some involving patients), and problem-solving sessions.

123 PHYS - Medical Physiology (9 credit hours). Integrated histology and general organology with the functioning of the human body is considered, ranging from cellular to higher organ-system levels. Lectures are supplemented with weekly or biweekly conference meetings of small groups of students with individual faculty for demonstrations, special clinical correlations, and problem-solving exercises.

## **Second Year**

Immunology, which is a part of the Microbiology course, is taught from January through March of the first academic year. Beginning in late spring, students are exposed to basic concepts in Microbiology, Neurosciences, Pathology and Pharmacology. These courses continue into the second year with credit awarded at the completion of the entire course.

Some concepts in the courses of Neurosciences, Microbiology, Pathology, and Pharmacology are presented in the months of April and May of the M1 year, and these courses continue into the second year along with Pathophysiology. Students also participate in a series of Clinical Pathology Conferences (CPC), which are integrated small group case discussions focusing around related content from Pathology, Pathophysiology and Pharmacology. PCC and DRS continue in the second year in 5 week-long blocks.

Required Courses	Lecture Hours	Conferences/ Small Group/Lab Hours	Total Hours Second Academic year	Semester Hours
<u>PCC</u>	22	16	38	4
<u>DRS</u>	10	52	62	4
<u>Microbiology w/ Immunology</u>	98	16	114	6
<u>Neurosciences</u>	91	10	101	7
<u>Pathology</u>	77	20	97	9
<u>Pathophysiology</u>	128	23	151	12
<u>Pharmacology</u>	81	8	89	6

211 DRS - Doctoring: Recognizing Signs and Symptoms (4 credit hours). Continuation of the course in the art and science of patient care presented in five week-long blocks throughout the fall and spring semesters.

211 PCC - Prevention, Community, and Culture (4 hours credit). This course continues the discussion of patient care through case discussions in small groups requiring self-directed learning, synthesis of information, and presentation skills.

212 MICR - Medical Microbiology (6 credit hours). A course that presents the concepts of immunology and immunity, the basic aspects of microbial morphology, growth metabolism and genetics, the actions of anti-microbial agents, and the role of microorganisms in infectious diseases. Laboratory experiences and small group case-based studies complement and expand the didactic material. Grades are assigned in the spring semester of the second year.

212 NEUR - Neurosciences (7 credit hours). This is a lecture/laboratory course dealing with the anatomy and function of the central nervous system (CNS). The course includes the anatomy of the brain and spinal cord, location of nuclei and their interconnections, and the origin and termination of major fiber pathways in the CNS. Localizing neurology, disorders of cognitive function and the major classes of neurologic disease are discussed. Problem-solving sessions related to clinical application are emphasized. The course allows the student to achieve an understanding of a clinical approach to neurologic disease. Grades are assigned in the spring semester of the second year.

214 PATH - Pathology (9 credit hours). The course develops the principles of the discipline of pathology. Normal organology and integrated histology are part of the course which presents disease by organ systems. The methods of instruction include lecture, laboratory experiences, demonstrations, and group discussions. Grades are assigned in the spring semester of the second year.

212 PAPH - Pathophysiology (12 credit hours). Based on the concept that pathophysiology is the study of alterations in or derangements of normal bodily function that result from disease processes, this multidisciplinary course is designed to bridge the gap between the basic sciences and the clinical disciplines. The main goal is to correlate

the anatomic, biochemical, physiologic, and pathologic mechanisms that underlie commonly encountered clinical problems. The course is particularly important in creating an awareness in the medical student that basic science is highly relevant to clinical medicine, and that knowledge of the underlying pathophysiology of a disease process facilitates the understanding of its etiology, clinical presentations, and therapeutic alternatives. In addition to traditional lectures, emphasis is placed on non-lecture formats, such as laboratory sessions, small group integrative seminars, and related clinical correlation conferences. Grades are assigned in the spring semester of the second year.

222 PHA - Medical Pharmacology (6 credit hours). The medical student is introduced to the pharmacologic concepts of the action of drugs and other xenobiotics. The classification, mechanisms of action, and toxic effects of pharmacologic agents are stressed. Discussion of representative examples of major drug classes are emphasized, and treatment modalities, whenever appropriate, are presented. This basic course uses lectures, clinical correlative discussions, and independent study to assist the student in understanding pharmacologic therapy in the clinical phase of his/her medical education. Grades are assigned in the spring semester of the second year.

The Biomedical Science component of the curriculum is completed in March. Students then sit for the USMLE Step 1 Exam prior to beginning clerkships.

### **Third Year Begins in May**

Students proceed directly into the Third Year Clinical Clerkships upon successful completion of the Biomedical Sciences, and obtaining a passing score on the United States Medical Licensing Examination (USMLE) Step 1. Occasionally, students may elect to delay entry into the clerkship program in order to pursue graduate studies. Criminal background checks are a requirement for training. Based on the results of these checks, an affiliated clinical site may determine to not allow your presence at their facility.

Students begin the third year with a week-long DRS/PCC block which focuses on providing clinical skills essential to success in the M-3 clerkships. During the clerkships, students focus their attention and efforts on patient problem-solving and experience an increasing level of responsibility throughout the rotations. Student workload in the third year is controlled by the director of each clerkship. The total amount of time allotted for third-year clerkships is 48 weeks, which is taken over a 64-week period. After completion of a minimum of three core clerkships, students may choose one or more electives to enhance their skills and understanding in a specific discipline before completing all six required clerkships.

<b>Clerkship</b>	<b>Duration</b>
DRS/PCC	1 week
Family Medicine	8 weeks
Medicine	8 weeks
OB/GYN	8 weeks
Pediatrics	8 weeks
Psychiatry/Neurology	8 weeks
Surgery	8 weeks

These clerkships provide a breadth of clinical experiences in the major care areas. Students become an integral part of the health-care team in an academic setting involving both house staff and faculty as well as ancillary services of the teaching hospitals. Programs are available in facilities in Memphis, Knoxville, Chattanooga and Nashville.

DRS/PCC-3001/F - Prevention, Community, and Culture (2 credit hours). The M-3 DRS/PCC course consists of a week of “Preparing for Clerkships” and periodic workshops. The content of the introductory week includes charting skills, ECG and radiology workshops, “what to do in a code,” suturing and knot tying sessions, venipuncture, clinical breast exam, SOAP note writing, and TB mask fitting. Clinical reasoning and differential diagnosis of common complaints, such as abdominal pain and headache, are reviewed.

FME1-3001/F - Core Clerkship in Family Medicine (14 credit hours). The Family Medicine Clerkship is an eight-week clinical experience during which students participate in a unique breadth of patient care in the context of family and community. Students experience traditional office-based practice under the supervision of a community-based family physician preceptor. With the office practice as a base, the family physician serves all aspects of patient care involving both inpatient and outpatient settings, ranging from the hospital to the nursing home. Students are placed with family physicians that practice the full breadth of the discipline, including obstetrical care, whenever feasible.

The department maintains a wide array of approved clinical training sites throughout the state of Tennessee and works closely with students to identify mutually agreeable clinical assignments. Student hardships will be considered in making the final assignment.

The clerkship is a full-time learning experience, typically mirroring the family physician preceptor and including both weekend responsibilities and night call. Students have several written assignments to complete as well as assigned readings during the eight weeks. This clerkship is also offered in Knoxville (FME2-3001/F) and Chattanooga (FME3-3001/F).

MED1-3001/F - Core Clerkship in Medicine (14 credit hours). The clinical clerkship in medicine is designed to provide the medical student with an opportunity to learn by



experience in patient care and by the examples set by the faculty and house staff. The student is a participating member of the clinical team responsible for patient care which includes residents and the attending physician. A student is expected to: 1) acquire skill and efficiency in history taking and physical examinations, in technical procedures, in the assembly and interpretation of laboratory data, and in patient diagnosis and management; 2) apply to clinical problems the knowledge and facts acquired in the biomedical sciences; and 3) read current medical journals as well as textbooks. Each student is assigned to the University Medical Services at the Veterans Affairs Medical Center, the Regional Medical Center or Methodist University Hospital for the eight-week rotation. At the mid-point of the clerkship, each student will switch from one hospital assignment to another. Alternatively, students may rotate through Baptist Hospital in Nashville for four weeks of their rotation (Nashville MED4-3001/F). This clerkship also is offered in Knoxville (MED2-3001/F) and Chattanooga (MED3-3001/F).

NEU1-3001/F - Core Clerkship in Neurology (7 credit hours). This four-week experience is offered in an eight-week rotation in concert with the Psychiatry Clerkship. The clinical sites for the clerkship are at Baptist Memorial Hospital, Methodist University Hospital, and the Veterans Affairs Medical Center. The major emphasis is on developing skills in neurological history taking and in the performance and interpretation of the neurologic examination. The clinical correlations of neurostructure and function taught in Neurosciences are expanded upon in the clinical setting. An exposure to the various categories of neurologic disorders and their pathophysiology is provided. The diagnostic approach to the patient stresses both anatomic and etiologic considerations. Neurology is a focal point for the dynamic advances in our understanding of the pathogenesis of disease and related new therapies. Currently, this clerkship is offered only in Memphis.

OBG1-3001/F - Core Clerkship in Obstetrics and Gynecology (14 credit hours). This required eight-week clerkship is designed to familiarize the student with female pelvic anatomy and the normal menstrual cycle. In addition, obstetric and gynecologic history taking and pelvic examination are taught, along with the normal physiology of pregnancy and care of the normal pregnant woman through the antepartum, intrapartum, and postpartum course. Basic complications of pregnancy are covered, as well as specific diseases as related to pregnancy outcome. The gynecologic portion of the clerkship focuses on basic diseases which occur in the female pelvis, including infection, endometriosis, and cancer. This clerkship also is offered in Knoxville (OBG2-3001/F) and Chattanooga (OBG3-3001/F).

PED1-3001/F - Core Clerkship in Pediatrics (14 credit hours). Four weeks of this eight-week required clerkship experience are in an ambulatory setting that includes: general outpatient care, subspecialty clinic experience and primary care in a private office setting. The other four weeks are spent on inpatient service, providing direct "hands-on" patient management. An eight-week lecture series covers the most relevant topics in pediatric care. Regular rounds with faculty and house staff provide opportunities for interaction with all members of the health care team in managing the pediatric patient. This clerkship also is offered in Chattanooga (PED3-3001/F).

PSY1-3002/F - Core Clerkship in Psychiatry (7 credit hours). This four-week clerkship is offered in an eight-week block in concert with the Neurology Clerkship. Students are assigned to a general inpatient service as their home base, gaining familiarity with diagnosis and treatment of severely disturbed patients. Additional time is organized around psychiatric services in a general medical setting (Consultation-Liaison or Emergency Room at the Regional Medical Center) or the Alcohol and Drug Rehabilitation Services at the Veterans Affairs Medical Center. Lectures, readings, case conferences, and outpatient clinic assignments round out the experience. The student is expected to gain a basic knowledge of psychiatric diagnosis, applied psychopharmacology, and non-pharmacologic treatment options. Emphasis is on information useful to students regardless of their future specialty choice. Currently, this clerkship is offered only in Memphis.

SUR1-3001/F - Core Clerkship in Surgery (14 credit hrs). This eight-week clerkship encompasses general, vascular, and trauma surgery. The objective of this clerkship is to familiarize the student with the basic pathophysiologic, diagnostic and therapeutic modalities involved in the art and science of surgery. The fundamentals taught in this rotation will be of benefit to individuals even if they do not choose a field of surgery as a career. The clinical rotations are four weeks each in two different facilities. These facilities include the Veterans Affairs Medical Center, the Regional Medical Center, Baptist Hospital, St. Francis, and the Methodist University Hospital. In addition to this clinical involvement, each student is involved in small group conferences and an afternoon didactic lecture series delivered by members of the faculty. The student also participates in a skills laboratory, videotape presentations, grand round sessions, and generous outpatient experiences. This clerkship also is offered in Knoxville (SUR2-3001/F) and Chattanooga (SUR3-3001/F).

Additional information on each clerkship can be found at:  
[www.utm.edu/Medicine/Acad\\_Affairs/UME/Clerkships/](http://www.utm.edu/Medicine/Acad_Affairs/UME/Clerkships/)

**Location of Clinical Clerkship and Elective Offerings:**

	<b>Memphis</b>	<b>Knoxville</b>	<b>Chattanooga</b>	<b>Nashville</b>
Family Medicine	x*	x	x	
Medicine	x	x	x	x
Neurology <sup>a</sup>	x			
Ob/Gyn	x	x	x	
Pediatrics	x		x	
Psychiatry <sup>a</sup>	x			
Surgery	x	x	x	
Ambulatory Medicine	x	x	x	x
Senior Clerkship Medicine	x	x	x	x
Senior Clerkship (any third year clerkship)	x	x	x	
Surgery Specialties	x	x	x	
Specialty Clerkship	x	x	x	
Patient Safety/Quality Improvement Clerkship	x	x	x	
Electives	x	x	x	x

<sup>a</sup> Psychiatry and Neurology are scheduled in the same eight-week period.

\* The Department of Family Medicine seeks to expose all medical students to primarily ambulatory-based medicine in the real-life office setting of practicing community family physicians. The department places students in locales throughout the state of Tennessee including urban, suburban, rural, and under-served communities. Whenever possible, student preferences for specific locations are taken into consideration. Students may request approved settings in their hometown or communities where they may stay with family or friends. Students are responsible for the costs associated with transportation, housing, and food.

## Fourth Year

The fourth year is composed of six 4-week clerkships, M-4 DRS/PCC (longitudinal), and four 4-week electives. These clerkships allow for increased responsibility in patient care as well as the opportunity to pursue areas of individual interest. The electives provide students with the opportunity to select the clinical or basic science experiences to best meet their particular career goals. More information is provided at [http://www.utmem.edu/Medicine/Acad\\_Affairs/UME/index.php?doc=fourth\\_year.htm](http://www.utmem.edu/Medicine/Acad_Affairs/UME/index.php?doc=fourth_year.htm).

Clerkships	Duration
PCC/DRS	1 week
<u>Ambulatory Medicine</u>	4 weeks
<u>Surgery Specialties</u>	4 weeks
Specialty Clerkship	4 weeks
Senior Clerkship in Medicine	4 weeks
Senior Clerkship in any of the required M3 Clerkships	4 weeks
Patient Safety/Quality Improvement	4 weeks
<u>Required Electives*</u>	16 weeks
Optional Electives	12 weeks

\* Elective Programs: 16 weeks of half-time/full-time electives are required. (320 electives are available in Chattanooga, Jackson, Knoxville, Memphis and Nashville.) Electives can be viewed at [http://www.utmem.edu/Medicine/Acad\\_Affairs/UME/Clerkships/Catalog.doc](http://www.utmem.edu/Medicine/Acad_Affairs/UME/Clerkships/Catalog.doc)

## Clerkship Chart

The required fourth-year clerkships and elective rotations are shown below. The number following the departmental designation indicates the city in which the clerkship is held (e.g., MED1, with the 1 indicating Memphis):

1 Memphis 2 Knoxville 3 Chattanooga 4 Nashville 5 Jackson

JI Required Clerkship in Internal Medicine	Ambulatory Care	Specialty Clerkship*	Surgery Specialties	JI Any		Electives (16 weeks)
MED1-3002 MED2-3002 MED3-3002 MED4-3002	MED1-3003 MED2-3003 MED3-3003 MED4-3003	SPE1-3001 SPE2-3001 SPE3-3001	SUR1-3002 SUR2-3002 SUR3-3002	FME1-3010 FME1-3012 FME1-3030 FME5-3010 FME6-3012 MED1-3029 MED1-3030 MED1-3035 MED1-3036 MED1-3062/F MED1-3063 MED1-3067 MED1-3100 MED1-3110 NEU1- 3010 OBG1-3010 OBG1-3020 PED1-3010 PSY1-3010 PSY1-3030 PSY1-3150 SUR1-3011 SUR1-3012 SUR1-3013 SUR1-3014	FME2-3010 MED2-3010 MED2-3030 OBG2-3010 SUR2-3010 SUR2-3020 SUR2-3030 SUR2-3031 SUR2-3040 FME3-3010 MED3-3010 MED3-3030 MED3-3031 OBG3-3010 OBG3-3020 PED3-3010 SUR3-3010 SUR3-3030	4000 SERIES IN ANY DISCIPLINE (W/O SAME THIRD NUMBER IN SAME DISCIPLINE)

Specific dates for the senior year are shown in the clerkship calendar section of the web site.

## Clerkship Descriptions

DRS/PCC-3002/F (1 credit hour). The curriculum is designed as a continuing medical education (CME) model. The goal is to provide direction for students in developing the skills necessary to become life-long learners and the ability to share their learning as effective teachers in both the academic as well as the community setting. Successful completion of the M-4 LCP includes both required and optional didactic and experiential components. Workshops include interdisciplinary topics such as HIV/AIDS, hospital nutrition, end-of-life/palliative care, smoking cessation, complementary and alternative medicine, and medical disabilities.

MED1-3002/F - Senior Clerkship in Medicine (7 credit hours). The Senior Clerkship in Medicine places the student in a more direct role in patient care similar to an internship, but closely supervised and directed. The senior clerkship student will record the principal database (with resident or faculty review and counter signature), develop an evaluation and treatment plan, and write orders on patients (to be reviewed, altered if necessary, and signed by the resident or faculty prior to implementation). The student is introduced to responsibility for inpatient care in a setting in which the student is the initial evaluator of the patient's problems as outlined in the general instructions.

The student develops conceptual and manual skills for evaluation and care of internal medicine patients and becomes more familiar in dealing directly with hospital and other paramedical personnel with an appreciation for the team approach to patient care. The student participates in two-hour rounds at least four days per week with the attending physician assigned to the service and consults daily with the resident house staff on each assigned patient. This clerkship also is offered in Knoxville (MED2-3002/F), Chattanooga (MED3-3002/F), and Nashville (MED4-3002/F).

MED1-3003/F - Ambulatory Care (7 credit hours). The objectives of the ambulatory clerkship are to provide: 1) an in-depth orientation to the evaluation, management and long-term clinical course of common medical problems which are handled by internists; 2) guidelines for recognizing common clinical problems which may be cared for in an ambulatory setting versus those which require hospitalization and/or referral for specialty or subspecialty care; 3) instruction in the unique principles of successfully providing medical care in the ambulatory setting; and, 4) instruction in health maintenance, disease prevention, and relevant clinical epidemiology. The student will work in a variety of clinical areas including general medicine clinics at the Regional Medical Center and Veterans Affairs Medical Center. There are also opportunities to participate in the Adult Special Care Clinic, Sickle Cell Clinic, Hypertension Clinic, and many of the subspecialty clinics such as Cardiology and Endocrinology. The student may spend some time with an internist in private practice. This clerkship also is offered in Knoxville (MED2-3003/F), and Chattanooga (MED3-3003/F).

SUR1-3002/F - Surgery Specialties (7 credit hours). This clerkship exposes the student to the Surgery Specialties of Orthopaedics, Ophthalmology, Otolaryngology and Urology. The clerkship is available in Knoxville (SUR2-3002F), and in Chattanooga (SUR3-3002/F).

Senior Clerkship (FME, MED, OB/GYN, PED, PSY/NEURO, SUR) (3010/F to 3012/F) (7 credit hours). Students are required to take a 4-week experience in any one of the core clerkships.

PSQ1-2002/F - Patient Safety, Quality Improvement Clerkship (7 credit hours). This is an opportunity to participate in a structured, longitudinal curriculum while performing stepwise work on a Patient Safety/Quality Improvement Project (PS/QI Project) under the tutelage of a quality improvement coach. Those students who do not participate in a longitudinal PS/QI Project and complete a project report will be required to participate in a 4-week block curriculum in February/March of their senior year.

SPE1-3001/F - Specialty Clerkship (7 credit hours). This clerkship is offered in each block throughout the calendar year. Students will have a week each in Anesthesiology, Radiology, ICU and Palliative Care during the four-week clerkship. The clerkship will be graded "Pass/Fail." This clerkship is available in Knoxville (SPE2-3002/F) and Chattanooga (SPE3-3002/F).

Electives (7 credit hours each). Sixteen weeks of two-week (half-time) or four-week (full-time) elective work are required and normally taken during the senior year. Both basic science and clinical electives of varying lengths are offered in a variety of settings with maximal learning opportunities. During this time, each student has the opportunity

to: 1) select experiences that meet individual career goals, 2) study in depth in a clinical or basic science area, and 3) have increased responsibility in patient care under the direct supervision of the faculty. Electives are offered by the University of Tennessee, UT-affiliated hospitals, and (with approval) at other accredited medical schools. The Elective Catalog is available at:

[http://www.utmem.edu/Medicine/Acad\\_Affairs/UME/Clerkships/Catalog.doc](http://www.utmem.edu/Medicine/Acad_Affairs/UME/Clerkships/Catalog.doc).

With proper selection, the electives program provides a varied and appropriate educational experience. This imposes a high level of responsibility on each student and with the limited elective time available, each student is encouraged to seek advice from as many different people as is practical.

Although prior approval by the course coordinator is not required for all electives, the responsibility of verifying the availability of an elective for a particular scheduling period rests with each student. For courses which indicate, "Consent of Course Coordinator" as a prerequisite, permission must be obtained from the course coordinator prior to scheduling.

A student may request an elective not currently listed in the Electives Catalog. Any specially designed elective requires approval of the involved faculty member, the appropriate departmental chair, and the Clinical Sciences Subcommittee. The Office of Medical Education has forms available for this purpose. Since the approval process for a special elective could require considerable time, students are advised to begin this process well in advance of the time at which the requested elective is to be scheduled.

## **Counseling for Clerkships and Electives**

Departments have designated contact faculty for their educational programs. These faculty members should be a student's first point of contact in matters of specific departmental concern in the curriculum. In addition, administrative details can be handled by the contact person; a listing of these individuals follows the faculty list in the electives catalog at: [www.utmem.edu/Medicine/Acad\\_Affairs/UME/](http://www.utmem.edu/Medicine/Acad_Affairs/UME/)

## **Clerkship Locations**

Selected clerkships and electives may be taken in the College of Medicine at Memphis, Knoxville, Chattanooga, Nashville, or Jackson. The sites at Knoxville, Chattanooga, and Nashville offer a variety of clerkships, as well as clinical and basic science electives. Senior programs are available at all five (5) sites (although not in each discipline). Not all electives are offered on a continuing basis. Students should refer to the individual elective description for additional information.

## **Option Periods (OPM1-4001/F) or (Option Half-Period OPM1-4001/H)**

Students in the College of Medicine have twelve option weeks usually taken in the fourth year. Students should use these option weeks to interview for residencies and other personal business. Jobs and/or non-credit work can be arranged during option weeks with faculty members. Any student interested in applying for a research award during option weeks should contact the office of the Vice Chancellor for Research for additional information.

## **Electives at Other Institutions**

A maximum of eight weeks of electives may be taken by students at other institutions. Any student applying for an elective at another institution must be in good standing in the College of Medicine, have satisfactorily completed the core clerkships of the third year, and have permission from the appropriate clinical department chair as well as the Office of Medical Education. Electives at other institutions are normally taken for credit and, thus, tuition is paid at the University of Tennessee. The cooperating institution must be affiliated with an accredited medical school, must agree to accept and evaluate the student, and must certify that the elective being applied for is a regularly offered medical student elective at that institution.

An "Elective Away Application" form is available electronically at [http://www.utmem.edu/Medicine/Acad\\_Affairs/Students/index.php?doc=forms.htm](http://www.utmem.edu/Medicine/Acad_Affairs/Students/index.php?doc=forms.htm) or in the Office of Medical Education. This form must be completed and on file in the Office of Medical Education before the elective begins in order for formal academic credit to be awarded.

## **Visiting Students Application Service**

The Visiting Student Application Service (VSAS) is a new AAMC application designed to streamline the application process for senior "away" electives at other U.S. LCME medical schools. This service requires students to submit just one application for all schools, effectively reducing paperwork, miscommunication, and time. VSAS also provides a centralized location for managing offers and tracking decisions. It was created at the request of two GSA committees: Committee on Student Records (COSR) and Committee on Student Affairs (COSA).

<http://www.aamc.org/programs/vsas/students/vsasstudent.pdf>

## **Guidelines for Visiting Medical Students**

The University of Tennessee College of Medicine has elective opportunities available at its sites in Memphis, Knoxville, Chattanooga, Nashville and Jackson for medical students from other medical schools. To be eligible for consideration, students must meet the following criteria:

- Visiting students must be candidates for the M.D. degree in good standing in a medical school accredited by the Liaison Committee on Medical Education or from institutions with which UTHSC has a formal exchange program.
- Visiting students shall be limited to a maximum of 12 weeks of experiences during their medical school career. Electives will be assigned to visiting students only after all University of Tennessee students have been scheduled.
- All visiting students must have:
  - coverage for malpractice/liability insurance in the amount of \$1 million per incident and \$3 million aggregate from their institution or from acceptable other sources
  - health insurance
  - required immunizations for measles and rubella
  - completed the hepatitis vaccine series
  - taken a TB skin test within the past year
  - been certified in CPR within the past year and
  - HIPAA compliance training
  - Passing score on USMLE Step 1.
- Visiting students must have completed instruction in the basic physical examination and have a working knowledge of general ward procedures. All electives require that the student has completed the core Family Medicine, Medicine, Neurology, Pediatrics, Surgery, Psychiatry, and Obstetrics-Gynecology Clerkships.
- Visiting students must submit the “Visiting Student Application” for an elective no earlier than April of their junior year and at least four weeks prior to beginning the rotation. Students attending U.S. medical schools may obtain applications from the respective department chair in the College of Medicine. Others should request applications from the College of Medicine’s Office of Medical Education. All completed applications should be submitted first to the respective Departmental Office at UT before being sent to the Office of Medical Education. It is expected that clerkship work at the University of Tennessee will be part of the graduation requirements of the home institution. For this reason, it is essential that an authorization for taking an elective from Dean’s Office of the home institution be submitted. Section II of the “visiting student” application provides for this authorization. Currently, students who are regularly enrolled in another medical school and paying tuition at that school are not charged tuition at the University of Tennessee for brief elective periods. This policy may change in the future, and the school reserves the right to charge tuition at any time.

It is the individual student’s responsibility to secure housing. The campus housing office can be contacted at (901) 448-5609 regarding availability. Further specifics about housing can be obtained from the department in which the elective rotation will be taken.



## General Information for Students

### Student Affairs

The Office of Student Affairs is concerned with the overall growth, development, and graduation of medical students. Thus, the goal of the Office is to meet students' individual needs and to serve in an advising capacity to various student activities. Programs sponsored by the Office of Student Affairs include:

Freshman Orientation, Faculty Mentor Program, Peer Counseling Program, Student Publications, Residency Placement Assistance, Medical Student Performance Evaluation, Career Counseling, Student Organization Support Guidance, Student/Faculty Award Selections, Graduation Ceremonies, and the Caduceus Ball. Student Affairs personnel seek to enhance students' nonacademic experiences with a goal of assuring that problems are addressed before they have an adverse affect. Students with concerns, whether personal, financial, or social, should not hesitate to seek assistance.

### Student Organizations

**Alpha Omega Alpha National Medical Honor Society (AOA):** Alpha Omega Alpha (AOA) is an esteemed society whose purpose is to perpetuate excellence in medicine. Selection to AOA is competitively based upon academic achievement and demonstration of attributes exemplary of a physician. The society sponsors two programs annually: AOA Distinguished Visiting Lecturer and AOA Student Research Day.

**Student Government Association Executive Council (SGAEC):** The SGAEC studies matters of importance to students of the Health Science Center and submits recommendations expressing student views and concerns to the administration and faculty of the University. The president of the Medical Student Executive Council is the College of Medicine's representative on the SGAEC.

**Medical Student Executive Council (MSEC):** Students are an integral component of the governance of the College, and the MSEC is the major student organization which represents the student body of the College of Medicine. The President of the MSEC is elected by voting members of the Council annually in the spring semester. Each class elects three MSEC representatives. Additionally, representatives of the Student National Medical Association (SNMA), the American Medical Student Association (AMSA), the Family Medicine Student Association, American Medical Association - Medical Student Section (AMA-MSS), Organization of Student Representatives (OSR) to the American Association of Medical Colleges, Student Society for Internal Medicine, and the medical fraternities are voting members. MSEC elects the student representatives to committees such as the Committee on Undergraduate Medical Education (CUME), the Biomedical Sciences Subcommittee (BSS), the Clinical Sciences Subcommittee (CSS). The Council also selects the finalists for the student members of the Admissions Committee. MSEC holds weekly noon meetings on Thursdays in the Student Activities Center. These meetings are open, and all medical

students are encouraged to attend and to express concerns related to life as a medical student. The MSEC meets periodically with the Dean of the College, the Office of Medical Education, the Office of Student Affairs, and other appropriate persons.

**Organization of Student Representatives (OSR):** The Organization of Student Representatives provides student input to the AAMC and its Council of Deans. Each of the 126 American Medical Schools elects a student representative to this organization. The Medical Student Executive Council annually elects this representative. The OSR has annual national and regional meetings. During these meetings, the student members discuss the status and trends in medical education, and pass resolutions reflecting the organization's position on important issues. These positions are then sent to the Council of Deans, the governing body of the AAMC.

**Adolph Meyer Society:** The Adolph Meyer Society is an organization of medical students who are interested in psychiatric aspects of medicine. The monthly meetings are held at the home of a faculty member. Students and faculty discuss informally topics of current interest and concern. Meetings are open to all medical students and their spouses.

**American Medical Student Association (AMSA):** The American Medical Student Association is a national organization which offers students the opportunity to become involved in community outreach projects through locally organized chapters. AMSA is well-known for its commitment to facilitating student impact on medical education and practice. As a national organization, AMSA offers many opportunities, such as preceptorships in a variety of specialties across the country, information regarding International Health Electives, participation in the International Medical Student Association, and access to experiences of other AMSA chapters. AMSA task forces include: Nutrition and Preventive Medicine, Death and Dying, Women in Medicine, Law and Medicine, and many others.

**Council on International Outreach (CIAO):** The Council on International Outreach is the umbrella organization for all student outreach initiatives in the College. It serves to strengthen student commitment to the local community, promote awareness of global health care needs and our responsibility to meet these needs. CIAO facilitates opportunities for education abroad and supports student organizations engaged in public service. CIAO helps to set a standard of global responsibility by demonstrating the willingness of future physicians to help others. The organization is composed of both students and faculty members from the College of Medicine as well as members from the community at large. Additional information may be obtained through the Office of Student Affairs.

**Family Medicine Student Association (FMSA):** The Family Medicine Student Association is a service organization open to all medical students and their spouses. FMSA provides opportunities for students to become involved in addressing vital concerns and issues facing medical students, e.g., malpractice insurance issues, practice management, primary care physicians distribution and manpower needs, and planning for the medical marketplace. Many students participate in the Family Practice Preceptorships during the summer between their first and second years.

**The Student National Medical Association (SNMA):** The SNMA, founded in 1964, is a nonprofit corporate association of minority students. The SNMA is dedicated to: 1) leadership development by augmenting and enhancing individual efforts as well as providing collective group development of minority medical students; 2) social awareness through student interaction with minority consumers and other health professional groups to keep abreast of social changes and their implications for the minority communities; and 3) service to humanity through a commitment to professional excellence which will ultimately benefit others in their chapters and in the community.

## **Fraternity**

Phi Chi is the nation's largest medical fraternity with more than 45,000 members worldwide. The UT Chapter welcomes both male and female members and offers housing opportunities as well as social and professional programs and activities.

## **Campus Publications**

The College supports a number of publications which are of particular interest to medical students including: The Record, Student Life Newsletter, Activities Calendar, and MSEC Minutes. A detailed description of each publication may be found in The CenterScope: Student Handbook and Directory.

## **Student Services Programs**

### **Aid to Impaired Medical Students (AIMS)**

The Aid to the Impaired Medical Student Program, unique among American medical schools when it was established in Memphis in 1982, attempts to provide compassionate assistance to impaired students. The AIMS Program focuses on problems of impairment due to substance abuse (drugs and alcohol).

Governed by a council of students and professional members, the AIMS program seeks to identify, intervene, evaluate, treat and monitor those students who do not successfully adapt to the stresses of medical school. The program is completely confidential and protects the rights of those students receiving treatment. Further, the program assures that recovered students are able to continue their medical education without stigma or penalty. At the same time, it protects patients and others from the harm an impaired student might cause.

### **Peer Counseling Program**

Peer Counselors are trained sophomore student volunteers who offer a support system to freshman students. The program teaches prospective physicians that it is acceptable to ask for and offer support. In addition, the program fosters positive development and a shared, cooperative approach to education. A national model, this unique program has been well received and utilized by the UT medical students.

### **Audience of One Peer Counseling**

In an ongoing effort to provide support for students, the College of Medicine Peer Counseling Program has extended its services with the introduction of “Audience of One.” Audience of One is composed of M2 peer counselors with interest in exploring special needs of M1 students that may be better addressed through private discussions rather than a group format. For information, contact the Office of Student Affairs.

### **Big Brother/Sister Program**

Each entering student is assigned a “Big Sib.” The Big Brother or Big Sister offers invaluable insight into the “ropes” of the first year: which books are best, the first test, best grocery store, where to get a hair cut, where to relax and have fun, how to sign up for intramurals, etc. Close and lasting relationships often develop through this program.

### **Faculty Mentor Program**

The Faculty Mentor System facilitates interaction among faculty and students. Each entering student becomes a member of a faculty mentor group composed of five first-year students, one or two faculty mentors, and two or more peer counselors. The faculty share their perspectives on medical education and the profession, and serve as resource persons for specific questions or problems. The sophomore peer counselors coordinate the activities of the group.

### **Student Advisory Group**

The Student Advisory Group (SAG) is designed to provide advice and counsel to the Office of Student Affairs in exercising its responsibilities to students. The elected representatives (VP’s for Student Affairs) from each class and elected OSR members provide student representation. Issues addressed are non-academic and deal with advancing the personal development and professional life of medical students.

### **Career Counseling and Residency Placement**

Choosing the specialty most congruent with interests, talents and long-term personal and professional goals is a major life decision. Programs and activities are available to support students as they contemplate their choice of specialties and residencies. The Career Counseling and Residency Placement program begins in the first year of medical education and continues through the NRMP Match in the fourth year. (See the Student Affairs website for more information

[http://www.utmem.edu/Medicine/StudentAffairs/studAffrs\\_cim/](http://www.utmem.edu/Medicine/StudentAffairs/studAffrs_cim/))

### **Awards**

The Committee on Recognition and Awards under the direction of the Office of Student Affairs selects recipients for the following awards. Among the special awards given are the following:

**Faculty Medal for Academic Achievement:** The award is presented by the faculty to the graduating senior with the highest academic standing in the class.

**Alumni Achievement Award in Clinical Medicine:** This award is presented to an outstanding graduating senior who exemplifies the highest ideals of the practice of

medicine. The recipient displays the best qualities of personal honesty, character, compassion for patients, and dedication to the highest ethical and professional standards. A plaque and stipend are provided by the College of Medicine Alumni Association for the continued pursuit of excellence in medical arts and skills.

**Alumni Achievement Award in Research:** This award is given to a graduating senior in recognition of outstanding achievement in biomedical research. A plaque and stipend are provided by the College of Medicine Alumni Association for continuation of research pursuits.

**Alpha Omega Alpha Distinguished Graduate Award:** An engraved plaque is presented to the graduating senior who, in the opinion of the Committee on Recognition and Awards and the AOA Executive Committee, will make the most significant contribution to the medical profession. The award is presented by the College of Medicine Chapter of the Alpha Omega Alpha National Medical Honor Society.

**Robert L. Summitt, MD Distinguished Student Achievement Award:** The Committee on Recognition and Awards selects a graduating senior who has shown distinction in scholarship, leadership, service, and character during the period of medical education. An engraved plaque and a stipend are awarded by the College with sponsorship by the Upjohn Pharmaceutical Company.

**Departmental Awards:** The Departments of Medicine, Obstetrics and Gynecology, Pediatrics, Psychiatry, Surgery, Neurology, and Family Medicine, respectively, present an award to the graduating senior who illustrates the most outstanding abilities within each specialty. Additionally, The Tennessee Academy of Family Physicians sponsors The Outstanding Student in Family Practice Award.

**Charles C. Verstandig Award:** This award is presented to the member of the graduating class who surmounts the greatest difficulty in obtaining a medical education. The recipient is selected by the class with input from the Committee on Recognition and Awards.

**Anthony S. Ficalora:** This award is given to a graduating senior for his/her sensitivity to and respect for patients. The recipient is chosen by the Committee on Recognition and Awards.

**Distinguished Student Service Award:** An engraved plaque is given by the College of Medicine to a graduating senior for outstanding service to the student body and to the College of Medicine. The recipient is selected by the Medical Student Executive Council.

**Student Affairs Service Award:** This award is presented by the University of Tennessee Health Science Center Office of Academic, Faculty, and Student Affairs in recognition and appreciation of outstanding leadership and service as a member of the Student Government Association Executive Council.

**Outstanding Community Service Award:** This award is given to a graduating senior for outstanding service to the community and the medical profession while a medical

student. It includes a set of CIBA Medical Illustrations Atlas The recipient is selected by the Medical Student Executive Council.

**Alpha Omega Alpha National Honor Medical Society** student membership is based entirely upon scholarship, honesty, and potential leadership. Students are elected to the chapter during their last year of medical school. The UT local chapter of AOA makes all selections.

**Outstanding Faculty Awards:** The graduating seniors select an outstanding faculty member from their basic science years and from their clinical years for recognition.

## **Interdisciplinary Programs**

A number of activities with clinical, educational or research components require active collaboration of a variety of disciplines. In order to facilitate development of programs with multi-department and multi-college participation, several programs have been designated as interdisciplinary programs. Interdisciplinary programs imply more than close cooperation on campus; they also involve coordination of all private and public efforts in a particular field. Thus, interdisciplinary programs fit the description of being organized scientific activities “without walls.”

## **Clinical and Translational Science Institute**

The UTHSC Clinical and Translational Science Institute (CTSI) is an interdisciplinary center of excellence with a mission to conduct research that translates scientific discoveries into clinical applications, to educate a cadre of professionals in all aspects of translational and clinical science, and to serve as a local, regional, state and national resource for advancing scientific discoveries from bench to bedside to practice. The CTSI is designed to provide outstanding support for all levels of translational and clinical research in an environment that promotes interdisciplinary communication and teamwork, encourages and rewards novel and innovative approaches to research, facilitates sharing of methods and results, and is responsive to the needs of our partners, affiliates, and our community. The creation of a "home" for clinical and translational research centered at UTHSC provides an opportunity for investigators and stakeholders alike to participate in structured and well-supported interdisciplinary research programs to enhance the quality and efficiency of medical discovery and its applications.

## **Center of Genomics and Bioinformatics**

This interdisciplinary center builds upon a strong base in functional genomics and bioinformatics that extends from Knoxville, through Oak Ridge, to Memphis. The purpose of the Center is to provide infrastructure and expertise to catalyze a broad range of research projects and university-industry collaborations that exploit cutting edge techniques to delineate the function of genes in biology. The Center works closely with faculty across departments and schools throughout the UT System (UTK, UTHSC, and UTSI), Oak Ridge National Laboratory (ORNL), and St. Jude Children’s Research Hospital (SJCRH).

## **Vascular Biology Center of Excellence**

Research scientists in the Vascular Biology Center seek to define key risk factors for vascular disease and understand how these factors increase the risk of disease. To accomplish these goals the Center combines the basic research and clinical environments. As a result of combining these environments, the Center is ensuring rapid translation of research findings into patient care, thereby saving lives and improving the quality of life for vascular disease patients; heightening local and national awareness of vascular disease prevention and care; expanding and integrating existing research opportunities within the university to foster cooperative and effective research between various medical disciplines; and training tomorrow's investigators to be individual thinkers.

## **Neurobiology of Brain Disease Center of Excellence**

The Neurobiology of Brain Disease Center combines the latest technologies for brain disease research and molecular biology to improve the understanding of brain function and the discovery of novel treatments for disorders such as:

Parkinson's and Huntington's diseases, Stroke, Cancer, Multiple Sclerosis and other neuroimmunologic diseases, developmental defects, Neurotrauma (such as injuries in car accidents, falls, or sports injuries), Schizophrenia and other psychiatric disorders, and drug addiction.

The Center brings together neuroscientists from seven university departments including anatomy and neurobiology, pharmacology, physiology, neurology, neurosurgery, psychiatry, and radiology. Through combined efforts, these scientists and clinicians with expertise in neuroscience research utilize the latest technology to advance the understanding and treatment of brain disease.

## **Center of Excellence for Diseases of Connective Tissue**

Scientists in the Center of Excellence for Diseases of Connective Tissues conduct basic research in five broad areas:

Autoimmune diseases (such as rheumatoid arthritis and lupus); degenerative diseases (such as osteoarthritis and degenerative disc disease); inflammation and the basic science of how the body reacts to injury; fibrotic diseases (such as heart failure and emphysema), and clinical research.

It is from clinical service, clinical and basic research and teaching that the center derives its strength. Major center components include research focused on:

Understanding the cause and origin of connective tissue disease by using animal models and in vitro cell culture systems, designing new diagnostic tests for diseases of connective tissue, and developing novel therapies and prosthetics to treat these diseases.

## **Carolyn P. and Edward J. Boling Center for Developmental Disabilities**

The Child Development Center was established in January, 1957, under a grant from the United States Children's Bureau through the Maternal and Child Health Division of the Tennessee Department of Public Health. The current facility was constructed with a grant from the United States Public Health Service in March, 1966. The building was renamed the Boling Center for Developmental Disabilities (BCDD) in honor of retired UT President Boling and his wife in 1988.

BCDD is one of sixty-one federally funded university centers for excellence in developmental disabilities, education, research, and service. Program goals are to: provide interdisciplinary training; develop innovative clinical service programs; and deliver technical assistance and consultation to those local, state, and federal programs that address the needs of individuals with developmental disabilities.

Training programs within the BCDD include: developmental pediatrics, biochemistry of metabolic disorders, clinical genetics, and child psychiatry, as well as audiology, dentistry, nursing, nutrition, occupational therapy, physical therapy, psychology, special education, speech pathology, and social work. Training efforts are largely directed at the graduate level, and fellowships are offered in most disciplines. Training opportunities are also available to students at the undergraduate level. Cooperative programs housed in the BCDD include: Harwood Day Training Center, Memphis Oral School, Exceptional Children's Clinic, UT Child Care Laboratory, BCDD Demonstration School, and Adolescent Day Treatment Program.

A unique feature of the BCDD is the interdisciplinary approach to both service and training. Trainees in every discipline have opportunities to work with professionals in other disciplines and to understand each professional's contribution to the diagnostic and treatment process. The interdisciplinary environment also provides a setting in which children and adults with complex problems can receive diagnostic and treatment services.

## **University of Tennessee Cancer Center Institute**

The University of Tennessee Cancer Institute, established in its present form in early 1985, is dedicated to research and education in cancer and cancer-related disorders. Membership in the Cancer Center is voluntary, is open to any interested faculty or community health professional, and is intended to promote scientific collaborations among investigators from many disciplines. The Cancer Center and its members are responsible for the development and application of new knowledge to patient care and to the prevention and early detection of cancer. The Cancer Center is a full, active member of a national multidisciplinary cooperative clinical trial group funded by the National Cancer Institute and enrolls patients to investigational treatment protocols in leukemia, lymphoma, breast, and respiratory cancer. Basic research programs include population pharmacokinetics, cancer pharmacology, and tumor cell biology. The Cancer Center is also involved in funded research and community service projects in cancer control and cancer education.



## **Molecular Resource Center**

The Molecular Resource Center of Excellence (MRC) serves as an interdisciplinary resource for basic biomedical and clinical investigators. The Center was established to develop the facility and expertise needed for a basic science or clinical investigator to begin with a purified protein and isolate its cognate gene. Conversely, the investigator may begin with a gene that can be easily cloned and isolate its cognate protein. Once a desired gene has been cloned or a protein purified, the facility permits full structural determination and manipulation of both molecules. The Center consists of four facilities: Gene Cloning and DNA Sequencing, Oligonucleotide Synthesis, Peptide Synthesis, and DNA-chip array. Additional facilities will be developed over the next several years, including a laser-driven dual beam flow cytometer that will permit analysis and sorting of up to seven different cell types, and a protein analysis laboratory consisting of peptide isolation and mapping facilities, amino acid and primary sequence analysis facilities and computer-based molecular modeling capabilities.

## **The Center for Neuroscience**

The first of its kind in Tennessee, The Center for Neuroscience was established in 1985 through the State of Tennessee Better Schools Program. In 1988, the Tennessee Higher Education Commission designated it an Accomplished Center of Excellence because it had become one of the largest integrated neuroscience research and training programs in the U.S. and an internationally recognized center for neuroscience. The Center for Neuroscience is a multidisciplinary program, which includes faculty from twelve departments in the College of Medicine (four basic sciences and eight clinical sciences departments). The interdepartmental nature of the program provides the collaborative environment necessary for quality neuroscience research. Research directions are diverse, with emphases on movement disorders, including Parkinson's disease, Huntington's chorea, and muscular dystrophy; visual function and eye diseases; developmental neurobiology; and molecular neuroscience/genetics. Other areas include neuroendocrine regulation and the neuronal control of cardiovascular function, sleep, cerebral circulation and metabolism, the biochemical analysis of peptides, and brain modeling.

## **Center for Pediatric Pharmacokinetics and Therapeutics**

The Center for Pediatric Pharmacokinetics and Therapeutics (CPPT) was formally established in July 1986 at The University of Tennessee Health Science Center by a grant from the State of Tennessee. This grant provided the additional funding necessary to build a comprehensive, multidisciplinary Center of Excellence committed to the development of new knowledge related to drug disposition and effects in children. Prior to establishing the Center, faculty investigators at The University of Tennessee, Le Bonheur Children's Medical Center, St. Jude Children's Research Hospital, and the Regional Newborn Center had over \$1 million of extramurally funded research related to pediatric pharmacokinetics and pharmacodynamics. The CPPT was built upon this strong foundation, providing new resources and bringing together the requisite expertise in pediatrics, clinical pharmacokinetics, pharmacodynamics, pharmacology,

pharmacogenetics and related disciplines. By establishing several CORE laboratories as shared resources for Center faculty, the CPPT has facilitated collaboration and coordination of a multidisciplinary group of investigators at the University of Tennessee Health Science Center. The CPPT has over 20 full-time faculty investigators who are directing extramurally funded research programs related to the pharmacokinetics and pharmacodynamics of drugs in children.

## **The Brain Injury Research Center**

The Brain Injury Research Center is a regional consortium that includes membership from ten participating institutions. The consortium includes the following: Colleges of Allied Health, Dentistry, Medicine and Nursing at The University of Tennessee Health Science Center; The Regional Medical Center at Memphis; the Baptist Memorial Hospital; the Veterans Administration Medical Center; the Semmes Murphey Clinic; the Le Bonheur Children's Medical Center; the Methodist University Hospital; Memphis Neuroscience Center; St. Jude Children's Research Hospital; and the Epi Care Center. The major aims of this Center are to standardize clinical therapies, to better assess new protocols, to increase research related to brain injury, and to heighten community awareness.

## **The Center for Prevention and Health Services Research**

The Center for Prevention and Health Services Research, in collaboration with the University of Memphis and other area universities and health care organizations, serves as a catalyst to stimulate the growth of important research whose purpose is to improve the database, quality, access and efficiency of clinical and prevention health services for adults of all races and economic status in the State of Tennessee. The major objective of the Center is to develop collaborative research relationships with many departments and colleges both at the University of Tennessee Health Science Center and in other area institutions.

## **Chairs of Excellence and Endowed Professorships**

**See the general section of this catalog.**

### **Lectureships**

**Alpha Omega Alpha Lectureship:** The local chapter of Alpha Omega Alpha sponsors a visiting lectureship during the spring of each year.

**James H. Horner Distinguished Visiting Professorship:** James H. Horner was a medical student who died shortly before his medical school graduation in 1983. Dr. Horner's family established this distinguished Professorship "to promote education, compassion, and academic excellence in the practice of medicine." This Professorship is held in conjunction with the annual alumni weekend.

**Henry B. Brackin Lectureship:** This lectureship, sponsored by an anonymous donation honoring Dr. Brackin, makes possible an annual lectureship in some area of psychiatry.

Eleanor and James N. Etteldorf Lectureship: This annual lectureship in pediatrics, established by Dr. James N. Etteldorf, includes symposiums composed of visiting and resident faculty.

T.S. Hill Lectureship: This lectureship in psychiatry was established to honor Dr. T.S. Hill, Professor Emeritus and Chairman of the Department of Psychiatry from 1941 to 1963.

McDonald Lectureship: This lectureship was established for invited faculty to participate in lectures and rounds with students and residents and other members of the Section of Hematology in the Department of Medicine.

Israel David Michelson Visiting Professorship: This lectureship in pathology is funded through an endowment established by friends and colleagues of Dr. Michelson.

R.R. Overman Lectureship: This lectureship is funded through an endowment created from the gifts of former students and colleagues of Dr. Richard R. Overman and provides an annual lectureship.

Quarterly Visiting Professorship in the Department of Pediatrics: Various guest faculty lectures in the Department of Pediatrics are presented quarterly and funded by an anonymous source.

Irving Shelton Lectureship: Lectureships in psychiatry were established through a contribution of Mr. Irving Shelton, the publisher of *Disease of the Nervous System* (now the *Journal of Clinical Psychiatry*).

Karl L. Smiley, Jr. Lectureship: The purpose of this lectureship is to provide a participatory lectureship for graduate student education and enrichment reflecting current interests in the field of microbiology.

Phineas J. Sparer Distinguished Visiting Professorship: Established by a gift from Mrs. Florence Sparer in memory of her husband, the visiting Professorship rotates annually between the Departments of Psychiatry and Preventive Medicine.

Therapeutics Lectureship: This lectureship is to provide lectures in clinical pharmacology.

Charles C. and Mary Elizabeth Lovely Verstandig Distinguished Visiting Professorship: This endowment provides for an annual distinguished visiting Professorship in various areas of academic interest.

Harwell Wilson Distinguished Visiting Professorship and The Harwell Wilson Visiting Lecture in Surgery: An endowment created by the friends of Dr. Harwell Wilson provides a distinguished visiting Professorship and an annual lectureship in surgery.

## **Faculty List**

A complete list of College of Medicine faculty is available at the Office of Medical Education web site: [www.utmem.edu/Medicine/Acad\\_Affairs/Fac\\_Adv/](http://www.utmem.edu/Medicine/Acad_Affairs/Fac_Adv/)

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# COLLEGE OF NURSING

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Susan Jacob, PhD, Executive Associate Dean

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# GENERAL INFORMATION

## History

The College of Nursing is an autonomous unit of The University of Tennessee Health Science Center (UTHSC) and has a history dating back to 1898. The first public hospital in Memphis was established by an act of the Tennessee Legislature in 1829. Twelve years later, this small hospital meant for river travelers was replaced with a facility that was used as a military hospital during the American Civil War. It later became the Memphis City Hospital.

Memphis Training School for Nurses was chartered September 28, 1887, at a time when nursing education in the United States was still in its infancy. It was one of the first schools of nursing in the South and was the first in the Mid-South. In December 1887, the school accepted its first student, Lena Clark Angevine, who is now known as Tennessee's pioneer nurse. In 1898, a new city hospital along with the Nursing School of the Memphis City Hospital opened at 860 Madison Avenue, and the Memphis Training School for Nurses closed.

The medical staff of the hospital petitioned the Mayor to appoint Mrs. Lena Angevine Warner Superintendent of Nurses at the new nursing school. In 1913, the hospital became the teaching center of the College of Medicine of the University of Tennessee. In 1920, the Memphis General Hospital became a University hospital by contractual agreement when the University of Tennessee College of Medicine accepted responsibility for the medical care of the patients. In 1926, the University of Tennessee School of Nursing was created, and on November 9, 1926, The City of Memphis and The University of Tennessee entered into a contract governing the operation of the Memphis General Hospital by the College of Medicine. The University began operation of the School of Nursing in June 1927. In July 1949, the School of Nursing became an autonomous unit within the University.

In September 1950, the newly established Baccalaureate in Nursing (BSN) Program admitted 26 students. In 1972, the Master's program was developed and admitted students for the 1973 summer quarter. The PhD in Nursing began August 1988. The BSN program was held in abeyance in December 1997 allowing the College to focus entirely on graduate education. This focus provided the opportunity for development of the practice doctorate to meet future needs of an increasingly complex health care environment in Tennessee and the nation. The first students in the practice doctorate entered July 1999. The Doctor of Nursing Science (DNSc) degree designation for the practice doctorate transitioned to the Doctor of Nursing Practice (DNP) in 2005, in accordance with national trends.

In August 2003, the UTHSC and Methodist Healthcare of Memphis announced a unique partnership between the health system and the university's College of Nursing. The purpose of this partnership was to enhance delivery of nursing care by offering the full range of educational opportunities in nursing including an entry-level bachelor's degree in nursing, continuing with the master's degree, and concluding with the doctoral degree. Students entered College of Nursing programs at all levels of nursing education

(BSN, MSN, DNP, and PhD) in July 2005. The professional entry master's CNL program was approved by the Tennessee Board of Nursing in 2008, and the first students will be admitted to the MSN-CNL program in July 2009. The last professional entry class at the baccalaureate level was admitted July 2008.

The College of Nursing provides innovative education, patient care, and research programs throughout Tennessee and the Mid South. Most degree programs in the College use state-of-the-art telecommunications and World Wide Web methodology to bring nursing education to students in East Tennessee, rural West Tennessee, and across the nation. The faculty and staff deliver cutting-edge clinical services in many different locations. The faculty and students bring the science of caring to the daily lives of their patients. The internationally renowned research programs of the faculty advance the frontiers of knowledge in several areas.

Information taken from: From Diploma to Doctorate: 100 Years of Nursing Education by E. Dianne Greenhill, RN, BS, EdD, and Professor Emeritus

## **College of Nursing Mission Statement**

Preparing nurse leaders for excellence today and tomorrow.

## **College of Nursing Vision**

Transforming health care through innovative preparation of nurse leaders

## **College of Nursing Values**

The College of Nursing core values are:

1. Innovation and excellence in educational programs, clinical research, and advanced practice;
2. Diversity of students, faculty, staff, and clients; and
3. Partnership with students, health care professionals, and the larger community.

## **College of Nursing Philosophy**

The philosophy of the College of Nursing is consistent with the goals and mission of UTHSC. The College philosophy focuses upon the nature of the PERSON, ENVIRONMENT, HEALTH, and NURSING. The faculty believes that the PERSON is a unique integrated being that is continuously evolving. Each person has the right to participate in making decisions that affect his/her health and to accept or refuse health care within the context of safety to society.

The faculty views ENVIRONMENT as all conditions influencing the life and development of the person. The health of individuals, families, and communities is affected by these conditions.

HEALTH is viewed as a dynamic state arising from a process of continuous change in the person and environment. The faculty views the promotion, maintenance, and restoration of health as a complex phenomenon involving the shared responsibility of the person, health care providers, and society. Faculty view nursing as stated in the second edition of Nursing's Social Policy Statement (ANA, 2003), "NURSING is the protection, promotion and optimization of health and abilities, prevention of illness and injury, alleviation of suffering through the diagnosis and treatment of human response and advocacy in the care of individuals, families, communities, and populations" (p.6). Nursing must provide leadership in influencing the organizational, social, economic, legal, and political factors within the healthcare system and society. "These and other factors affect the cost, access to, and quality of health care and the vitality of the nursing profession" (p.6).

Professional nursing is a science and an art. The science of nursing requires that nurses study, explore, and research nursing and related knowledge areas. From these areas nurses develop and test nursing theories for the improvement of nursing practice and health care. The art of nursing requires that nurses use knowledge gained from the humanities, arts, and sciences as the foundation for acceptance and appreciation of clients' values. Nursing care requires sensitivity as well as critical, logical, and analytical thinking to effect changes in clients and the health care system.

EDUCATION for professional nursing practice includes a sound theoretical knowledge base to support experiential learning. The faculty believes that the educational process facilitates continuing personal and professional growth. The intent of the educational programs is to focus on the learner with active participation of the student in the learning process. Education is a life-long process with the commitment of the learner to establish patterns of continued inquiry.

## **Faculty**

In addition to the full-time and part-time faculty of the College of Nursing, faculty from other UTHSC colleges teach in the College of Nursing. The faculty selects, instructs, examines and promotes students in the college; it organizes and maintains the curriculum in consultation with and with the consent of the Dean. The campus directory should be consulted for a list of faculty and faculty rank.

## **Nursing Alumni Association**

The UTHSC College of Nursing Alumni Association represents more than 4,500 graduates and is an integral part of The University of Tennessee National Alumni Association. With the partnership between Methodist Healthcare of Memphis and the UTHSC College of Nursing, almost 4,000 graduates from the Methodist School of Nursing have joined the College of Nursing Alumni to participate in the Nursing Alumni Association activities.

Alumni serve on several college committees where alumni representation is appropriate and advantageous to the future of the College of Nursing.



## **Degrees Offered**

The College of Nursing offers programs that lead to the Bachelor of Science in Nursing (BSN) degree, Master of Science in Nursing (MSN) degree and the Doctor of Nursing Practice (DNP) degree. A Post Graduate Certification program is also available. The Doctor of Philosophy (PhD) in Nursing degree is offered as a part of the College of Graduate Health Sciences.

## **Accreditation**

The University of Tennessee is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools. The baccalaureate and master's degree programs in the UTHSC College of Nursing are accredited by the Commission on Collegiate Nursing Education (CCNE), One DuPont Circle, NW, Suite 530, Washington, DC 20036, (202) 887-6791. The MSN Nurse Anesthesia program is also accredited by the Council on Accreditation of Nurse Anesthesia Educational Programs (COA), 222 S Prospect Avenue, Park Ridge, IL 60068, (847) 655-1160. The baccalaureate and master's degree programs are approved by the Tennessee Board of Nursing, 227 French Landing, Suite 300, Heritage Place Metro Center, Nashville, Tennessee 37243, (800) 778-4123.

## **Honors, Awards, and Scholarships**

### **Honor Society**

The Beta Theta Chapter of Sigma Theta Tau International, the Honor Society of Nursing, was established at UTHSC College of Nursing in 1972. Beta Theta was rechartered in 1988 as Beta Theta Chapter-at-Large to include the University of Memphis Loewenberg School of Nursing and in 2006 to include the Baptist College of Health Sciences School of Nursing. Purposes of the Society are to recognize superior achievement and the development of leadership qualities, to foster high professional standards, encourage creative work, and to strengthen commitments to the ideals and purposes of the profession. Students are eligible for membership consideration.

### **Faculty Award**

The Faculty Award is given annually to graduating students in each degree program with the highest scholastic average in the class.

### **The Alumni Award**

The Alumni Award is presented by the Alumni Association of the UTHSC College of Nursing to a graduate student who has displayed genuine enthusiasm for learning and nursing in addition to superior skill in providing patient care and an outstanding ability to interact with peers, patients, and staff.

## **Elinor F. Reed Award**

The Elinor F. Reed Award is presented to a student chosen by a College of Nursing faculty committee for excellence in patient care.

## **Loans and Scholarships**

Students in the College of Nursing are eligible for loans and scholarship awards from various sources. Traineeships are available to students through the Professional Nurses Traineeship Program. A limited number of scholarships are sponsored by philanthropic organizations and awarded by the College of Nursing. Application for College of Nursing administered Scholarships and Traineeships is made by completing a Free Application for Federal Student Aid (FAFSA). A FAFSA may be accessed online via [www.utmem.edu/finaid](http://www.utmem.edu/finaid). Scholarships and Traineeships are awarded only to students who have accepted offers of enrollment from the UTHSC College of Nursing. For information regarding Loans, contact the UTHSC Office of Financial Aid, (901) 448-5568.

Sigma Theta Tau International Scholarship. The Beta Theta Chapter-At-Large awards scholarships to qualified nurses or nursing students. These awards recognize outstanding scholarship that will advance knowledge in the area of nursing science and practice. Applications should be made to Beta Theta Chapter-At-Large.

## **Traineeships**

Professional Nurse Traineeships. Professional Nurse Traineeships provide some financial assistance in the payment of tuition and fees to eligible full-time nursing students in a practice option. Preference is given to individuals who are residents of health professional shortage areas as designated under section 332 of the Public Health Service Act.

Primary Care Education Traineeships. The Memphis Veterans Affairs Medical Center provides Primary Care Education Traineeships for medical residents and associated health trainees. Known as the PRIME program, funds are provided to foster the development of primary and managed care training and to foster education in team care in the primary and managed care setting. A call for applications is made during the summer/fall term of each year.

## **Fees, Expenses, and Financial Assistance**

### **Expenses and Financial Assistance**

In addition to regular fees, students may expect other expenditures for developing professional libraries; for continuation of licensure to practice nursing; for membership in professional organizations; for equipment such as a computer and software, tape recorders, name tags, laboratory coats, stethoscope and diagnostic kit; and for travel. For financial aid information, including the availability of federal loans, contact the UTHSC Financial Aid Office, (901) 448-5568.

Applicants in need of supplementary financial assistance should seek information and applications for such assistance from their current employers, service clubs, and professional organizations. In all cases, to apply for loans, scholarships, or traineeships, students must complete a Free Application for Federal Student Aid (FAFSA) which is available online ([www.utm.edu/finaid](http://www.utm.edu/finaid)).

## **Graduation Requirements**

To be recommended for the degree of Bachelor of Science in Nursing (BSN), a candidate must have completed satisfactorily the prescribed curriculum with a grade point average of 2.0 or above, must have discharged all financial obligations to the University, and have demonstrated a level of professionalism acceptable to the College of Nursing faculty.

To be recommended for the degree of Master of Science in Nursing (MSN) a candidate must: 1) have completed satisfactorily the prescribed curriculum with a grade point average of 2.5 or above; 2) have discharged all financial obligations to the University; and 3) have demonstrated a level of professionalism acceptable to the College of Nursing faculty.

To be recommended for the Doctor of Nursing Practice (DNP) degree a candidate must: 1) have completed satisfactorily the prescribed curriculum with a grade point average of 3.0 or above; 2) have discharged all financial obligations to the University; and 3) have demonstrated a level of professionalism acceptable to the College of Nursing faculty.

Attendance at graduation is mandatory for all College of Nursing graduates.

## **Admission and Selection**

Applicants to the College of Nursing are advised that information contained both in the UTHSC Admissions Requirements Booklet (ARB) and the General Admission Requirements stated in the General Information section of this Catalog are applicable to them. Guidelines used to classify applicants as in-state or out-of-state for purposes of admission and tuition are available online via [www.utm.edu/admiss](http://www.utm.edu/admiss) by selecting "Residency Classification Guide." Other questions regarding residency should be addressed to the Assistant Director of the Office of Enrollment Services (contact information below).

## **Admission Procedures**

The completed online application, the online application fee, and all supporting paper documentation (e.g., official transcripts) must be received by the Office of Enrollment Services in order for an application file to be complete. Supporting documentation should be sent to the UTHSC Office of Enrollment Services:

The University of Tennessee Health Science Center  
Office of Enrollment Services  
910 Madison Ave, Suite 525  
Memphis, TN 38163  
(901) 448-5560  
www.utmem.edu/admiss

Only individuals whose application files are complete will be considered by the College of Nursing Admissions Committee. Preference is given to residents of Tennessee, but out-of-state applicants are also given full consideration.

## **Application Deadlines**

Application Deadline means that all application materials (completed online application, including submission of application fee, Recommendation Forms submitted online by references, official transcripts, etc. submitted in a single packet) must be received by or postmarked to the UTHSC Office of Enrollment Services no later than the published deadline.

January 15: MSN Program Clinical Nurse Leader (CNL)

February 1: DNP Program

September 1: MSN Program, Nurse Anesthesia

Notification: For the January 15 application deadline, decisions are expected prior to the end of February. For the February 1 application deadline, interviews are tentatively scheduled during the last week in March. For the September 1 application deadline, interviews are tentatively scheduled during the last week in September. In all cases, applicants will be advised of the disposition of their application as soon as possible.

## **Professional Entry Nursing Programs: Bachelor of Science in Nursing (BSN) and Master of Science in Nursing (MSN) – CNL**

The UTHSC professional entry program in nursing culminates in a Bachelor of Science in Nursing (BSN) degree or the Master of Science in Nursing degree (MSN) for students completing the master's Clinical Nurse Leader (CNL) program. The last admission to the BSN program was July 2008. Future admission to the professional entry program will be for second degree students who will apply to the MSN-CNL program for July 2009 entry.

The baccalaureate degree provides the basis for beginning professional practice as a generalist and the foundation for graduate preparation in nursing. Learning in the undergraduate nursing program is directed toward the study of scientific rationale underlying nursing care and the development of critical thinking skills. The MSN-CNL program provides the basis for entry to professional nursing practice as a generalist with knowledge of clinical microsystems, a focus on quality, safety, and error reduction. Learning in the professional entry master's CNL nursing program is directed toward the

study of scientific rationale underlying nursing care, the development of critical thinking skills, knowledge of clinical microsystems, a focus on quality, safety, and error reduction. The Master of Science in Nursing CNL program at UTHSC prepares students for initial licensure as Registered Nurse. Graduates of the University of Tennessee BSN program may apply to the Master's CNL program post RN licensure to complete the requirements for the MSN degree.

## **Professional Entry: Bachelor's Program**

The Undergraduate Program in nursing at the UTHSC culminates in a Bachelor of Science in Nursing (BSN) degree. Students enroll on a full-time basis. The College of Nursing offers three options that lead to a student earning a Bachelor of Science Degree in Nursing. These options are:

- 1. BSN Option I (Traditional):** Full-time, primarily face-to-face, 3-term program for transfer students who have completed 60 or more semester hours of coursework at another college/university, including the prerequisite courses shown in the Prerequisite Course Work list below.
- 2. BSN Option II (Second Degree):** Full-time, primarily face-to-face, 3-term program for individuals who have a bachelor's degree or higher in another field and who have completed the courses shown in the Prerequisites Course Work list below.
- 3. BSN Option III (RN-to-BSN):** Primarily face-to-face, 3-term program for registered nurses (RN) who already hold a diploma or associate degree in nursing and who have completed 60 semester hours of non-nursing college credits as shown in the Prerequisite Course Work list below.

### **BSN Requirements:**

#### **BSN Option I (Traditional)**

1. Have successfully completed with a "C" or better a minimum of 60 semester hours of college credit including the following prerequisite courses: General Chemistry with lab – 4 hours; Human Anatomy and Physiology with lab – 8 hours; Microbiology with lab – minimum 3 hours; English Composition – 6 hours; Electives – 9 hours; Lifespan Development Psychology – 3 hours; Humanities/The Arts – 6 hours; Mathematics – 3 hours; Nutrition – 3 hours; Psychology – 3 hours; Sociology or Anthropology – 3 hours; Statistics – 3 hours; Historical Studies – 6 hours..
2. An American History requirement must also be met. This requirement can be met either by completing one credit of American History in high school or two semesters (6 credit hours) of American History in college. If the American History requirement is met in high school, the high school credit does not count toward the 6-Hour, collegiate Historical Studies prerequisite requirement.
3. Provide current and relevant documentation of physical, learning, psychological, or other disabilities. Documentation guidelines are available in the Student Academic Support Services (SASS) Office, GEB, room BB9. Students should call (901) 448-7746 to schedule an appointment to discuss the accommodation needs as soon as possible to facilitate timely acquisition of appropriate services.
4. Provide a copy of a current certification in cardiopulmonary resuscitation (CPR/BCLS) or advanced life support prior to matriculation. In addition, students

enrolled in the BSN program are expected to maintain current certification throughout their enrollment in the program.

5. Have ready access to a Web-connected, laptop personal computer. Computer literacy and adequate computer skills are required.
6. Present evidence of proficiency in English, if native tongue is not English, by submitting verification of a minimum score on the Test of English as a Foreign Language (TOEFL). Minimum scores are 550 on TOEFL paper version, 213 on TOEFL computer version, and 80 on TOEFL Web-based version. TOEFL scores must be earned within two years prior to application.
7. Complete a successful criminal background check prior to matriculation. Background checks may be repeated during the student's program of study.s. Individuals who have been dismissed from other nursing programs for any reason will not be considered for admission.

### **BSN Requirements:**

#### **BSN Option II (Second Degree)**

1. Have earned a minimum of a baccalaureate degree from a regionally accredited college or university.
2. Have successfully completed with a "C" or better the following courses: Human Anatomy and Physiology with lab – 8 hours; Microbiology with lab – minimum 3 hours; The applicant's performance in these and other science courses will be given special attention.
3. An American History requirement must also be met. This requirement can be met either by completing one credit of American History in high school or two semesters (6 credit hours) of American History in college. If the American History requirement is met in high school, the high school credit does not count toward the 6-Hour, collegiate Historical Studies prerequisite requirement.
4. Provide current and relevant documentation of physical, learning, psychological, or other disabilities. Documentation guidelines are available in the Student Academic Support Services (SASS) Office, GEB, room BB9. Students should call (901) 448-7746 to schedule an appointment to discuss the accommodation needs as soon as possible to facilitate timely acquisition of appropriate services.
5. Provide a copy of a current certification in cardiopulmonary resuscitation (CPR/BCLS) or advanced life support prior to matriculation. In addition, students enrolled in the BSN program are expected to maintain current certification throughout their enrollment in the program.
6. Have ready access to a Web-connected, laptop personal computer. Computer literacy and adequate computer skills are required.
7. Present evidence of proficiency in English, if native tongue is not English, by submitting verification of a minimum score on the Test of English as a Foreign Language (TOEFL). Minimum scores are 550 on TOEFL paper version, 213 on TOEFL computer version, and 80 on TOEFL Web-based version. TOEFL scores must be earned within two years prior to application.
8. Complete a successful criminal background check prior to matriculation. Background checks may be repeated during the student's program of study.
9. Individuals who have been dismissed from other nursing programs for any reason will not be considered for admission.

## **BSN Requirements:**

### **BSN Option III (RN-to-BSN)**

1. Hold an unencumbered Tennessee RN license or have unencumbered authority to practice as an RN via the multi-state privilege.
2. Have successfully completed with a "C" or better at least 60 semester hours of non-nursing college credit including the following prerequisite science courses: Human Anatomy and Physiology with lab – 8 hours; Microbiology with lab – minimum 3 hours; The applicant's performance in these and other science courses will be given special attention.
3. An American History requirement must also be met. This requirement can be met either by completing one credit of American History in high school or two semesters (6 credit hours) of American History in college. If the American History requirement is met in high school, the high school credit does not count toward the 6-Hour, collegiate Historical Studies prerequisite requirement.
4. Provide current and relevant documentation of physical, learning, psychological, or other disabilities. Documentation guidelines are available in the Student Academic Support Services (SASS) Office, GEB, room BB9. Students should call (901) 448-7746 to schedule an appointment to discuss the accommodation needs as soon as possible to facilitate timely acquisition of appropriate services.
5. Provide a copy of a current certification in cardiopulmonary resuscitation (CPR/BCLS) or advanced life support prior to matriculation. In addition, students enrolled in the BSN program are expected to maintain current certification throughout their enrollment in the program.
6. Have ready access to a Web-connected, laptop personal computer. Computer literacy and adequate computer skills are required.
7. Present evidence of proficiency in English, if native tongue is not English, by submitting verification of a minimum score on the Test of English as a Foreign Language (TOEFL). Minimum scores are 550 on TOEFL paper version, 213 on TOEFL computer version, and 80 on TOEFL Web-based version. TOEFL scores must be earned within two years prior to application.
8. Complete a successful criminal background check prior to matriculation. Background checks may be repeated during the student's program of study.
9. Individuals who have been dismissed from other nursing programs for any reason will not be considered for admission.

Beginning July, 2009, the College of Nursing will offer two (2) options that lead to a student earning an MSN degree. The options are: 1) The Master of Science in Nursing degree (MSN) for students completing the master's Clinical Nurse Leader (CNL) program; and 2) the MSN for students entering the Nurse Anesthesia program.

With the exception of the Nurse Anesthesia program, the last admission for the MSN advanced practice programs was July 2008. Future admission to the Family Nurse Practitioner, Acute Care, and Neonatal Nurse Practitioner advanced practice options will be for Registered Nurses with a minimum of a BSN who will apply to the DNP program.

## **Professional Entry: Master’s Clinical Nurse Leader (CNL) Program**

The MSN - CNL degree provides the basis for professional practice as a generalist Registered Nurse and the foundation for advanced practice graduate preparation in nursing. Learning in the professional entry master’s CNL nursing program is directed toward the study of scientific rationale underlying nursing care, the development of critical thinking skills, knowledge of clinical microsystems, a focus on quality, safety, and error reduction. The Master of Science in Nursing CNL program at UTHSC prepares students for initial licensure as Registered Nurse. Graduates of the University of Tennessee BSN program may apply to the Master’s CNL program post RN licensure to complete the requirements for the MSN degree.

### **Upon completion of the MSN – CNL Program, the graduate will be able to:**

1. Communicate effectively with individuals, families, and health professionals.
2. Deliver and manage comprehensive care along the health illness continuum in collaboration with other health professionals.
3. Apply legal, ethical, social, political, economic, historical, and global environmental factors as a basis of nursing practice.
4. Implement holistic care that addresses the needs of diverse populations across the lifespan.
5. Apply professional judgment and critical thinking in the provision of patient-centered care.
6. Use technology and information systems effectively to promote optimal health for patients, families, communities, and populations in diverse settings.
7. Use evaluation methods to implement continuous quality improvement.

## **Master of Science in Nursing (MSN) Admission Process**

Admission to the MSN Program is competitive. Applicants who meet minimum requirements are not guaranteed admission. Preference is given to residents of Tennessee, but out-of-state applicants are also given full consideration.

### **Minimum Requirements for MSN Admission**

The application and a \$50 non-refundable application fee must be submitted online, although part of the application process requires the submission of paper documents. That is, the application process is comprised of two parts, an online component and a paper component. Full application instructions and access to the online component of the application can be found online at [www.utmem.edu/nursing](http://www.utmem.edu/nursing) then “Future Students” then “Application 101.” All paper application materials must be submitted by the applicant to the UTHSC Office of Enrollment Services, 910 Madison Avenue, Suite 525, Memphis, TN 38163 in a single packet. Applicants who meet minimum program requirements are not guaranteed admission. Preference is given to residents of Tennessee, but out-of-state applicants are given full consideration. The application deadline for the MSN-CNL is January 15 and September 1 for Nurse Anesthesia. Questions regarding residency status should be addressed to the UTHSC Assistant Director of Enrollment Services, 910 Madison Avenue, Suite 525, Memphis, TN 38163, (901) 448-5560.



The MSN-Clinical Nurse Leader (CNL) Option is for post-bachelor's applicants seeking professional entry to nursing practice and RN licensure. The MSN – CNL program a 22-month, primarily face-to-face, program of study for individuals who have earned a bachelor's degree or higher in any field, in addition to completing 14 hours of specified prerequisite courses for the CNL Option. Clinical Nurse Leader students enroll on a full-time basis. The Note: Graduates of the UTHSC CON BSN program may apply for admission to the MSN-CNL program post RN licensure. Such applicants must also submit a copy of an unencumbered Tennessee RN license or have unencumbered authority to practice as an RN via the multi-state privilege at the time of application in addition to the following requirements for all MSN-CNL applicants.

The MSN - CNL applicant must:

1. Submit official copies of transcripts for all college and university work in sealed, unopened envelopes.
2. Have earned a minimum of a baccalaureate degree from a regionally accredited college or university. If the baccalaureate degree is in Nursing, it must be from a program accredited by a national organization (NLNAC or CCNE) responsible for nursing accreditation. If the baccalaureate degree is not in nursing, the applicant may be admitted but with the requirement of successful completion of all professional entry prerequisite courses in the College of Nursing prior to enrolling in the MSN courses.
3. Have successfully completed with a "C" or better a minimum of 14 semester hours of college credit including the following prerequisite courses: Human Anatomy and Physiology with lab – 8 hours; Microbiology with lab – minimum 3 hours; Statistics – 3 hours. The applicant's performance in science courses will be given special attention.
4. Have a minimum cumulative grade point average (GPA) of 3.0 on a 4.0 Scale. Computation of the cumulative GPA is based all collegiate work. Only applicants with a cumulative GPA of at least 3.0 based on all collegiate work or a cumulative GPA of at least 3.2 earned during the applicant's most recently completed degree program will be considered for admission. The GPA calculation for the most recently completed degree will be based only on those grades earned at the degree-granting institution. Applicants may submit additional documents to demonstrate professional scholarship and leadership abilities that could make them more competitive.
5. Provide current and relevant documentation of physical, learning, psychological, or other disabilities, if applicable. Documentation guidelines are available in the Student Academic Support Services (SASS) Office, GEB, room BB9. Students should call (901) 448-7746 and schedule an appointment to discuss accommodation needs as soon as possible following entry into the Program.
6. Submit three (3) Recommendation Forms. Applicants to the MSN-CNL professional entry program must submit 3 Recommendation Forms from faculty members or references qualified to speak to the applicant's potential for success in a rigorous graduate-level professional entry nursing program.
7. Submit a three (3) to five (5) page essay. The purpose of the essay is to provide the Admissions Committee insight into the professional goals and expectations of the applicant and to demonstrate the candidate's written communication skills.

8. Provide a copy of a current certification in cardio-pulmonary resuscitation (CPR/BCLS) or advanced life support prior to enrollment. In addition, students enrolled in the MSN or DNP program are expected to maintain current certification throughout their enrollment in the program. Some options (e.g., Nurse Anesthesia) may have additional certification requirements.
9. Have ready access to a Web-connected, laptop personal computer. Computer literacy and adequate computer skills are required.
10. Present evidence of proficiency in English, if native tongue is not English, by submitting evidence of a minimum score on the Test of English as a Foreign Language (TOEFL). Minimum scores are 550 on TOEFL paper version, 213 on TOEFL computer version, and 80 on TOEFL Web-based version. TOEFL scores must have been earned within two years prior to application.
11. Other admission matters: On-campus interview is a required part of the admission process. Complete a successful criminal background check prior to matriculation. Background checks may be repeated during the student's program of study.

Admission to Graduate Advanced Practice Programs: Admission to all Advanced Practice Programs, with the exception of the Nurse Anesthesia option, will be at the DNP level beginning July 2009. The Nurse Anesthesia MSN Program is for individuals who have an earned bachelor's degree in nursing wanting nurse anesthesia advanced practice specialization. The Nurse Anesthesia option is a 30-month, primarily face-to-face, program of study for individuals who have an earned bachelor's degree in nursing and who have a minimum of one year of Adult ICU experience at the time of application. Nurse Anesthesia students enroll on a full-time basis.

The applicant who seeks entry-level advanced practice post professional entry must apply to the DNP graduate program (Family Nurse Practitioner, Acute Care Nurse Practitioner, or Neonatal Nurse Practitioner options) or to the MSN graduate program for the Nurse Anesthesia option. The MSN-Nurse Anesthesia applicant must:

1. Submit official copies of transcripts for all college and university work in sealed, unopened envelopes.
2. Submit a copy of an unencumbered Tennessee RN license or have unencumbered authority to practice as an RN via the multi-state privilege at the time of application.
3. Have earned a minimum of a baccalaureate degree from a regionally accredited college or university. If the baccalaureate degree is in Nursing, it must be from a program accredited by a national organization (NLNAC or CCNE) responsible for nursing accreditation. If the baccalaureate degree is not in nursing, the applicant may be admitted but with the requirement of successful completion of all professional entry prerequisite courses in the College of Nursing prior to enrolling in the MSN courses.
4. Have a minimum cumulative grade point average (GPA) of 3.0 on a 4.0 Scale. Computation of the cumulative GPA is based all collegiate work. Only applicants with a cumulative GPA of at least 3.0 based on all collegiate work or a cumulative GPA of at least 3.2 earned during the applicant's most recently completed degree program will be considered for admission. The GPA calculation for the most recently completed degree will be based only on those grades earned at the degree-granting institution. Applicants may submit additional documents to demonstrate

- professional scholarship and leadership abilities that could make them more competitive.
5. Provide current and relevant documentation of physical, learning, psychological, or other disabilities, if applicable. Documentation guidelines are available in the Student Academic Support Services (SASS) Office, GEB, room BB9. Students should call (901) 448-7746 and schedule an appointment to discuss accommodation needs as soon as possible following entry into the Program.
  6. Submit a Graduate Record Exam Score (GRE Score). The GRE Score is required for MSN – Nurse Anesthesia applicants ONLY. Official scores must have been earned within 5 years prior to the application deadline date [September 1]. Official GRE scores must be submitted as part of “Paper-packet component”.
  7. Submit three (3) Recommendation Forms. The Recommendation Forms should be from graduate prepared nurses or faculty members who can address the applicant’s potential or ability for functioning in the advanced practice or research role (clinical skills, critical thinking, independent decision making, collaborative skills with other health professionals, and nursing leadership). Two recommendation forms should be completed by faculty members who can address your academic ability and one recommendation form should be completed by an employer or professional who can address your professional performance.
  8. Submit a three (3) to five (5) page essay. The purpose of the essay is to provide the Admissions Committee insight into the professional goals and expectations of the applicant and to demonstrate the candidate’s written communication skills.
  9. Provide a copy of a current certification in cardio-pulmonary resuscitation (CPR/BCLS) or advanced life support prior to enrollment. In addition, students enrolled in the MSN or DNP program are expected to maintain current certification throughout their enrollment in the program. Some options (e.g., Nurse Anesthesia) may have additional certification requirements.
  10. Have ready access to a Web-connected, laptop personal computer. Computer literacy and adequate computer skills are required.
  11. Provide evidence of having met the critical care experience requirements.
  12. Present evidence of proficiency in English, if native tongue is not English, by submitting evidence of a minimum score on the Test of English as a Foreign Language (TOEFL). Minimum scores are 550 on TOEFL paper version, 213 on TOEFL computer version, and 80 on TOEFL Web-based version. TOEFL scores must have been earned within two years prior to application.
  13. Other admission matters: On-campus interview is a required part of the admission process. Complete a successful criminal background check prior to matriculation. Background checks may be repeated during the student’s program of study.

The College of Nursing, as a part of the UT system, is a state supported institution and gives priority to Tennessee residents; however, out-of-state applicants are also given full consideration. Questions regarding residency status should be addressed to the UTHSC Assistant Director of Enrollment Services, Suite 525, 910 Madison Avenue, (901) 448-5560. A Residency Classification Guide may be found at [www.utmem.edu/admiss](http://www.utmem.edu/admiss).

**Students enrolled in the Master of Science in Nursing (MSN) Program as of July 2008 will complete the advanced practice option in their selected specialty (Acute Care Nurse Practitioner, Family Nurse Practitioner, Neonatal Nurse Practitioner, or Nurse Anesthesia).**

The College of Nursing offers an accredited program leading to the Master of Science in Nursing (MSN) degree. The program provides the opportunity to:

1. Select an area of clinical specialization,
2. Develop an advanced level of clinical competence for leadership in practice that provides consumers with primary, secondary and/or tertiary categories of health care,
3. Develop a research base for systematic review, testing and evaluation of nursing care actions, their effects and outcomes, and
4. Acquire the foundation for doctoral study.

All students are enrolled in a common core of nursing theory and research courses. Each student selects a clinical area of concentration and follows the prescribed nursing courses in the area of the student's choice. Courses of study are offered in advanced practice specialties including Acute Care Nurse Practitioner, Family Nurse Practitioner, Neonatal Nurse Practitioner, and Nurse Anesthesia.

Upon completion of the Master's Program, the graduate will be able to:

1. Demonstrate specialty competencies for advanced nursing roles.
2. Provide leadership in health promotion and disease management.
3. Demonstrate the ability to engage in collegial intra- and interdisciplinary relationships in the conduct of advanced practice and research.
4. Evaluate results of interventions using accepted outcome criteria.
5. Apply nationally accepted guidelines and standards in the conduct of advanced nursing practice.
6. Participate in legislative and policy making activities that influence advanced nursing practice.
7. Demonstrate continuing professional development.

The master's program in nursing requires at least three academic terms of full-time study.

1. Any student who earns a "D" or "F" in any course will be dismissed from the program.
2. To be considered in good academic standing, a student must maintain a cumulative GPA of 2.5 or better. A student whose cumulative GPA falls below 2.5 may be dismissed. A student whose cumulative GPA falls below 2.5 in any term, will be placed on academic probation during the following academic term. The cumulative GPA must be higher than 2.5 at the end of the probationary term or the student will be dismissed from the program.
3. Dismissal may result from serious deficiencies in personal or professional behavior, or from failure to meet stipulated conditions within the designated time period.

4. Students who wish to withdraw from a course must notify the Associate Dean of Academic Affairs of the College of Nursing in writing and meet with her or his faculty advisor. Students who withdraw from a theory or clinical nursing course must also withdraw from all co-requisite nursing courses. A change of status form must be completed as required by the University.

Questions regarding residency status should be addressed to the UTHSC Assistant Director of Enrollment Services, Suite 525, 910 Madison Avenue, Memphis, TN 38163, (901) 448-5560. A Residency Classification Guide may be found online at [www.utmem.edu/admiss](http://www.utmem.edu/admiss).

## **BSN Promotion, Retention and Progression Requirements**

These policies govern the progression of students in the Bachelor's Program.

1. Promotion and graduation require recommendations of the Progressions Committee and endorsement by the Dean.
2. Consistent with other professional degrees on campus, promotion requirements are as follows: All students must demonstrate satisfactory behavior in personal and professional areas deemed necessary by faculty for academic success and competency in clinical practice. Such areas may include ability to establish rapport with clients; ability to work effectively with other members of the health care team; dependability; judgment; integrity; initiative; and interest.
3. To be considered in good academic standing, a student must maintain a cumulative GPA of 2.0 or better. A student whose GPA falls below 2.0 may be dismissed.
4. A student must maintain a minimum semester and cumulative GPA of 2.0 in order to progress to the subsequent term or to graduate.
5. A student must earn a minimum grade of "C" in every course. A student who earns a "D" in any course must repeat that course and earn the grade of "C" or better. Dismissal from the program will result from a student's earning more than one "D" or a grade of "F" or from serious deficiencies in personal or professional behavior.

## **Admissions Process and Requirements for DNP Programs**

Two major areas considered in admissions decisions: (1) Academic Preparation and Achievement; and (2) Personal Qualities. The applicant's personal qualities are assessed in three ways: (1) through an essay, (2) through Reference Forms, and (3) through interviews. (1) **Essay** - The purpose of the essay is to provide the Admissions Committee further insight into the professional goals, motivation, and expectations of the applicant and to evaluate written communication skills.

1. Academic Preparation and Achievement

Only applicants with a cumulative GPA of at least 3.0 based on all collegiate work or a cumulative GPA of at least 3.2 earned during the applicant's most recently completed degree program will be considered for admission. The GPA calculation for the most recently completed degree will be based only on those grades earned at the degree-granting institution. Applicants may submit additional documents to

demonstrate professional scholarship and leadership abilities that could make them more competitive.

Applicants to the DNP program are considered for admission to their selected specialty options within the College of Nursing. The total number of students admitted to the DNP program will vary depending on the number of positions available in each specialty option. Additionally, applicants may be more or less competitive within an option based on previous performance in selected course work. Faculty in the Nurse Anesthesia Option, for example, review applicant performance in basic sciences in addition to the cumulative GPA necessary for application.

## 2. Personal Qualities

An applicant's personal qualities are assessed in three ways: (1) through an essay, (2) through Recommendation Forms, and (3) through interviews.

- A. Essay - The purpose of the essay is to provide the College of Nursing Admissions Committee further insight into the professional goals, motivation, and expectations of the applicant and to evaluate written communication skills. Applicants are asked to respond to specific questions on the application essay form.
- B. Recommendation Forms - Applicants must submit or have references submit at least three (3) Recommendation Forms from graduate prepared nurses or faculty members who can address their potential or ability for functioning in the advanced practice or research role (clinical skills, critical thinking, independent decision making, collaborative skills with other health professionals, and nursing leadership). Applicants currently enrolled in a nursing program should have at least one (1) Recommendation Form submitted by a faculty member in that program.
- C. Interview - In order to assess the personal qualities of an applicant, selected individuals are invited to campus for interviews. Academic achievement, GPA ranking, previous experience, and written essay are considered in determining who will be invited to interview. Match of applicant's educational goals with faculty programs of practice or research is an important factor assessed during the interview process. The interview will be in-person and face to face unless extraordinary circumstances warrant other arrangements. The Graduate Program Director is charged with decision responsibility related to "extraordinary circumstances."

Applications and \$50 non-refundable application fees must be submitted online, although part of the application process requires the submission of paper documents. That is, the application process is comprised of two parts, an online component and a paper component. Full application instructions and access to the online component of the application can be found online at [www.utmem.edu/nursing](http://www.utmem.edu/nursing) then "Future Students then "Application 101." All paper application materials must be submitted by the applicant in a single packet to the UTHSC Office of Enrollment Services, 910 Madison Avenue, Suite 525, Memphis, TN 38163. Applicants who meet minimum program requirements are not guaranteed admission. Preference is given to residents of

Tennessee, but out-of-state applicants are given full consideration. The application deadline for the DNP and PhD programs is February 1. Questions regarding residency status should be addressed to the UTHSC Assistant Director of Enrollment Services, 910 Madison Avenue, Suite 525, Memphis, TN 38163, (901) 448-5560.

## **Minimum Requirements for DNP Admission**

Applications must be submitted online, although part of the application process requires the submission of paper documents. Full application instructions and access to the online component of the application can be found online at [www.utmem.edu/nursing](http://www.utmem.edu/nursing) then “Future Students” then “Application 101.” All paper application materials must be submitted by the applicant to the UTHSC Office of Enrollment Services, 910 Madison Avenue, Suite 525, Memphis, TN 38163 in a single packet. Preference is given to residents of Tennessee, but out-of-state applicants are also welcomed and given full consideration. Applicants who meet minimum requirements are not guaranteed an interview or admission.

The applicant must:

1. Submit official copies of transcripts for all college and university work in sealed, unopened envelopes.
2. Submit a copy of an unencumbered Tennessee RN license or have unencumbered authority to practice as an RN via the multi-state privilege at the time of application.
3. Have earned a minimum of a baccalaureate degree from a regionally accredited college or university. If the baccalaureate degree is in Nursing, it must be from a program accredited by a national organization (NLNAC or CCNE) responsible for nursing accreditation. If an RN holds a baccalaureate degree in a field other than nursing, applicants meeting all other admission criteria may be admitted to the MSN program with the requirement of successful completion of three (3) prerequisite courses (503 NSG. Health Assessment; 510 NSG. Professional Issues; 515 NSG. Health of Populations) prior to enrolling in the MSN courses.
4. Only applicants with a cumulative GPA of at least 3.0 based on all collegiate work or a cumulative GPA of at least 3.2 earned during the applicant’s most recently completed degree program will be considered for admission. The GPA calculation for the most recently completed degree will be based only on those grades earned at the degree-granting institution. Applicants may submit additional documents to demonstrate professional scholarship and leadership abilities that could make them more competitive.
5. Provide current and relevant documentation of physical, learning, psychological, or other disabilities, if applicable. Documentation guidelines are available in the Student Academic Support Services (SASS) Office, GEB, room BB9. Students should call (901) 448-7746 and schedule an appointment to discuss accommodation needs as soon as possible following entry into the Program.
6. Submit three (3) Recommendation Forms. The Recommendation Forms should be from graduate prepared nurses or faculty members who can address the applicant’s potential or ability for functioning in the advanced practice or research role (clinical skills, critical thinking, independent decision making, collaborative skills with other health professionals, and nursing leadership). Two recommendation forms should be completed by faculty members who can address your academic ability and one

recommendation form should be completed by an employer or professional who can address your professional performance.

7. Submit a three (3) to five (5) page essay. The purpose of the essay is to provide the Admissions Committee insight into the professional goals and expectations of the applicant and to demonstrate the candidate's written communication skills.
8. Provide a copy of a current certification in cardio-pulmonary resuscitation (CPR/BCLS) or advanced life support prior to enrollment; students enrolled in the MSN or DNP program are expected to maintain current certification throughout their enrollment in the program. Some advanced practice options (e.g., Nurse Anesthesia) may have additional certification requirements.
9. Have ready access to a Web-connected, laptop personal computer. Computer literacy and adequate computer skills are required.
10. Provide evidence of having met the experience requirements for certain advanced practice options (e.g., Neonatal Nurse Practitioner prior to admission).
11. Present evidence of proficiency in English, if native tongue is not English, by submitting evidence of a minimum score on the Test of English as a Foreign Language (TOEFL). Minimum scores are 550 on TOEFL paper version, 213 on TOEFL computer version, and 80 on TOEFL Web-based version. TOEFL scores must have been earned within two years prior to application.
12. Complete a successful criminal background check prior to matriculation. Background checks may be repeated during the student's program of study.

Applicants meeting admission criteria and selected for further admission consideration must participate in an interview for the purpose of evaluating communication and decision-making skills, educational goals and current leadership, scholarship, practice roles and activities. The interview will be in-person, face-to-face unless extraordinary circumstances warrant other arrangements. The DNP Program Director is charged with the responsibility for making decisions related to "extraordinary circumstances." Match of applicant's educational goals with faculty programs of practice is an important factor assessed in the interview.

Questions regarding residency status should be addressed to the UTHSC Assistant Director of Enrollment Services, Suite 525, 910 Madison Avenue, Memphis, TN 38163, (901) 448-5560. A Residency Classification Guide may be found online at [www.utmem.edu/admiss](http://www.utmem.edu/admiss).

## **Doctor of Nursing Practice Program (DNP)**

The DNP degree represents the culmination of study that prepares graduates for advanced levels of nursing practice. Emphasis is placed on nursing care that is based upon philosophical, ethical, and scientific principles. In addition to the advanced clinical practice series, all students enroll in core courses focusing on concepts essential for analysis and evaluation of practice outcomes such as epidemiology, biostatistics, health and policy issues, health economics, philosophy of science, clinical research utilization, and health care quality improvement, health information management, and leadership. Each student selects an area for scholarly examination of internal and external factors that influence nursing care in his/her clinical area. This process guides the student in



identification and evaluation of practice issues. Students collaborate with expert clinicians in their specialty areas.

Upon completion of the DNP Program, the graduate will be able to:

1. Demonstrate advanced levels of clinical judgment/scholarship in nursing practice.
2. Critically analyze complex clinical situations and practice systems.
3. Evaluate and apply conceptual models, theories, and research in order to improve health care of diverse populations.
4. Systematically investigate a clinically focused area of nursing in order to advance health care.
5. Analyze the social, economic, political, and policy components of health care systems which affect care planning and delivery.
6. Assume leadership roles in the development of clinical practice models, health policy, and standards of care.
7. Integrate professional values and ethical decision-making in advanced nursing practice.

## **DNP Promotion, Retention and Progression Requirements**

These policies govern the progression of students in the DNP Program.

1. Promotion and graduation require recommendation of the Progressions Committee and endorsement by the Dean.
2. Consistent with other professional degrees on campus, promotion requirements are as follows: All students must demonstrate satisfactory behavior in personal and professional areas deemed necessary by faculty for academic success and competency in clinical practice. Such areas may include ability to establish rapport with clients; ability to work effectively with other members of the health care team; dependability; judgment; integrity; initiative; and interest.
3. Any student who earns a “D” or an “F” in any course will be dismissed from the program.
4. To be considered in good academic standing, a student must maintain a cumulative GPA of 3.0 or better. A student whose cumulative GPA falls below 3.0 may be dismissed. A student whose cumulative GPA falls below 3.0 in any term, will be placed on academic probation during the following academic term. The cumulative GPA must be higher than 3.0 at the end of the probationary term or the student will be dismissed from the program.
5. Dismissal may result from serious deficiencies in personal or professional behavior or from failure to meet stipulated conditions within the designated time period.
6. Students who wish to withdraw from a course must notify the Associate Dean of Academic Affairs of the College of Nursing in writing and meet with their advisor. Students who withdraw from a theory or clinical nursing course must also withdraw from all co-requisite nursing courses. A change of status form must be completed as required by the University.

Questions regarding residency status should be addressed to the UTHSC Assistant Director of Enrollment Services, Suite 525, 910 Madison Avenue, Memphis, TN 38163,

(901) 448-5560. A Residency Classification Guide may be found online at [www.utm.edu/admiss](http://www.utm.edu/admiss).

## **Doctor of Philosophy (PhD) in Nursing**

The PhD in Nursing emphasizes the critical evaluation of existing knowledge through hands-on-research preceptorships backed by rigorous coursework. Upon entering the PhD program, students become immersed in clinical research that develops and tests concepts of nursing care. Students completing the program take their place among today's foremost nursing research scientists and scholars.

The UT PhD program began in the fall of 1988 and is offered by the College of Nursing in Memphis and Knoxville as a part of their respective Graduate Schools (e.g., through the College of Graduate Health Sciences in Memphis). The PhD program concentrates on theories and models of nursing and intense research mentorship with accomplished faculty researchers. Faculty work with students on an individual basis to design a program of learning experiences and directed research that will assure successful preparation for a career as a scientist in clinical nursing research.

Upon completion of the PhD Program, the graduate will be able to:

1. Analyze, test, refine, extend, and expand the theoretical basis of nursing practice.
2. Conduct research that generates and advances nursing as a discipline.
3. Provide leadership as nurse researchers, educators, and/or administrators in current and emerging health care settings.
4. Collaborate with members of other disciplines in health related research of mutual concern.
5. Analyze, develop, and recommend health care policy at various levels.

## **PhD Admissions**

Graduates of accredited institutions are eligible to apply for admission to the PhD program in the College of Graduate Health Sciences. Information regarding admission criteria, application process, and course descriptions can be found under the UTHSC College of Graduate Health Sciences in the UTHSC Catalog, and the UTHSC Home Page, [www.utm.edu](http://www.utm.edu). Consistent with other College of Nursing programs, applications to the PhD program must be submitted online.

## **Doctor of Nursing Practice – Doctor of Philosophy in Nursing**

The Doctor of Nursing Practice – Doctor of Philosophy (DNP-PhD) Program provides highly motivated and qualified students with an integrated advanced clinical and research program of study leading to a combined DNP/PhD degree. This program combines the existing DNP and PhD nursing programs, which are based in the College of Nursing and College of Graduate Health Sciences, respectively. Unlike the traditional DNP program, the DNP/PhD program focuses on developing the student's ability to conduct clinical research. Typically, students do not enroll in clinical specialty courses until the fourth term of the program. The total time to graduation varies and depends on

the student's background. Students must be accepted to the College of Nursing DNP program to be considered for admission to the DNP/PhD Program.

## **Special Students**

### **Policies and Procedures for Non-Degree Student Classification**

The College of Nursing has a non-degree graduate student classification for those individuals who are not candidates for a degree but who wish to take courses for credit.

The non-degree classification is tailored to meet the needs of a variety of individuals including:

1. Individuals whose regular applications are pending or accepted but whose admission is not until next term.
2. Individuals enrolled at other institutions who take courses at UTHSC College of Nursing for credit acceptable to the home institution.
3. Individuals who are registered nurses seeking to continue their development.
4. Individuals who wish to pursue a post-masters or post-doctoral non-degree course of study that leads to eligibility to sit for a certification examination.

### **Non-Degree Individuals NOT Seeking Certification Preparation**

Individuals who wish to enroll under the non-degree student classification will complete an abbreviated application form that is available from the College of Nursing, Office of Academic Affairs. Individuals desiring to take graduate courses must hold a Baccalaureate or higher degree, meet course prerequisites, and declare this on the application. No test scores, transcripts, letters of evaluation, or Admission Committee approval are required. Applications should be sent to the College of Nursing, Office of Academic Affairs. Upon approval, forms will be forwarded for processing from the College of Nursing to the Office of Enrollment Services. The student must register and pay fees to the Cashier on the official date of registration for that term.

Only selected courses are available to non-degree individuals, and enrollment is limited to available space within a course. Non-degree students are required to fulfill the same course requirements as regular students and are subject to all academic rules and regulations as outlined in the UTHSC CenterScope. Non-degree students enrolled in graduate courses must earn a grade of B or better in any course taken to receive credit for that course toward a degree at the UTHSC. Any coursework taken as a non-degree student will be recorded on the student's UT transcript, is considered during the admission process, and is included in the applicant's GPA computation. All coursework taken at the UTHSC is included in the student's GPA calculation.

At the time of admission to non-degree student status, no commitment is stated or implied concerning subsequent admission to the graduate nursing programs. If admission to a degree program is desired at a later time, a non-degree student must make

separate application and satisfy the admission requirements of the degree program to which admission is sought.

A maximum of 12 semester hours taken as a special student in the College of Nursing may be applied to the MSN/DNP degree, subject to approval by the Associate Dean of Academic Affairs.

### **Procedure for Processing Non-Degree Student Enrollment**

1. The Associate Dean for Academic Affairs will determine courses that are appropriate for non-degree students.
2. The Associate Dean for Academic Affairs will compile and distribute a list of the course offerings that have been approved to interested applicants along with an abbreviated application form with a deadline for application submission.
3. The applicant will submit the application form to the Office of Academic Affairs.
4. The application will be sent to the Office of Enrollment Services by the College of Nursing Office of Academic Affairs. The Office of Academic Affairs will contact applicants if space is not available.
5. Applicants will complete the regular registration process and pay fees at the established times.

## **Individuals Seeking Certification**

### **Post Graduate Preparation in Advanced Practice Option**

This option offers an opportunity for nurses holding a master's (MS or MSN) or doctoral degree in nursing to gain additional education that can lead to national certification in an advanced practice specialty. Nurses may apply to the following specialty areas of post-masters/post-doctoral study leading to preparation for national certification:

#### **Primary Care Specialty Areas:**

Family Nurse Practitioner

#### **Critical Care Specialty Areas:**

Critical and Acute Care Nurse Practitioner

Neonatal Nurse Practitioner

Nurse Anesthesia

Requirements for national certification are determined by the specific certifying agency. Generally, there are classroom and clinical instruction requirements and some certifying agencies have additional practice requirements. Faculty members strive to assure that all the educational requirements are met, but since these are subject to change, the applicant should consult the certifying agency. Each applicant's materials are individually evaluated and a specific plan of study developed.

## Minimum Requirements for Post Graduate Certification Admission

Post graduate students seeking certification in one of the areas of advanced practice nursing are expected to follow same application procedures as degree seeking students. Applications must be submitted online, although part of the application process requires the submission of paper documents. Full application instructions and access to the online component of the application can be found online at [www.utmcm.edu/nursing](http://www.utmcm.edu/nursing) then “Future Students” then “Application 101.” All paper application materials must be submitted by the applicant to the UTHSC Office of Enrollment Services, 910 Madison Avenue, Suite 525, Memphis, TN 38163 in a single packet. Preference is given to residents of Tennessee, but out-of-state applicants are also welcomed and given full consideration. Applicants who meet minimum requirements are not guaranteed an interview or admission.

The applicant must:

1. Submit official copies of transcripts for all college and university work in sealed, unopened envelopes.
2. Submit a copy of an unencumbered Tennessee RN license or have unencumbered authority to practice as an RN via the multi-state privilege at the time of application with submission of the license from the compact state of residence.
3. Have earned a minimum of a baccalaureate degree from a regionally accredited college or university. If the baccalaureate degree is in Nursing, it must be from a program accredited by a national organization (NLNAC or CCNE) responsible for nursing accreditation. If an RN holds a baccalaureate degree in a field other than nursing, applicants meeting all other admission criteria may be admitted to the MSN program with the requirement of successful completion of three (3) prerequisite courses (503 NSG. Health Assessment; 510 NSG. Professional Issues; 515 NSG. Health of Populations) prior to enrolling in the MSN courses.
4. Only applicants with a cumulative GPA of at least 3.0 based on all collegiate work or a cumulative GPA of at least 3.2 earned during the applicant’s most recently completed degree program will be considered for admission. The GPA calculation for the most recently completed degree will be based only on those grades earned at the degree-granting institution. Applicants may submit additional documents to demonstrate professional scholarship and leadership abilities that could make them more competitive.
5. Provide current and relevant documentation of physical, learning, psychological, or other disabilities, if applicable. Documentation guidelines are available in the Student Academic Support Services (SASS) Office, GEB, room BB9. Students should call (901) 448-7746 and schedule an appointment to discuss accommodation needs as soon as possible following entry into the Program.
6. Submit three (3) Recommendation Forms. The Recommendation Forms should be from graduate prepared nurses or faculty members who can address the applicant’s potential or ability for functioning in the advanced practice or research role (clinical skills, critical thinking, independent decision making, collaborative skills with other health professionals, and nursing leadership). Applicants currently enrolled in a nursing program should have at least one (1) Recommendation Form submitted by a faculty member in that program.

7. Submit a three (3) to five (5) page essay. The purpose of the essay is to provide the Admissions Committee insight into the professional goals and expectations of the applicant and to demonstrate the candidate's written communication skills.
8. Provide a copy of a current certification in cardio-pulmonary resuscitation (CPR/BCLS) or advanced life support prior to enrollment; students enrolled in the MSN or DNP program are expected to maintain current certification throughout their enrollment in the program. Some advanced practice options (e.g., Nurse Anesthesia) may have additional certification requirements.
9. Have ready access to a Web-connected, laptop personal computer. Computer literacy and adequate computer skills are required.
10. Provide evidence of having met the experience requirements for certain advanced practice options (e.g., Neonatal Nurse Practitioner prior to admission and Nurse Anesthesia prior to application).
11. Present evidence of proficiency in English, if native tongue is not English, by submitting evidence of a minimum score on the Test of English as a Foreign Language (TOEFL). Minimum scores are 550 on TOEFL paper version, 213 on TOEFL computer version, and 80 on TOEFL Web-based version. TOEFL scores must have been earned within two years prior to application.
12. Complete a successful criminal background check prior to matriculation. Background checks may be repeated during the student's program of study.

Applicants meeting admission criteria and selected for further admission consideration must participate in an interview for the purpose of evaluating communication and decision-making skills, educational goals and current leadership, scholarship, practice roles and activities. The interview will be in-person, face-to-face unless extraordinary circumstances warrant other arrangements. The Program Director is charged with the responsibility for making decisions related to "extraordinary circumstances." Match of applicant's educational goals with faculty programs of practice is an important factor assessed in the interview.

Questions regarding residency status should be addressed to the UTHSC Assistant Director of Enrollment Services, 910 Madison Avenue, Suite 525, Memphis, TN 38163, (901) 448-5560.

Applicants who meet minimum program requirements are not guaranteed admission. Preference is given to residents of Tennessee, but out-of-state applicants are given full consideration. The application deadline for all MSN and DNP programs is February 1, except Nurse Anesthesia, whose application deadline is September 1.

Questions regarding academic programs in the College of Nursing should be addressed to:

The University of Tennessee Health Science Center  
College of Nursing, Office of Student Affairs  
877 Madison Avenue, Suite 637  
Memphis, TN 38163  
(901) 448-6125  
[www.utmem.edu/nursing](http://www.utmem.edu/nursing)

## **Academic Standards**

The admission requirements are consistent with the criteria for admission to the professional colleges of UTHSC. Academic standards include admission process, admission requirements, and all policies governing the progression and graduation of students.

## **Academic Programs and Requirements**

### **Attendance**

The educational programs at UTHSC have been developed by the faculty and staff of these colleges to provide students with the information and experiences necessary to become practicing professionals. All students are expected to attend the various educational opportunities provided for them by the college or school in which they are enrolled. Attendance is required at some of the educational experiences such as laboratories and related instruction, clinical activities, and small group conferences. In the College of Nursing, attendance is mandatory for all laboratories and clinical experiences. Attendance is required of all students at scheduled “on-campus” sessions.

### **Honor System**

All coursework is conducted under the Honor System that is in operation for all students at UTHSC. The Honor System is administered by the students in the College of Nursing through an elected Honor Council. Details of the Honor Code and related processes are found in the CenterScope.

### **Grading System**

The faculty evaluates the academic achievement, acquisition of skills, and attitudes of nursing students and uses the marks of A, B, C, D, F, WP, WF, and I, in all official reports. In certain instances, some courses may be graded on a PASS/FAIL basis.

The following grade ranges are utilized in the College of Nursing:

92 - 100 = A  
83 - 91 = B  
75 - 82 = C  
70 - 74 = D  
0 - 69 = F

The letters WP or WF are recorded to indicate pass or failure in those instances in which a student withdraws from a course before completing the work.

The designation of “I” (incomplete) will be used when a student is unable to complete the course at the regular time because of a reason acceptable to the course coordinator. In such cases, arrangements will be made by the coordinator for the student to complete

the course requirements, and the grade of “I” will then be replaced by whatever grade the course coordinator considers the student to have earned. It is the responsibility of the student to work with the course coordinator in determining under what circumstances the “I” grade can be changed, however, the student must remove the “I” by the end of the following semester. Failure to remove the “I” within the allowed time will result in a grade of “F” being recorded as the permanent grade.

## **Appeal Process**

The following process for appeal applies to all students:

1. In those instances in which a student elects to appeal any academic action, he/she has the right to request a hearing before the Progressions Committee. Such a request must be filed, in writing, to the chair of the Committee within five (5) calendar days after the original action. At the hearing, the student may present evidence and witnesses on his/her behalf, excluding legal counsel.
2. When a student requests a hearing he/she must appear in person before the Progressions Committee. The faculty of the course(s) at issue will be consulted to determine the nature of the student’s difficulty. Each student shall be considered individually by the Committee. The Progressions Committee makes a recommendation to the Dean who then makes and issues the final college decision regarding the student’s appeal.
3. Should the student be dissatisfied with the Dean’s recommendation, he/she may appeal to the Chancellor by filing a written appeal with the Chancellor within five (5) calendar days of receipt of the Dean’s recommended action.

## **Dismissal**

In addition to dismissal for academic failure or unprofessional conduct, the faculty and administration of the College reserve the right to dismiss any student for unethical or illegal conduct. All students are expected to adhere to the principles of the American Nurses Association Code for Nurses with Interpretative Statements and to the Honor Code for the campus of UTHSC.

## **Leave of Absence**

Students who wish to withdraw or find that they cannot continue in the regular curriculum should contact the Office of Academic Affairs. Students are required to register for course work each semester once they have been admitted. Any student who is unable to register for a semester must contact the Office of Academic Affairs to initiate the change of status process. A request for leave of absence is subject to approval of the Dean. The student should be aware that requests for leave of absence may be denied, requiring the student to seek re-admission. Any student who does not maintain continuous enrollment or have an approved leave of absence will be dismissed and must seek readmission.



## **Re-admission**

Students who withdraw or are dismissed from the College may request re-admission. Request for re-admission must be in writing and should be addressed to the Dean of the College of Nursing. Request for re-admission is acted upon by the Dean in consultation with appropriate administrators and faculty committees. If re-admission is granted, the placement in the program and remaining requirements will be specified by the Associate Dean for Academic Affairs and the student's Major Advisor.

## **College of Nursing Retesting Policy**

No student will be given the opportunity to repeat an examination in a course to improve his/her grade after the final grade has been assigned. Any retesting must occur before the final course grade is granted.

## **Transfer of Credits - Graduate Program**

Transfer hours will be considered on an individual basis. After admission, students may request transfer of credits to UTHSC by contacting the College of Nursing Office of Academic Affairs. Only courses completed with a grade of B or better and accepted by the student's major department in the College of Nursing will be considered for transfer credit.

## **Insurance and CPR Certification**

All clinical agencies that provide clinical laboratories for the College of Nursing students require professional liability insurance and current certification in cardiopulmonary resuscitation. Therefore, College of Nursing students enrolled in any courses will be automatically assessed a fee to cover liability insurance. Proof of current CPR certification according to standards of the American Heart Association or the American Red Cross is also required.

## **Procedure for Admission to Candidacy for the Doctor of Nursing Practice**

Each student is responsible for filing an application for admission to candidacy in the Office of Academic Affairs. Admission to candidacy must be granted prior to the date of graduation. The primary purpose of admission to candidacy is to ensure a review of the candidate's course work to determine if the student has demonstrated the ability to do graduate work. The student's Major Advisor and the Associate Dean for Academic Affairs must sign the application.

The following requirements must be met by the student to become a candidate for the Doctor of Nursing Practice degrees:

1. Successful completion of all prerequisite courses and entering the final term of the graduate program of study.

2. At least a B (3.0) cumulative average on all graduate work. Grades of “D” and “F” are not accepted for graduate degree credit, but are counted in computing scholastic grade point average.
3. The student’s program of study conforms to the College of Nursing curriculum and the requirements of the particular Option.
4. The student’s Major Advisor certifies that the candidate has successfully completed sufficient graduate courses and has demonstrated ability to do graduate work.
5. Approval by the Dean of the College of Nursing.

## **Core Performance Standards**

### **Minimum Performance Standards for Students in the BSN and MSN-CNL Programs**

All students admitted to the BSN program must meet the following core performance standards for admission and progression of BSN students:

1. Critical thinking sufficient for clinical judgment.
2. Interpersonal abilities sufficient to interact with individuals, families, groups, and populations from a variety of social, emotional, cultural, and intellectual backgrounds.
3. Communication abilities sufficient for verbal written interaction with others.
4. Physical abilities sufficient to move from room to room, walk in hallways, maneuver in small spaces, and the strength necessary to lift patients as needed.
5. Gross and fine motor abilities sufficient to provide safe and effective nursing care.
6. Auditory ability sufficient to monitor and assess health needs.
7. Visual ability sufficient for observation and assessment necessary in nursing care.
8. Tactile ability sufficient for physical assessment and to provide nursing intervention.

### **Minimum Performance Standards for Students in the MSN Nurse Anesthesia Option**

The applicant will possess the mental, auditory, visual, sensory, strength, manual dexterity, and communication skills to:

1. Perform a systematic and complete history and physical examination on a client;
2. Communicate significant examination findings to other professionals and client/family;
3. Appropriately assess and record subjective and objective findings;
4. Maintain effective relationships and interact appropriately with other professionals and clients/families, demonstrating skills of leadership collaborations and decisiveness;
5. Accurately analyze alterations in functional patterns;
6. Maintain flexibility and emotional stability in response to novel, unique situations and stress;

7. Demonstrate advanced use of the nursing process: develop, implement, educate and counsel clients, prescribe appropriate therapy, demonstrate self care skills and evaluate appropriate plans of action for diagnosed problems;
8. Safely provide airway management and be able to maintain advanced life support systems while operating and interpreting multiple monitoring modalities;
9. Rapidly respond and intervene in emergency situations requiring anesthesia care throughout the spectrum of practice settings;
10. Speak, write and comprehend the English language proficiently;
11. Use computer to word process, email, and access the World Wide Web.

### **Minimum Performance Standards for Students in the Graduate Program Acute Care Nurse Practitioner Option/Track**

The applicant will possess the mental, auditory, visual, sensory, strength, manual dexterity, and communication skills to:

1. Perform a systematic and complete history and physical examination on a client with complex problems;
2. Communicate significant examination findings to other professionals and client/family;
3. Appropriately record subjective and objective findings;
4. Maintain effective relationships and interact appropriately with other professionals and clients/families, demonstrating skills of leadership collaboration and decisiveness;
5. Accurately analyze alterations in functional patterns;
6. Anticipate potential common, acute, and life-threatening problems encountered in critically ill patients;
7. Maintain flexibility and emotional stability in response to novel and high stress situations;
8. Demonstrate advanced use of the nursing process-assess and diagnose actual and potential health/illness problems; develop, implement, educate and counsel clients, prescribe appropriate therapy, demonstrate self care skills and evaluate appropriate plans of action for diagnosed problems;
9. Identify ethical dilemmas in critical care practice and participate in ethical decision making using a systematic approach;
10. Develop/participate in the development of theory based educational programs for critically ill patients/families and nursing personnel;
11. Analyze/critique critical care research and demonstrate/role model the appropriate integration of research into practice;
12. Speak, write and comprehend the English language proficiently;
13. Use computer to word process, email, and access the World Wide Web.

### **Minimum Performance Standards for Students in the Graduate Programs, Family Nurse Practitioner/Neonatal Nurse Practitioner/Psychiatric Family Nurse Practitioner Options/Tracks**

The applicant will possess the mental, auditory, visual, sensory, strength, manual dexterity, and communication skills to:

1. Perform a systematic and complete history and physical examination on a client;
2. Communicate significant examination findings to other professionals and client/family;
3. Appropriately record subjective and objective findings;
4. Maintain effective relationships and interact appropriately with other professionals and clients/families, demonstrating skills of leadership, collaboration and decisiveness;
5. Accurately analyze alterations in functional patterns;
6. Anticipate potential common, acute self-limiting, and selected chronic problems;
7. Maintain flexibility and emotional stability in response to novel, unique situations and stress;
8. Demonstrate advanced use of the nursing process-assess and diagnose actual and potential health/illness problems; develop, implement, educate and counsel clients; prescribe appropriate therapy; demonstrate self-care skills; and evaluate appropriate plans of action for diagnosed problems;
9. Develop insight into own emotional functioning to evaluate ability to provide therapeutic intervention for a client;
10. Speak, write and comprehend the English language proficiently;
11. Use computer to word process, email, and access the World Wide Web.

### **Minimum Performance Standards for Students in the PhD in Nursing Program**

The applicant will possess the mental, auditory, visual, sensory, strength, manual dexterity, and communication skills to:

1. Withstand the stress of a rigorous program of education and research;
2. Speak, write and comprehend the English language proficiently;
3. Communicate in a professional manner, establish rapport with clients and colleagues, and to use problem-solving skills effectively;
4. Use computer to word process, email, and access the World Wide Web.

A student may request accommodation through the Office of Student Academic Support Services (SASS) located in the General Education Building (GEB), phone (901) 448-5056. This consultation is confidential and will in no way influence your acceptance into the program of nursing.

### **Course Descriptions – BSN**

844 IP. Interprofessional Health Practice. Interprofessional Health Practice provides a framework for all health professional students to discover the benefits of a practice that actively engages all health professions. The course will focus on the role and scope of practice of various health professions, how teams function and the benefits of teamwork, and effective patterns of communication and collaboration among health care team members. Credit: 3 (3-0). (Credit awarded at the end of the course which runs the entire length of the student's program.)

499/699 PHAR. Pharmacology. This course builds a basic foundation of pharmacology, focusing on major drug classifications, their actions and side effects. Emphasis is on basic pharmacology and pharmacotherapeutics. Credit: 3 (3-0).

503/603 NSG. Health Assessment. This course prepares the student to perform a holistic assessment of diverse clients across the lifespan. Skills addressed that are needed for the systematic assessment of health status include critical thinking, interviewing, obtaining a health history, performance of a physical examination, and documentation. Credit: 3 (2-1).

504 NSG. Introduction to Professional Practice. This course focuses on concepts, skills and techniques foundational for professional nursing practice. Students are provided opportunities to apply critical thinking skills to explore professional values, nursing process and the professional nursing role. Credit: 3 (2-1).

505/605 NSG. Informatics for Health Care. This course provides an overview of healthcare information technology and computer science systems to prepare students to effectively and efficiently use technology for the identification, collection, processing, and management of data/information. Legal, ethical, cultural, economic, and social factors that affect healthcare information technology are explored. Credit: 2 (2-0).

506 NSG. Mental Health. This course provides the theoretical and clinical foundation for providing safe, effective, patient-centered, evidence-based, culturally competent nursing care to individuals, groups and families experiencing mental health challenges. The course focuses on therapeutic communication as an integral component of the nursing process. Legal, ethical, cultural, economic, and social factors that affect the mental health of individuals, families, groups, and populations are explored. Credit: 5 (3-2).

507/607 NSG. Genetics. This course provides a foundation for understanding and applying genetic knowledge within the clinical setting. Legal, ethical, cultural, economic, and social factors that affect the field of human genetics are explored. Credit: 1 (1-0).

508 NSG. Pediatric and Adolescent Health. This course provides the theoretical and clinical foundation for providing safe, effective, patient-centered, evidence-based, and culturally competent nursing care to children and adolescents. Developmental aspects associated with preventive care and health promotion of children and adolescents along the wellness-illness continuum are examined. Legal, ethical, cultural, economic, and social factors that affect child and adolescent health are explored. Credit: 3 (2-1).

509 NSG. Reproductive Health. This course provides the theoretical and clinical foundation for providing safe, effective, patient-centered, evidence-based, and culturally competent reproductive health care to women and their families. Nursing care of pregnant women, infants, and their families during a normal pregnancy will be the primary focus of the course. Legal, ethical, cultural, economic, and social factors that affect reproductive health are examined. Credit: 3 (2-1).

510 NSG. Professional Issues. This course examines historical and current issues that affect the profession. Students also explore the role of nursing theory in the continued development of professional nursing. Credit: 2 (2-0).

512 NSG. Adult Health Skills. This course focuses on the development of essential technical skills used to provide adult health nursing care. Credit: 1 (0-1).

513 NSG. Clinical Anatomy. This course provides knowledge of gross anatomical structures and the related general function of major organ systems and selected microscopic tissues. Credit: 3 (2-1).

514/614 NSG. Introduction to Evidence Based Practice. This course focuses on the research method and the role of the professional nurse in critiquing and utilizing nursing research literature. Research as it relates to health care and clinical nursing practice is examined. Credit: 3 (3-0).

515 NSG. Health of Populations. This course provides the theoretical and clinical foundation for providing safe, effective, community-focused, evidence-based, and culturally competent nursing care to populations. The course focuses on community health assessment, community health planning, and community health education. Legal, ethical, cultural, economic, and social factors that affect the process of health promotion and disease prevention are examined. Credit: 5 (3-2).

516 NSG. Acute Care. This course provides the theoretical and clinical foundation for providing safe, effective patient-centered, evidence-based, and culturally competent nursing care to patients in the acute care setting. This course focuses on medical and surgical management of illness and injury, and advocating for health care goals. Legal, ethical, cultural, economic, and social factors that affect the health of adults across the lifespan are examined. Credit: 5 (3-2).

517 NSG. Acute Care Skills. This course focuses on the development of essential technical skills used to provide nursing care in the acute care setting. Credit: 1 (0-1)

518 NSG. Leadership. This course focuses on the basic concepts and theories of open systems and outcomes at the patient, organization, and health care levels, as they apply to nursing leadership and beginning management roles. Leadership, organization and management practices, and their impact on nurses, healthcare delivery systems, and patient outcomes are emphasized. Legal, ethical, cultural, economic, and social factors that affect and are affected by the quality of leadership are examined. Credit: 2 (2-0).

519 NSG. Internship. The clinical internship provides the opportunity, within a select area of interest, to facilitate role transition and lifelong learning. Emphasis will be on integration and application of knowledge and skills from previous course work in order to demonstrate the ability to design, provide, coordinate, and manage safe, effective, patient-centered, evidence-based, and culturally competent nursing care. Credit: 3 (1-2).

521/621 NSG. Pathophysiology. This course focuses on the study of the etiology, pathogenesis, and clinical manifestations associated with common disease processes across the life span, the interrelationship of interacting factors that affect morbidity and

mortality, and the scientific rationale related to therapeutic principles of treatment resulting from an alteration in normal physiology. Credit: 3 (3-0).

522 NSG. Directed Study. An elective course designed to provide the student with the opportunity to undertake guided study and/or clinical experience in a focused area. Credit: Variable.

523 NSG. Medication Safety in Healthcare. This course focuses on the concepts and mathematical processes necessary to administer medications safely in the practice environment. Students are provided current content and learning activities to obtain the knowledge to provide safe, timely, effective, efficient, equitable, patient-centered (STEEEP) medication administration. The role of healthcare team communication and collaboration in medication safety will be explored. Credit: 1 (1-0).

524 NSG. Nursing Skills Lab I. This course focuses on the development of competency in foundational skills and procedures used in the safe, timely, effective, efficient, equitable, patient-centered (STEEEP) delivery of basic nursing care. Credit: 1 (0-1).

525 NSG. Cultural Competence and Language Acquisition for Hispanic Populations. This honors elective course provides the theoretical and clinical foundation for providing safe, effective, patient-centered, evidence-based, and culturally competent nursing care to Hispanic populations. This course focuses on acquisition of the Spanish language geared toward health care providers, as well as, cultural diversity as it relates to the Hispanic population. Legal, ethical, cultural, and social factors which affect the health of Hispanic patients are examined. Credit: 3 (2-1)

526 NSG. Gerontology. This course provides the theoretical and clinical basis for providing safe, timely, efficient, effective, equitable, patient-centered, evidence-based, culturally competent nursing care to older adults. The course focuses on promotion of health and wellness, management of disease, provision of comfort, and end of life care. In addition, the course will follow and incorporate the Hartford competencies for Gerontological Care. Credit: 3 (2-1).

527 NSG. Adult Health Nursing. This course provides the theoretical and clinical foundation for providing safe, effective patient-centered, evidence-based, and culturally competent nursing care to patients throughout the adult years. This course focuses on promotion of health and function, management of illness, and advocating for health care goals. Legal, ethical, cultural, economic, and social factors that affect the health of adults across the lifespan are examined. Credit: 6 (3-3).

## **Course Descriptions - MSN and DNP**

### **General**

605 PATH. Advanced Pathology. Study of the etiologies and processes of human biological responses to actual and potential injury in contrast to normal. The focus is on the underlying physiological and pathophysiological mechanisms of disease states, and

the scientific rationale for seeking, selecting, and interpreting physiological data. Age specific considerations are presented. Credit: 3 (3-0).

611 BIOE. Biostatistics for the Health Sciences. This is an elementary course in statistical methods, applied to nursing problems. Statistical analysis dominates research, and students' knowledge of statistical procedures and terminology can benefit them in understanding research articles to keep abreast of new information in their area of expertise and performing their own research studies. Credit: 2 (2-0).

613 NSG. Interviewing and Counseling. This course focuses on increasing the knowledge and skills in communication that are essential to effective helping in the multiple roles of advanced nursing practice. Content includes major communication theories and research, the establishment and maintenance of effective interpersonal relationships, and counseling and interviewing strategies. Students participate in experiential exercises using the presented strategies. Credit: 2 (2-0).

615 NSG. CNL Leadership Role. The purpose of this course is to facilitate transition into the clinical nurse leader (CNL) role. Students examine essential nursing leadership, clinical outcomes management, and care environment management competencies as a basis for advancing a personal philosophy of nursing. Content includes analysis of factors that contribute, constrain, and politically affect nursing leadership in the clinical microsystem. Emphasis is placed on the principles of leadership in complex healthcare organizations, creating and sustaining a healthy environment, and leading through transformational change. Credit: 3 (3-0).

616 NSG. CNL-Healthcare Systems Complexity. This course provides a conceptual framework for the delivery of care within complex healthcare environments using principles of complexity science in relation to healthcare systems and organizations. Topics include complexity, organizational and change theories, organizational culture, healthcare systems, integration of care, regulatory issues, evaluation of complex healthcare issues and strategic planning. Credit: 3 (3-0).

617 NSG. CNL-Target Population Diagnosis. This course provides the philosophy and framework for population health and the care of aggregates. Analysis and application of theory and skills needed to assess, diagnosis, plan, and evaluate the care of populations within complex health systems are presented. Concepts of health, disease, health promotion, and health restoration are emphasized, along with knowledge of human and cultural diversity, factors influencing health and disease states, the ethics of care, resource accountability, and coordination and lateral integration of care. Credit: 4 (3-1).

618 NSG. CNL-Quality Management. This course provides a foundation for the examination, analysis, improvement of processes and outcomes within the healthcare microsystem using the process improvement methodologies. Emphasis on improving processes for better clinical, customer, provider, and financial outcomes is provided. Credit: 1 (1-0).

619 NSG. CNL-Clinical Leadership Practicum. This course focuses on implementation of the CNL role in a selected healthcare microsystem. During the 300-hour immersion experience, the student acquires in-depth skills related to the practice and evaluation of



interprofessional care. Focus is on accountability for design coordination, delegation, supervision, and evaluation of care provided by the unit based health care team. Credit: 5 (0-5).

712 BIOE. Epidemiology. This course offers the basic principles of epidemiology. Credit: 3 (3-0).

800 ACNP. Acute Cardiopulmonary Nursing. This advanced nursing practice course focuses on the care of adult patients with cardiopulmonary illness frequently encountered in critical and acute care settings. Content includes diagnosis and management of episodic and chronic cardiopulmonary illness; diagnostic tests, technologic and therapeutic interventions; and crisis/disaster management strategies. Particular attention is given to providing evidence based, comprehensive, individualized, and collaborative care that takes into consideration health quality, costs, and outcomes. Credit: 3 (3-0).

801 ACNP. Acute Care Nursing. This advanced practice nursing course focuses on the care of acute, critical, and complex- chronically-ill adults. Content includes diagnosis and management of acute, episodic, and exacerbations of chronic medical-surgical health conditions; ordering and interpreting diagnostic tests; and utilizing technologic and therapeutic interventions. Emphasized aspects of the Acute Care Nurse Practitioner role include communication skills, teaching, coaching, disseminating information, and billing. Health quality, costs, and outcomes are addressed through collaborative, individualized, comprehensive, and evidence-based care. Credit: 4 (4-0). Prerequisites/Co-requisites: Physical Diagnosis, Diagnostic Reasoning

802 ACNP. Acute Cardiopulmonary Clinical. This advanced practice nursing clinical course focuses on the care of adult patients with cardiopulmonary illness in critical and acute care settings. Students conduct an inclusive history and physical examination, document findings, then plan and implement a comprehensive evidence-based plan of care. This course prepares the student to diagnose and manage episodic and chronic cardiopulmonary illness, interpret diagnostic tests, utilize technologic and therapeutic interventions, and apply crisis/disaster management strategies. The student develops evidence-based, individualized, collaborative plans of care that incorporate health quality, cost, and outcomes. Credit: 3 (0-3). Prerequisites/Co-requisites: Physical Diagnosis, Diagnostic Reasoning, Acute Cardiopulmonary Nursing.

814 NSG. Biostatistics. This course introduces and applies biostatistical concepts important to advanced nursing practice and research. Credit: 3 (3-0).

818 NSG. Roles of Advanced Nursing Practice. This course focuses on examining role theory as it relates to advanced practice. The content includes a comparison of advanced practice nursing roles as well as requirements for and regulation of these roles. The course fosters understanding of the principles, personal, and cultural values, and beliefs that provide a framework for advanced nursing practice; it provides students the opportunity to explore personal values and analyze how these values shape professional practice. Credit: 1 (1-0).

819 NSG. Evaluation of Practice. This course explores various methodologies to critically evaluate clinical practice. Students develop proficiency in a) translating research to clinical practice, b) applying improvement science for better patient, performance, and organizational outcomes, and c) designing evaluation plans specific to their practice interest for the ultimate purpose of creating and sustaining changes at the care delivery, organizational, and policy levels. Credit: 4 (4-0). Prerequisites: BIOE 814, BIOE 712, HSA 851

823 NSG. Physical Diagnosis. This course builds on the assessment skills learned in an undergraduate level health assessment course. The course is designed to help the students develop and apply their knowledge through the acquisition of skills that may be used in both primary and acute care settings. This course will acquaint the student with common health problems including emotional illnesses that are most frequently encountered in health care settings. Emphasis is placed on recognition of signs and symptoms associated with common health problems, psychosocial and cultural variations, differentiation between normal and pathological findings, critical thinking necessary for clinical diagnostic reasoning and risk assessment. Course content and clinical experiences provide learning opportunities in the following conceptual areas: communication, history taking, system specific symptoms including emotional illness, physical assessment, age related anatomical-physiological changes, pathology, laboratory skills, EKG, X-ray interpretation and recording in the problem oriented format. Pre or Co-requisites: Health Assessment, Demonstration of skills for a Screening Physical Exam on an Adult. Credit: 3 (1-2).

825 NSG. Examination of Practice. This course explores various methodologies used to critically examine clinical practice. Work from previous courses will also be integrated as DNP students develop a clinical project. A project proposal will be developed in collaboration with the student's committee to examine issues/needs present in a selected practice site. Students will consider the broader context of the selected health care system and the implications of project implementation. The application of research process and the theoretical basis for quality improvement measures will guide project development. Prerequisites: BIOE 712, HSA 877, NSG 814, NSG 836. Credit: 3 (3-0).

826 NSG. Methods in Epidemiology. This course introduces the student to the most common analytic methods in epidemiology. Students will learn how to design epidemiologic studies, to choose appropriate research designs, and to utilize common statistical tests. Emphasis will be placed on case control studies, cohort studies, and the use of multivariate and logistic regression. Prerequisites: BIOE 712 Principles of Epidemiology or equivalent. Credit: 3 (3-0).

834 NSG. Professional Role Development. The purpose of this course is to facilitate transition into the advanced practice nursing role. Students will examine standards of advanced practice and professional leadership issues as a basis for advancing a personal philosophy of nursing. Content includes analysis of factors that contribute, constrain, and politically affect the advanced practice of nursing. Professional, cultural ethical, legislative, and regulatory associations are discussed. Emphasis is placed on the development and maintenance of practice, including certification, marketing, contract negotiations, and practice management. Prerequisite/Concurrent: N818, Clinical Specialty courses. Credit: 3 (3-0).

835 NSG. Foundations for Evidence-Based Clinical Practice. This is the first course in a series of two courses that provides the foundation and methods for evidence-based clinical practice (EBCP). This course addresses basic theory and the research method and analyzes the relationship of theory to research. Credit: 3 (3-0).

836 NSG. Methods for Evidence-Based Clinical Practice. This is the second course in a series of two courses that provides the foundation and methods for evidence-based clinical practice (EBCP). This course addresses scientific methods for EBCP and the application of scientific methods to a clinical problem. Prerequisite: N835. Credit: 3 (3-0).

851 HSA. Leadership & Health Policy. This course is designed to expand the learner's knowledge of leadership and health policy. The first component is designed to critically examine leadership concepts and theories in relation to advanced nursing practice in current and emerging health care delivery systems. Mechanisms for communication, asserting power and influence and conflict resolution techniques will be discussed. The second component is designed to provide an understanding of the forces involved in the formulation and implementation of health care policy and the role Doctor's of Nursing Practice can play in leading the development and implementation of such policy. The course examines the characteristics of health care policy and politics, the stages in policy making and the key role governmental, public groups and individuals play in policy making. Credit: 3 (3-0).

869 NSG. Integrated Model of Forensic Nursing. This course presents core concepts, standards of practice, and emerging issues of forensic nursing in a holistic model that integrates concepts of forensic science, public health and psychiatric mental health in an historical, political, and social context. Content will include analysis of the roles, advanced nursing skills, ethical decision-making, and cultural competence required of forensic nurses caring for victims of injury and/or perpetrators of crime across the life span. Credit: 2 (2-0).

877 HSA. Health Care Economics. Unique nature of health care as an economic good; health care market and its participants, including patients, physicians, and hospitals; financing and delivery of personal health care in the United States and other countries. Credit: 3 (3-0).

916 NSG. Concept and Theory Analysis. This course focuses on the process of concept analysis, and its application to clinical practice. Nursing theories, and concepts from nursing theories and clinical practice will be analyzed and critiqued. Credit: 3 (3-0).

917 NSG. Advanced Practice Selectives. This series of electives will be tailored to the goals and needs of the students. These courses provide depth in a particular aspect of advanced practice and the theoretical and clinical content specific to that area. Credit: 4 (2-2) (minimum total credits = 12 hrs.).

926 NSG. Resident Practicum. This course is a synthesis practicum with a practitioner-mentor in the student's area of advanced practice. . Credit: 6 (0-6).

936 NSG. Resident Practicum. This course is a synthesis practicum with a practitioner-mentor in the student's area of advanced practice. Credit: 6 (0-6).

816 PHAR. Pharmacology I. This course provides an overview of the major drug classifications, actions, and side effects. For each group of drugs discussed, lectures will provide overviews of 1) basic pharmacokinetics and dynamics, 2) adverse effects and drug interactions, and 3) special considerations in drug therapy for clients across the lifespan. Credit: 3 (3-0).

825 PHAR. Pharmacology II: Neonatal NP. This course builds on Pharmacology I and provides additional knowledge basic to the advanced practice of neonatal nursing. Content specific to advanced pharmacology within specialty areas will be presented in modular format. Prerequisite: PHAR 816. Credit: 3 (3-0).

826 PHAR. Pharmacology II. This course builds on Pharmacology I and provides additional knowledge basic to advanced practice nurses in primary care. Content specific to advanced pharmacology within specialty areas will be presented in modular format. Prerequisite: PHAR 816. Credit: 3 (3-0).

830 PHAR Advanced Pharmacology. This course provides an overview of the major drug classifications used by advanced practice nurses. Core content focuses on pharmacokinetics, pharmacodynamics, and pharmacotherapeutics, adverse effects, drug and food interactions, safety concerns, and special considerations across the lifespan. Credit: 3 (3-0).

828. PHAR. Pharmacology II: Anesthesia. This course provides an in-depth study of the pharmacology of anesthetic agents and drugs currently used in human medicine. This course focuses on the impact of drugs on anesthesia practice. Credit: 4 (4-0).

946 NSG. Residency Project. DNP students evaluate a practice issue identified in their residency site to improve practice for individuals, groups, or communities. Students disseminate project results. Prerequisites: N825 Examination of Practice, NAPS courses. Credit: 3 (3-0).

931 NSG. Individual, Group and Family Patterns. This course addresses advanced psychiatric nursing practice, processes and strategies. Foci of the course are the study of human life processes and the varying patterns that are developed in the physical, behavioral, mental, emotional, cultural and spiritual aspects of persons across the lifespan, families and groups. Philosophical, historical and theoretical contributions to the understanding of individual growth and development of patterns, family and group phenomena are emphasized. Interventions and techniques based on the nursing assessment and specific selected theoretical perspectives are delineated. Health promotion and disease prevention are examined. Pre or co-requisite: NAPS 865. Credit: 5 (3-2).

930 NSG. Biological Treatments for Psychiatric Disorders. Current molecular, developmental and environmental perspectives are examined considering inherited and acquired vulnerabilities to mental illness. Disruptions leading to mental illness are studied from a broad overview of balanced and functional brain anatomy and

physiology. Psychopharmacological and other biological therapies for mental illnesses based on current science and practice standards are detailed with emphasis on optimal outcomes and primary, secondary and tertiary prevention. The responsibilities and contributions of the advanced practice nurse as expert clinician are emphasized. Credit: 3 (3 -0).

960 NSG. Directed Study. A course designed to provide the doctoral student with the opportunity to undertake additional guided study, research, and/or practice experience in an area of the student's choice under faculty supervision. The student will develop course outcomes in consultation with faculty. Credit: Variable.

839 NSG. Management of Psychiatric Mental Health Problems. This course builds upon the knowledge in the Psychiatric/Mental Health Nursing Option to develop a framework of knowledge, skills, and experience to care for individuals, families and groups with complex psychiatric-mental health problems and promote mental health within our society. The focus is the conceptualization of theory-based advanced psychiatric nursing practice with individuals, families, and groups. Theory underlying the practice of consultation as an indirect-care modality of the psychiatric nursing specialty is included. Factors influencing consultation such as the community, continuing education, and the mental health development of consultation, liaison service, crisis intervention, interdisciplinary and intra-disciplinary consultation services, and primary, secondary and tertiary prevention are examined. Clinical is included in the residency practicum. Pre or co-requisites: NAPS 865 Assessment & Management of Psychiatric Mental Health Problems, NSG 931 Individual, Group, & Family Patterns, NSG 926 Resident Practicum. Credit: 3 (3-0).

837 NSG. Assessment Strategies in Psychiatric/Mental Health Care. This course fosters development of the knowledge and skills for assessment of individuals, families and groups to promote mental health and detect complex psychiatric-mental health problems across the lifespan. The course builds on the student's past nursing knowledge and experiences, expanding the scope of nursing practice to those at risk or in need of psychiatric-mental health care. Focus is on recognition and assessment of mental health and diagnosing of mental disorders based on DSM-IV-TR criteria, psychometrics, evidence-based guidelines, theoretical literature, and scope and standards of advanced psychiatric/mental health nursing. Theories underlying the practice of consultation as an indirect-care modality of the psychiatric nursing specialty are introduced. Students master documentation methods that meet the legal-ethical requirements for care of patients with mental health problems. Credit: 3 (3-0).

838 NSG. Management of Psychiatric Mental Health Problems. This course builds upon a framework of knowledge, skills, and experience to care for individuals, families and groups with complex psychiatric-mental health problems and promote mental health within our society. The focus is the conceptualization of theory-based advanced psychiatric nursing practice with individuals, families, and groups. Theory underlying the practice of consultation as an indirect-care modality of the psychiatric nursing specialty is included. Factors influencing consultation considering primary, secondary and tertiary interventions and prevention are examined. Clinical experiences are in a variety of settings with clients across the lifecycle. Credit: 5 (3-2).

921 NSG. PMH Seminar. This course focuses on current research and issues in mental health care for the advanced practice psychiatric nurse. Literature that addresses psychiatric care is used to keep providers abreast of cutting edge information and treatment for mental health disorders in a variety of settings. Integration of mental health care into selected primary care conditions and diagnoses is addressed. Credit: 1 (1-0).

## **Specialty Courses**

660 FNP. Directed Study. An elective course designed to provide the student with the opportunity to undertake additional guided study and/or clinical experience in an area of nursing of the student's choice not otherwise available in the curriculum. Credit: 1 to 3.

816 FNP. Primary Care Nursing I: Family Health. This course is the first of two advanced practice nursing courses focusing on specialization, expansion, and advancement of research based knowledge and skills related to the advanced practice of nursing in primary care. Emphasis is on the initial development of a knowledge base necessary for clinical decision-making and the beginning definition of a model of practice with the family as the unit of service. Needs of families in rural or urban medically underserved areas are important components of the course. Pre or Co-requisites: FNP 817, PHARM 816, NSG 823. Credit: 4 (4-0).

817 FNP. Primary Care Clinical I. One of a series of courses preparing the student to provide health care to families with emphasis on urban and rural medically underserved. This clinical course is designed to integrate the nursing process learned in the basic baccalaureate program with the theory and practice necessary for the family nurse specialist to provide primary health care. Emphasis is on defining a model of nursing practice with the family as a unit of service. Emphasis is on defining a model of nursing practice with the family as a unit of service. This course provides the experience necessary to help the student develop knowledge, clinical judgment and appropriate medical and nursing interventions to promote the health of individuals and families. This clinical rotation includes management of common problems of children, common gynecological problems of women and selected chronic and self-limiting diseases of adults. The focus ranges from health and disease prevention to diagnosis and management of selected acute and chronic problems commonly found in the Delta Region. This clinical rotation includes management of common problems of children and selected chronic and self-limiting diseases of adults. Experience with the primary health care needs of special populations is also part of the nursing practice. Pre or Co-requisites: NSG 835, FNP 816, NSG 823, PHARM 816. Credit: 3 (0-3).

826 FNP. Primary Care Nursing II: Family Health. This is the second of two advanced practice nursing courses focusing on specialization, expansion, and advancement of the theory and research based knowledge and skills related to functioning as an advanced practice nurse in a primary care setting. Emphasis is on the continuing development of a knowledge base necessary for clinical decision making and the beginning refinements of a model of practice with the family as the unit of service. Needs of families in rural or urban medically underserved areas are important components of the course. Pre or Co-requisites: FNP 816, FNP 827, PATH 605, PHARM 816. Credit: 4 (4-0).

827 FNP. Primary Care Clinical II. This is the second of two advanced practice nursing courses focusing on development of the advanced practice knowledge and skills required to provide primary care services to families, particularly those in rural and urban medically underserved areas. Emphasis is on the continuing development of a knowledge base necessary for clinical decision making (based on critical thinking and diagnostic reasoning), with the family as the unit of service. Pre or Co-requisites: FNP 817, FNP 826. Credit: 5 (0-5).

850 FNP. Primary Care Clinical Role Practicum: Family Nurse Practitioner Clinical Specialization. The practicum experience focuses on the refined development of role preparation as a Primary Care Nurse Practitioner in a family practice setting, preferably rural. It provides an in depth practice experience under the guidance and direction of an experienced practitioner. Use of preceptors in role preparation will be negotiated and the student will formulate specific objectives with the preceptor for the clinical practice. The practice areas selected will provide the climate for role integration. Analysis of the role is actualized through study and practice in the clinical discipline. Credit: 4 (0-4).

660 NNP. Directed Study. An elective course designed to provide the student with the opportunity to undertake additional guided study and/or clinical experience in an area of nursing of the student's choice not otherwise available in the curriculum. Credit: 1 to 3.

811 NNP. Theoretical Basis of Neonatal Physiology. The structure and function of neonatal organ systems are presented. Neonatal physiology is related to the ways in which the newborn infant meets his basic needs. The influence of biological development on fetal and neonatal physiologic function and attainment of basic needs is considered. Credit: 4 (4-0).

818 NNP. Neonatal Nursing I: Pathology & Management. This is the first of two courses focusing on specialization, expansion, and advancement of research-based knowledge and skills related to the advanced practice of nursing in neonatal care. Emphasis is on the development of a knowledge base necessary for clinical decision-making and the definition of a model of practice with the neonate and the family as the unit of service. Credit: 4 (4-0).

828 NNP. Neonatal Nursing II: Pathophysiology & Management. This is the second course focusing on specialization, expansion, and advancement of research-based knowledge and skills related to the advanced, practice of nursing in neonatal care. Emphasis is on the continued development of a knowledge base necessary for clinical decision-making and the definition of a model of practice with the neonate and the family as the unit of service. Credit: 4 (4-0).

826 NNP. Neonatal Assessment. This course focuses on comprehensive assessment and clinical management of the normal and low risk newborn that is the foundation for clinical decision making required by the NNP advanced practice role. The theoretical base for assessment is emphasized at the beginning of the course. Clinical experience provides the student with opportunities to develop neonatal assessment skills, manage the term and low-risk neonate under supervision of the NNP, and provide discharge teaching for the parents. Credit: 4 (1-3).

827 NNP. Neonatal Nursing Clinical. NNP 818 is a co-requisite with NNP 827. It is a series of courses preparing the student to provide health care to the high-risk neonate. This clinical course provides the necessary experience to help the student develop knowledge, clinical judgment and appropriate intervention to promote the health of sick neonates. Emphasis of therapeutic management is placed upon early diagnosis, prompt treatment, and disability limitation. This clinical course includes management of selected common problems of the newborn infant. Credit: 4 (0-4).

850 NNP. Clinical Practicum. The practicum experience focuses on the refined development of role preparation as a Neonatal Nurse Practitioner in a neonatal intensive care setting. It will provide and in-depth practical experience under the guidance and direction of an experienced practitioner. Use of preceptors in clinical practice will be utilized. The practice area will provide opportunity for enhancing the student's area of clinical expertise in the neonatal intensive care setting and provide the climate for role integration. Analysis of the role is actualized through study and practice in the clinical discipline. Credit: 4 (0-4).

660 CANP. Directed Study. An elective course designed to provide the student with the opportunity to undertake additional guided study, research, and/or clinical experience in an area of nursing of the student's choice not otherwise available in the curriculum. Credit: 1 to 3.

811 CANP. Critical and Acute Care I: Management of Episodic/Chronic Health Problems in Critical and Acute Care Settings. This advanced practice course focuses on the care of clients-families frequently encountered in critical and acute care settings. Content includes the diagnosis and management of episodic and chronic illness, the technological assessments/diagnostic tests used to provide care in this population, the function of NP in critical and acute care settings, documentation practices and requirements, and institutional factors that influence advanced practice. Particular attention is given to providing theory and research-based comprehensive and collaborative care that takes into consideration health quality, costs, and outcomes. Consideration is also given to the sociocultural and biophysical factors that influence client-family outcomes. Pre or Co-requisites: NSG 823, CANP 812. Credit: 2 (2-0).

812 CANP. Critical and Acute Care Clinical I: Management of Episodic/Chronic Health Problems in Critical and Acute Care Settings. This course is a co-requisite for Critical and Acute Care I and provides the opportunity to implement didactic content. Students will be assigned to a preceptor based in the clinical agency or NP faculty. The student will co-manage a client case load with the NP preceptor, complete client assessments, and develop problem lists, management plans, and orders to present to the preceptor and in interdisciplinary conferences. Emphasis will be placed on cardiopulmonary problems. Students will develop psychomotor skills necessary for invasive procedures during supervised laboratory sessions and observe or participate in clinical procedures completed by the medical team or preceptor. Practical experience interpreting lab and diagnostic tests will be provided using case simulations and supervised clinical experience. Pre or Co-requisites: NSG 823, CANP 813. Credit: 3 (0-3).

813 CANP. Diagnostic Reasoning & Advanced Therapeutics. This course provides a foundation for the use of diagnostic reasoning and advanced therapeutics in the critical



and acute care settings. Diagnosis and therapeutics in the emergency situations are emphasized. Pre or Co-requisites: NSG 823. Credit: 2 (2-0).

821 CANP. Critical and Acute Care II: Management of Episodic/Chronic Health Problems in Critical and Acute Care Settings. This course expands upon the content presented in Acute Care I. Greater emphasis is placed upon the collaborative management of clients who require more sophisticated technological interventions and resource utilization. The influence of technology on client-family outcomes, health care costs, and health care quality will be addressed. Seminar discussions will include the ethical dilemmas associated with the advanced nursing care of these clients. Pre or Co-requisites: CANP 811, CANP 812. Credit: 4 (4-0).

822 CANP. Critical and Acute Care Clinical II: Episodic/Chronic Health Problems in Critical and Acute Care Settings. This course is a co-requisite Critical and Acute Care II and provides the opportunity to implement didactic content. Students will work collaboratively with an assigned preceptor and multidisciplinary health care team. Students will continue to co-manage a client case load with the NP preceptor, complete client assessments, and develop problem lists, management plans, and orders to present to the preceptor and interdisciplinary team. Students will develop collaborative plans that take into consideration current standards of care, quality, costs, outcomes, and client family biopsychosocial and cultural needs. In addition, students will manage clients with increasingly complex needs. Students will discuss the theoretical and research basis for strategies selected to manage clients-families with their preceptor and medical team. Students will also continue to refine psychomotor skills necessary for invasive procedures and perform invasive and other psychomotor skills under supervision. Pre or Co-requisites: CANP 821, CANP 812. Credit: 4 (0-4).

850 CANP. Critical and Acute Care Practicum: Management of Episodic/Chronic Health Problems in Critical and Acute Care Settings. This is the final clinical course and provides the opportunity to synthesize prior didactic content and clinical content. The practice areas selected will provide the climate for role integration. Students will work collaboratively with a preceptor and multidisciplinary health care team. Students will continue to co-manage a client case load with the preceptor, complete client assessments, and develop problem lists, management plans, and orders to present to the preceptor and interdisciplinary team. Students will develop collaborative plans that take into consideration current standards of care, quality, costs, outcomes, and client-family biopsychosocial and cultural needs. In addition, students will manage clients with the full range of complex needs. Students will discuss the theoretical and research basis for strategies selected to manage clients-families with their preceptor and medical team. Students will also continue to refine psychomotor skills necessary for invasive procedures and perform invasive and other psychomotor skills under supervision. Pre or Co-requisites: CANP 821, CANP 822. Credit: 4 (0-4).

812 MSN. Acute Care Quality Improvement. This course addresses the value of continuous quality improvement to the client/family, organization, and community. The process of insuring improved client outcomes in an acute care setting will be explicated. This course integrates current technology in continuous quality improvement data entry and analysis. Credit: 1(1-0).

821 MSN. Medical/Surgical Clinical I. This course focuses on developing skills in quality management initiatives, negotiation, conflict resolution, change management, organizational cultural assessment and consultation in an acute care setting outside the student's current practice site. Clinical assessment and diagnostic reasoning skills will be utilized to plan care for clients and families. Co-requisite MSN 822. Credit: 3 (0-3).

822 MSN. Medical/Surgical I. This course provides the foundation for developing advanced practice professional behavior including negotiation, conflict resolution, change management, consultation, and professional etiquette. Organizational culture factors that influence health care delivery are presented. This course also provides a forum for scholarly presentation and implementation of scholarly critique. Co-requisite MSN 821. Credit: 2 (2-0).

832 MSN. Medical/Surgical II. The focus of this course is care of clients with the most frequent hospital admitting diagnoses. Synthesis of literature, teaching/learning theory, consultation, and critique are emphasized. Prerequisite MSN 821, MSN 822. Credit: 2 (2-0).

825 MSN. Medical/Surgical Clinical II. This course focuses on developing skills in contract negotiation, organizational culture assessment, consultation, and needs assessment in an acute care setting outside of the student's current practice site. Clinical assessment, diagnostic reasoning, realistic standards of practice, management strategies, and resource allocation are used to plan care for clients and families. Strategies in committee development and operation will also be applied. Prerequisite/Concurrent: MSN 832. Credit: 4 (0-4).

826 MSN. Medical/Surgical III. This course focuses on literature synthesis and integration into advanced nursing practice for two acute care populations. Diagnostic reasoning, standards of practice, and multidisciplinary management strategies will be examined regarding the allocation and utilization of resources that assist patient's transition from hospital to home environments. Prerequisite/Concurrent: MSN 832, MSN 825. Co-requisite: MSN 829. Credit: 4 (4-0).

829 MSN. Medical/Surgical Clinical III. This course focuses on developing clinical expertise in assisting client's transition from the hospital to home environments. Clinical assessment, diagnostic reasoning, realistic standards of practice, in two acute care populations. Strategies in advocating for clients in an organizational culture will be analyzed. Prerequisite/Co-requisite: MSN 825, MSN 826, MSN 832. Credit: 6 (0-6).

813 PFPN. Individual and Group Patterns. This course addresses advanced psychiatric nursing practice, processes, and strategies. Foci of the course are the study of human life processes and the varying patterns that are developed in the physical, behavioral, mental, emotional, cultural, and spiritual aspects of persons and groups. Philosophical, historical, and theoretical contributions to the understanding of individual growth and development of patterns, and group phenomena are emphasized. Interventions and techniques based on the nursing assessment and specific selected theoretical perspectives are delineated. Pre or Co-requisites: NSG 613, PFPN 826, FNP 816. Credit: 2 (2-0).

814 PFNP. Individual and Group Therapies. The focus of the course is the conceptualization of theory-based advanced psychiatric practice with individual and groups. A process model for devising intervention strategies which considers cultural issues, emotional structures, functioning levels, psychological and mental health patterns and behavioral manifestations of health and illness is emphasized. Advanced levels of specialized nursing interventions are directed to mental health needs and primary health care needs of individuals of all ages and with selected groups. Pre or Co-requisites: PFNP 813, PFNP 827, PFNP 828. Credit: 2 (2-0).

815 PFNP. Family Therapy. The emphasis of the course is the theoretical basis for intervention with families with a variety of health problems. The focus of the course is the role of the psychiatric family nurse practitioner/clinical specialist in delivering care to the family unit as client. Levels of prevention in family care are emphasized. Concepts from family communications theory, family systems theory, crisis theory, family development, coping and adaptation are discussed. The clinical experiences provide opportunities to function as family therapist or co-therapist under faculty and peer-group supervision. Pre or Co-requisites: PFNP 813, PFNP 814. Credit: 3 (2-1).

833 PFNP. Specialty Consultation. The course focuses on theory underlying the practice of consultation as an indirect-care modality of the specialty. Included are factors influencing consultation, including the community, continuing education, the mental health development of consultation, liaison service, crisis intervention, interdisciplinary and interdisciplinary consultation services, and primary prevention. Supervision of consultation experience is provided. Prerequisite: PFNP 815. Credit: 4 (2-2).

660 PFNP. Directed Study. An elective course designed to provide the student with the opportunity to undertake additional guided study and/or clinical experience in an area of nursing of the student's choice not otherwise available in the curriculum. Credit: 1-3.

660 ANES. Directed Study. An elective course designed to provide the student with the opportunity to undertake guided study and/or clinical experience in the area of nursing or the student's choice not otherwise available in the curriculum. Credit: 1-3.

814 ANAT.APN Anatomy. This course provides a foundation in histology, gross anatomy, and clinical anatomy for basic science, procedures, and the delivery of anesthesia care. This course focuses on anatomy at the micro- and macro-cellular level through the inclusion of laboratory experiences. Credit: 4 (3-1).

821 PATH. Cardiovascular - Pathophysiology. This course is an overview of the cardiovascular anatomy, physiology, and pathophysiology. Anesthetic implications and techniques for the client with co-existing cardiac disease will be discussed. Prerequisite: ANES 811. Credit: 2 (2-0).

831 PATH. Neuro - Pathophysiology. This course involves a review of neuroanesthesia with an emphasis on anatomy, physiology, and pathophysiology. Lecture and discussion are focused on consideration of specific anesthetic implications associated with the various neuropathologies. Appropriate anesthetic management techniques and potential complications are discussed. Prerequisite: ANES 811. Credit: 2 (2-0).

821 ANES. Regional Anesthesia. This course focuses on advanced preparation for the administration and management of regional anesthesia. Credit: 2 (2-0).

823 ANES. Anesthetic Management for Obstetrics and Pediatrics. This course provides an overview of the anesthetic implications associated with the obstetrical and pediatric patient. Normal and abnormal pathophysiological changes of the parturient will be discussed. Management of epidural and spinal anesthesia in the laboring parturient will be examined. Management of the pediatric patient will focus on the anatomic, physiologic, and pathophysiological differences of patients from infancy through childhood. Credit: 3 (3-0).

832 ANES. Anesthesia Clinical Science III. This is the third course in a series of clinical courses that provides for progressive, guided instruction and supervision of the safe administration of anesthetics in the clinical setting. This course provides the opportunity for the student to administer anesthesia for general types of surgical procedures and/or specialty types of surgical procedures such as obstetrics. Weekly clinical conferences and case discussions are used to assist the student in conceptualizing, analyzing and evaluating various anesthesia nursing strategies as they are related to patients' specific needs. Credit: 2 (0-2).

842 ANES. Anesthesia Clinical Science IV. This is the continuation in a series of clinical courses that provides for progressive, guided instruction and supervision of the safe administration of anesthetics and the clinical management of patients undergoing anesthesia. This specific course provides additional clinical experiences in the administration of anesthesia in the general and/or specialty areas of anesthesiology. Weekly clinical conferences and case discussions are used to assist the student in conceptualizing, analyzing and evaluating various anesthesia nursing strategies as they are related to patients' specific needs. Credit: 2 (0-2).

852 ANES. Anesthesia Clinical Science V. This is the continuation in a series of clinical courses that provides for progressive, guided instruction and supervision of the safe administration of anesthetics and the clinical management of patients undergoing anesthesia. This specific course provides additional clinical experiences in the administration of anesthesia and/or specialty areas of anesthesiology. Weekly clinical conferences and case discussions are used to assist the student in conceptualizing, analyzing and evaluating various anesthesia nursing strategies as they are related to patients' specific needs. Credit: 2 (0-2).

866 ANES. Medical Physical Sciences for Anesthesia. This course provides a foundation of basic science principles for the delivery of anesthesia care, physiology and pharmacology. This course focuses on chemical and physical principles applicable to the practice of anesthesia. Credit: 3 (3-0).

867 ANES. Physiology/Pathology. This course provides a learning opportunity for the nurse anesthesia student to develop and incorporate knowledge of human normal and abnormal physiology in the management of differing pathological states. This course focuses on physiology and pathology at the micro- and macro-cellular levels. Credit: 5 (5-0).

868 ANES. Principles of Anesthesia Practice I. This course is the foundational course for nurse anesthesia practice. This course focuses on the application of theoretical basic sciences to anesthesia practice. Students will formulate anesthetic care plans based on the framework of basic sciences, pharmacology, and standards of practice. Credit: 5 (5-0).

869 ANES. Principles of Anesthesia Practice II. This course is for the examination of clinical consequences of abnormal physiology on anesthetic management in relation to patient co-morbidities and surgical procedures. This course focuses on the implementation and evaluation of appropriate anesthesia procedures relative to patient status, including co-morbidities and the surgical procedures. Students will evaluate care delivery in a simulated clinical laboratory environment. Credit: 6 (5-1).

870 ANES. Principles of Anesthesia Practice III. This course is for the examination of clinical consequences of abnormal physiology on anesthetic management states within the specialty areas of anesthesia and surgery. This course focuses on the specialty areas of anesthesia and surgery. Students will formulate anesthetic care plans based on the framework of basic sciences, pharmacology, and standards of practice. Credit: 2 (2-0)

871 ANES. Anesthesia Practicum A. This introductory level course is to integrate didactic knowledge based on the framework of basic sciences, pharmacology and standards of practice with basic practical application in nurse anesthesia. This course focuses on the student's ability to achieve a level of proficiency with PS I and II patients. Credit: 6 (0-6).

872 ANES. Anesthesia Practicum B. This course provides a clinical opportunity for the intermediate student nurse anesthetist to incorporate and integrate knowledge, skills, and objectives to a more comprehensive range of patients. The focus of this course is on the student's ability to achieve proficiency with PS I, IE, II, IIE, and III, IIIE patients. Credit: 7 (0-7).

873 ANES. Anesthesia Practicum C. This course provides a clinical opportunity for the student nurse anesthetist to incorporate and integrate knowledge, skills, and objectives to a more comprehensive range of patients. This course focuses on the student's ability to achieve a level of proficiency with PS IV, IVE, V, and VE patients. Credit: 7 (0-7).

874 ANES. Specialty Practicum A. This is the first in a series of two courses as a clinical experience for the student nurse anesthetist who has demonstrated successful completion of Anesthesia Practicum A for incorporation and integration of knowledge, skills, and objectives to the five specialty areas of anesthesia and surgery. The focus of this course is on the student's ability to achieve proficiency for obstetric, pediatric, neurosurgical, trauma, or cardiac surgical patients. Credit: 7 (0-7).

875 ANES. Specialty Practicum B. This is the second in a series of two courses as a clinical experience for the student nurse anesthetist who has demonstrated successful completion of Specialty Practicum A for incorporation and integration of knowledge, skills, and objectives to the five specialty areas of anesthesia and surgery. This course focuses on the student's ability to achieve proficiency for obstetric, pediatric, neurosurgical, trauma, or cardiac surgical patients. Credit: 7 (0-7).

## **Nursing Advance Practice Selectives**

811 NAPS. Women's Health. The focus of this course is on gender-specific health care for women across the life span and from diverse populations. Theoretical and research literature will be used to examine factors that predispose women to specific health needs, health problems, and health care outcomes. Current and future health care will be examined in terms of legal, ethical, political and health policy issues. Health promotion, disease prevention, and health care interventions will be examined in order to formulate and test advanced practice standards in general health care of women. For persons with selected backgrounds, this is one of a series of three courses that, with a residency in woman's health, may be used to meet the requirements for certification as a Woman's Health Nurse Practitioner. Credit: 4 (2-2).

812 NAPS. Women's Reproductive Health. Reproductive health care of women across the life span and from diverse populations will be addressed. Specific emphasis will be give prior to, during, and after pregnancy. Theoretical and research literature will be used to examine factors that predispose women to specific reproductive health needs, health problems, and health care outcomes. Current and future health care will be examined in terms of legal, ethical, political and health policy issues. Health promotion, disease prevention, and health care interventions will be examined in order to formulate and test advanced practice standards in reproductive health care. For persons with selected backgrounds, this is one of a series of three courses that, with a residency in woman's health, may be used to meet the requirements for certification as a Woman's Health Nurse Practitioner (WHNP). Credit: 4 (2-2).

821 NAPS. Gynecologic Health. Gynecologic health care of women across the life span and from diverse populations will be addressed. Theoretical and research literature will be used to examine factors that predispose women to specific gynecologic health needs, health problems, and health care outcomes. Current and future health care will be examined in terms of legal, ethical, political and health policy issues. Health promotion, disease prevention, and health care interventions will be examined in order to formulate and test advanced practice standards in gynecologic health care. For persons with selected backgrounds, this is one of a series of three courses that, with a residency in woman's health, may be used to meet the requirements for certification as a Woman's Health Nurse Practitioner (WHNP). Credit: 4 (2-2).

813 NAPS. PNP I: Primary Care of Children. This is the first in a series of three courses that prepare students for certification as a pediatric nurse practitioner. This course may also be taken with permission of the instructor for students who desire advanced clinical preparation in a select area of primary care of children. The course is designed to provide a theoretical & clinical base for defining a model of pediatric nursing practice in primary care. Care of the child is viewed in terms of primary and secondary prevention and assisting the child and family to an optimal level of wellness. Major developmental theories will be reviewed with an age-related focus on assessment of normal stages, tasks, and needs of specific age groups. Emphasis will be placed on anticipatory guidance for parents accompanying each stage, and the role of the nurse in promoting a healthy life style and developmental outcomes. Students explore developmental theories

and review selected health and developmental assessment tools for use in clinical practice. Credit: 4 (2-2).

823 NAPS. PNP II: Common Childhood Illness. This course is the second in series of three courses that prepare the student for certification as a pediatric nurse practitioner. This course may also be taken with permission of the instructor for students who desire advanced clinical preparation in a select area of common childhood illness. This course focuses on the scientific knowledge and research base necessary for advanced practice with children and their families. Emphasis will be placed on the development of expert knowledge in primary care of children with common childhood illnesses and will use a variety of concepts, theories and research findings to develop a practice model for implementation and evaluation. Credit: 4 (2-2).

833 NAPS. PNP III: Chronic Illness. This is the third in a series of three courses that prepare students for certification as a pediatric nurse practitioner. This course may also be taken with permission of the instructor for students who desire advanced clinical preparation in a select area of chronic illness. This course focuses on the scientific knowledge and research base necessary for advanced practice with children and their families. Emphasis will be placed on the development of expert knowledge in primary care of children with chronic conditions and will use a variety of concepts, theories and research findings to develop a practice model for implementation and evaluation. Credit: 4 (2-2).

822 NAPS. College Health. The focus of this course is on the theoretical and clinical content specific to college health. Theoretical and research literature will be used to examine factors that predispose students to specific health needs, health problems and health outcomes. Current and future health care will be examined in terms of legal, ethical, political and health policy issues. Health promotion, disease prevention and health care interventions will be examined in order to formulate and test advanced practice standards in college health. Credit: 4 (2-2).

824 NAPS. Occupational Health. The focus of this course is on the theoretical and clinical content specific to occupational health. Theoretical and research literature will be used to examine factors that predispose employees to specific health needs, health problems and health outcomes. Current and future health care will be examined in terms of legal, ethical, political and health policy issues. Health promotion, disease prevention and health care interventions will be examined in order to formulate and test advanced practice standards in occupational health. Credit: 4 (2-2).

845 NAPS. Nursing Administration I. The focus of this course is on the theoretical and clinical content specific to the administration and management of nursing delivery systems in health care organizations. Theoretical and research literature will be used to examine current issues in nursing administration. Selected nursing delivery systems will be analyzed through literature review, discussions, interviews, and learning experiences in practice settings. Credit: 4 (2-2).

846 NAPS. Nursing Administration II. The focus of this course is on the theoretical and clinical content specific to the administration and management of health care organizations. Theoretical and research literature will be used to examine current issues

in health care administration. Selected health care delivery systems will be analyzed through literature review, discussions, interviews, and selected learning experiences in practice settings. Credit: 4 (2-2).

847 NAPS. Nursing Administration III. The focus of this course is on the theoretical and clinical content specific to an administration and management area selected by the student with the approval of faculty. Theoretical and research literature will be used to examine current issues in the selected area of nursing or health care administration. The selected area or concept will be analyzed through literature review, discussions, interviews, and selected learning experiences in practice settings. Credit: 4 (2-2).

852 NAPS. Chronic Health Problems. Chronic health problems and family, social, economic and functional implications will be addressed in order to examine health care delivery and to make recommendations for the delivery of advanced nursing practice. Theoretical and research literature will be used to address demographic, socioeconomic, cultural, family and other conditions and their effect on persons with selected chronic health problems. Secondary and tertiary disease prevention and interventions for selected chronic health problems will be examined in order to formulate and test advanced practice standards of care. This course may be repeated up to three times. Credit: 4 (2-2).

814 NAPS. Integration of Psychiatric/Mental Health Nursing in Health Care. The purpose of this course is to address integration of the advanced practice psychiatric/mental health nursing care into health care. Mental health needs are examined in a broad context including family, community, society, and the political and economic forces that relate to health care. Theoretical and research literature is used to examine current issues in the integration of psychiatric/mental health care by health care providers. Integrative delivery systems for psychiatric/mental health care for selected populations are analyzed through literature review, discussions, interviews, and learning experiences in practice settings to identify major influences in the delivery of psychiatric/mental health care. Credit: 4 (2-2).

848 NAPS. Gerontology: Common Health Problems. Common health problems and functional implications in the aging process will be addressed in order to examine health care delivery and social implications of aging and to make recommendations for the delivery of advanced nursing practice. Theoretical and research literature will be used to address demographic, socioeconomic, cultural, family, and other conditions and their effect on older adults with selected common health problems. Secondary and tertiary disease prevention and interventions for selected common health problems will be examined in order to formulate and test advanced practice standards of care. Credit: 4 (2-2).

849 NAPS. Gerontology: Frail Older Adults. Health problems and functional implications for frail older adults will be addressed in order to examine health care delivery and social implications of aging and to make recommendations for the delivery of advanced nursing practice. Theoretical and research literature will be used to address demographic, socioeconomic, cultural, family and other conditions and their effect on frail older adults in the community and in the nursing home. Health promotion, primary, secondary, and tertiary disease prevention and interventions for selected health problems



of frail older adults will be examined in order to formulate and test advanced practice standards of care. Credit: 4 (2-2).

851 NAPS. Gerontology: Well Older Adults. Normal aging changes and functional implications of the aging process will be addressed in order to examine health care delivery and social implications of aging and to make recommendations for the delivery of advanced nursing practice. Theoretical and research literature will be used to address demographic, socioeconomic, cultural, family and other conditions that predispose older adults to selected health problems. Health promotion, disease prevention and interventions for selected health problems will be examined in order to formulate and test advanced practice standards of care. Credit: 4 (2-2).

853 NAPS. Evaluation: Psychiatric/Mental Health Care. This course focuses on the theoretical and clinical content specific to a well-defined area in the delivery of psychiatric/mental health care. The problem area is analyzed using the research and theoretical literature, practice in the area, and other means of inquiry. Strategies for implementing and evaluating change appropriate for the area of study are reviewed for their applicability. The utility of these strategies is analyzed from multiple perspectives (economic, patient, health care provider, legal/ethical issues, significance, etc). Clinical practice may occur in a variety of settings related to the area in psychiatric/mental health nursing studied. Credit: 4 (2-2).

854 NAPS. Management of Selected Psychiatric/Mental Health Problems. This course is designed to build on the previous knowledge and experiences of the student integrating mental health/psychiatric nursing in a selected health care delivery system. Content focuses on the management of selected psychiatric/mental health problems and the issues and theories related to clinical practice that influence the delivery of psychiatric/mental health nursing care. Strategies for care are further analyzed using the available standards and guidelines for practice and the research and theoretical literature. Recommendations for change in clinical practice are developed based on the analysis. Clinical practice occurs in health care settings providing services to clients with the selected psychiatric/mental health problems of interest. Credit: 4 (2-2).

815 NAPS. Anesthesia. This course examines the basic anesthetic principles associated with the broad practice of anesthesia. The theoretical components of the coursework will be related to the specialty area of anesthesia. Credit: 4 (2-2).

816 NAPS. Obstetrical Anesthesia. This course is the first in a series of two practice selectives that focuses on the practice of obstetrical anesthesia. The course examines the effectiveness of the specialty within the practice and explores common clinical issues related to the practice of obstetrical anesthesia. Credit: 4 (2-2).

817 NAPS. Advanced Obstetrical Anesthesia. This course is the second in a series of two practice selectives focusing on the practice of obstetrical anesthesia. This course will examine complex clinical practice issues of obstetrical anesthesia. In addition, the course will discuss the effectiveness of healthcare system policies on the current practice of obstetrical anesthesia. Credit: 4 (2-2).

818 NAPS. Cardiovascular Anesthesia. This course is the first in a series of two practice selectives that focuses on the practice of cardiovascular anesthesia. The course examines the effectiveness of the specialty within the practice and explores common clinical issues related to the practice of cardiovascular anesthesia. Credit: 4 (2-2).

819 NAPS. Advanced Cardiovascular Anesthesia. This course is the second in a series of two practice selectives focusing on the practice of cardiovascular anesthesia. This course will examine complex clinical practice issues of cardiovascular anesthesia. In addition, the course will discuss the effectiveness of healthcare system policies on the current practice of cardiovascular anesthesia. Credit: 4 (2-2).

825 NAPS. Neuro Anesthesia. This course is the first in a series of two practice selectives that focuses on the practice of neuro anesthesia. The course examines the effectiveness of the specialty within the practice and explores common clinical issues related to the practice of neuro anesthesia. Credit: 4 (2-2).

826 NAPS. Advanced Neuro Anesthesia. This course is the second in a series of two practice selectives focusing on the practice of neuro anesthesia. This course will examine complex clinical practice issues of neuro anesthesia. In addition, the course will discuss the effectiveness of healthcare system policies on the current practice of neuro anesthesia. Credit: 4 (2-2).

827 NAPS. Pediatric Anesthesia. This course is the first in a series of two practice selectives that focuses on the practice of pediatric anesthesia. The course examines the effectiveness of the specialty within the practice and explores common clinical issues related to the practice of pediatric anesthesia. Credit: 4 (2-2).

828 NAPS. Advanced Pediatric Anesthesia. This course is the second in a series of two practice selectives focusing on the practice of pediatric anesthesia. This course will examine complex clinical practice issues of pediatric anesthesia. In addition, the course will discuss the effectiveness of healthcare system policies on the current practice of pediatric anesthesia. Credit: 4 (2-2).

829 NAPS. Geriatric Anesthesia. This course is the first in a series of two practice selectives that focuses on the practice of geriatric anesthesia. The course examines the effectiveness of the specialty within the practice and explores common clinical issues related to the practice of geriatric anesthesia. Credit: 4 (2-2).

831 NAPS. Advanced Geriatric Anesthesia. This course is the second in a series of two practice selectives focusing on the practice of geriatric anesthesia. This course will examine complex clinical practice issues of geriatric anesthesia. In addition, the course will discuss the effectiveness of healthcare system policies on the current practice of geriatric anesthesia. Credit: 4 (2-2).

832 NAPS. Forensic Nursing. The focus of this course is on the practice of forensic nursing. The course examines the advanced practice nurse role, common clinical issues, and implementation of care standards in the practice of forensic nursing. This selective builds on nurse practitioner or clinical nurse specialist preparation. Credit: 4 (2-2).

834 NAPS. Rural Anesthesia. This course is the first in a series of two practice selectives that focuses on the practice of rural anesthesia. The course examines the effectiveness of the specialty within the practice and explores common clinical issues related to the practice of rural anesthesia. Credit: 4 (2-2).

835 NAPS. Advanced Rural Anesthesia. This course is the second in a series of two practice selectives focusing on the practice of rural anesthesia. This course will examine complex clinical practice issues of rural anesthesia. In addition, the course will discuss the effectiveness of healthcare system policies on the current practice of rural anesthesia. Credit: 4 (2-2).

836 NAPS. Outpatient Anesthesia. This course is the first in a series of two practice selectives that focuses on the practice of outpatient anesthesia. The course examines the effectiveness of the specialty within the practice and explores common clinical issues related to the practice of outpatient anesthesia. Credit: 4 (2-2).

837 NAPS. Advanced Outpatient Anesthesia. This course is the second in a series of two practice selectives focusing on the practice of outpatient anesthesia. This course will examine complex clinical practice issues of outpatient anesthesia. In addition, the course will discuss the effectiveness of healthcare system policies on the current practice of outpatient anesthesia. Credit: 4 (2-2).

838 NAPS. Pain Management. This course is the first in a series of two practice selectives that focuses on the practice of pain management in anesthesia. The course examines the effectiveness of the specialty within the practice and explores common clinical issues related to the practice of pain management in anesthesia. Credit: 4 (2-2).

839 NAPS. Advanced Pain Management. This course is the second in a series of two practice selectives focusing on the practice of pain management in anesthesia. This course will examine complex clinical practice issues of pain management. In addition, the course will discuss the effectiveness of healthcare system policies on the current practice of pain management in anesthesia. Credit: 4 (2-2).

841 NAPS. Trauma Anesthesia. This course is the first in a series of two practice selectives that focuses on the practice of trauma anesthesia. The course examines the effectiveness of the specialty within the practice and explores common clinical issues related to the practice of trauma anesthesia. Credit: 4 (2-2).

842 NAPS. Advanced Trauma Anesthesia. This course is the second in a series of two practice selectives focusing on the practice of trauma anesthesia. This course will examine complex clinical practice issues of trauma anesthesia. In addition, the course will discuss the effectiveness of healthcare system policies on the current practice of trauma anesthesia. Credit: 4 (2-2).

843 NAPS. General Practice of Anesthesia. This course is the first in a series of two practice selectives that focuses on the general practice of anesthesia. The course examines the effectiveness of the specialty within the practice and explores common clinical issues related to the general practice of anesthesia. Credit: 4 (2-2).

844 NAPS. Advanced General Practice of Anesthesia. This course is the second in a series of two practice selectives focusing on the general practice of anesthesia. This course will examine complex clinical practice issues of the general practice of anesthesia. In addition, the course will discuss the effectiveness of healthcare system policies on the current general practice of anesthesia. Credit: 4 (2-2).

855 NAPS. Cardiovascular Health in the Neonate. Neonatal health care outcomes specifically related to cardiovascular health will be addressed. Theoretical and research literature will be used to examine factors that predispose neonates to specific cardiovascular health needs and problems. Current and future health care delivery will be examined in terms of legal, ethical, political, and health policy issues. Health promotion, disease prevention, and health care interventions will be examined in order to formulate and test advanced practice standards in neonatal health care. This selective builds on master's preparation as a Neonatal Nurse Practitioner (NNP). Credit: 4 (2-2).

856 NAPS. Infectious Diseases in the Neonate. Neonatal health care outcomes specifically related to infectious diseases will be addressed. Theoretical and research literature will be used to examine factors that predispose neonates to specific problems related to infectious diseases. Current and future health care will be examined in terms of legal, ethical, political, and health policy issues. Health promotion, disease prevention, and health care interventions will be examined in order to formulate and test advanced practice standards in neonatal health care. This selective builds on master's preparation as a Neonatal Nurse Practitioner (NNP). Credit: 4 (2-2).

857 NAPS. Risk Factors for Neonatal Health. Neonatal health care outcomes specifically related to the prenatal/perinatal period will be addressed. Theoretical and research literature will be used to examine factors that predispose neonates to specific health needs and problems. Current and future health care delivery will be examined in terms of legal, ethical, political, and health policy issues. Health promotion, disease prevention, and health care interventions will be examined in order to formulate and test advanced practice standards in neonatal health care. This selective builds on master's preparation as a Neonatal Nurse Practitioner (NNP). Credit: 4 (2-2).

858 NAPS. Acute Hypertension Management. The focus of this course is on the management of acute hypertension. The course examines the advanced practice nurse role, common clinical issues, and implementation of care standards in the practice of managing acute hypertension. This selective builds on nurse practitioner or clinical nurse specialist preparation. Credit: 4 (2-2).

859 NAPS. Trauma Nursing. The focus of this course is on the practice of trauma nursing. The course examines the advanced practice nurse role, common clinical issues, and implementation of care standards in the practice of trauma nursing. This selective builds on nurse practitioner or clinical nurse specialist preparation. Credit: 4 (2-2).

861 NAPS. Acute Care Quality Assurance. The course focuses on acute care quality assurance nursing. The course examines the advanced practice nurse role, common clinical issues, and implementation of care standards in the acute care setting. This selective builds on nurse practitioner or clinical nurse specialist preparation. Credit: 4 (2-2).

862 NAPS. Acute Surgical Nursing. The focus of this course is on the practice of acute surgical nursing. The course examines the advanced practice nurse role, common clinical issues, and implementation of care standards in the practice of acute surgical nursing. This selective builds on nurse practitioner or clinical nurse specialist preparation. Credit: 4 (2-2).

863 NAPS. Acute Care Nursing. The focus of this course is acute care nursing. From within this broad framework, the student will choose a focus of study that will involve the advanced practice nurse role, common clinical issues, and implementation of care standards in the practice of acute care nursing. This selective builds on the student's preparation as an advanced practice nurse. Credit: 4 (2-2).

864 NAPS. Public Health. The focus of this course is public health. From within this broad framework, the student will choose a focus of study that will involve population and/or aggregate focused nursing practice. Historical and current scientific literature will be used to determine the scope of practice, evaluation of community needs, development of appropriate interventions, and methods for evaluating the results. Legal, social, ethical, political, and health policy implications will be analyzed. Credit: 4 (2-2).

865 NAPS. Assessment Management of Psychiatric/Mental Health Problems. This course is the first in a series that are designed for students entering the Psychiatric/Mental Health Nursing Option and develops a framework of knowledge, skills, and experience to care for individual and groups with complex psychiatric-mental health problems and promote mental health within our society. The course builds on the student's knowledge and experiences as a nurse practitioner, expanding the scope of nursing practice to those at risk or in need of psychiatric/mental health services. Clinical experiences with individuals and groups occur in primary care and/or traditional mental health settings and focus on recognition and assessment of mental disorders and mental health problems based on DSM-IV (TM) criteria, evidence-based guidelines and literature, scope and standards of advanced level psychiatric mental health nursing practice, theories of counseling and psychotherapy, and developmental theory. Students master documentation methods that meet the legal-ethical requirements of the role of the Advanced Practice Nurse-Psychiatric Mental Health in the health care system. Credit: 4 (2-2).

866 NAPS. Management of Psychiatric Mental Health Problems. This course builds upon previous content in the Psychiatric/Mental Health Nursing Option to develop a framework of knowledge, skills, and experience to care for individuals and groups with complex psychiatric-mental health problems and promote mental health within our society. The focus is the conceptualization of theory based advanced psychiatric nursing practice with individuals and groups. Clinical experiences with individuals across the age continuum occur in primary care and/or traditional mental health settings, applying evidence-based guidelines using clinical judgment, scope and standards of advanced level psychiatric mental health nursing practice, theories of counseling and psychotherapy, developmental theory and pharmacological interventions. Credit: 4 (2-2).

867 NAPS. Injury-Prevention and Treatment Applied to Individuals. This course focuses on the biopsychosocial effects of injury and the culturally competent methods of prevention and treatment applied to individuals, both as victims and offenders, as well as their families, across the life span. Credit: 4 (2-2).

868 NAPS. Injury-Prevention and Treatment Applied to Populations. This course will continue to focus on models of prevention of injury populations within the context of environment and culture. Social, cultural, economic, political, and policy components which contribute to injury of vulnerable populations across the lifespan will be systematically examined in order to generate models of intervention. On completion of the course, the student will be prepared to select the focus of research for the resident practicum and dissertation. Credit: 4 (2-2).

871 NAPS. Primary Care Nursing. The focus of this course is primary care nursing. From within this broad framework, the student will choose a focus of study that will involve the advanced practice nurse role, common clinical issues, and implementation of care standards in the practice of primary care nursing. This selective builds on the student's preparation as an advanced practice nurse. Credit: 4 (2-2).

870 NAPS. Acute Care Nurse Practitioner. The focus of this course is the care of adult clients/families frequently encountered in the critical and acute care setting by the acute care nurse practitioner. Content includes the acute care nurse practitioner role, common clinical issues, and implementation of care standards in the practice of acute care nursing. This selective builds on the student's preparation as an advanced practice nurse. Credit: 4 (2-2).

## COLLEGE OF NURSING FACULTY LISTING

Virginia Betts, JD  
*Professor*

Patricia Cowan, PhD  
*Associate Professor*

Michael Carter, DNSc  
*University Distinguished Professor*

Patricia Cunningham, DNSc  
*Associate Professor*

Ann Cashion, PhD  
*Professor and Chair, Acute Care*

Carolyn Graff, PhD  
*Associate Professor and Director PhD Program*

Veronica Engle, PhD  
*Professor*

Susan Patton, DNSc  
*Associate Professor*

Margaret Hartig, PhD  
*Professor and Chair, Primary Care and Public Health*

Rebecca Winsett, PhD  
*Associate Professor*

Donna Hathaway, PhD  
*Professor and Dean*

Lanny Coker, DNSc  
*Assistant Professor*

Susan Jacob, PhD  
*Professor and Executive Associate Dean*

Margaret Harvey, PhD  
*Assistant Professor*

Carol Lockhart, PhD  
*Professor*

Lynn Kirkland, DNSc  
*Assistant Professor*

Sheila Melander, DSN  
*Professor*

Wendy Likes, DNSc  
*Assistant Professor*

Karen Olson, PhD  
*Professor*

Leslie McKeon, PhD  
*Assistant Professor*

Cynthia Russell, PhD  
*Professor*

Tommie Norris, DNSc  
*Associate Professor and Director, Professional Entry Program*

Cheryl Stegbauer, PhD  
*Professor and Associate Dean for Academic Affairs*

Dwayne Accardo, DNP  
*Assistant Professor*

Carol Thompson, PhD  
*Professor*

Kathleen McCoy, DNP  
*Assistant Professor*

Peggy Veaser, EdD  
*Professor and Director*

Jill Detty Oswaks, DNSc  
*Assistant Professor*

Mona Wicks, PhD  
*Professor and Associate Dean for Research*

Julie Overby, MSN  
*Instructor*

Jacqueline Burchum, DNSc  
*Associate Professor*

Zoila Sanchez, PhD  
*Assistant Professor*

Patricia Speck, DNSc  
*Assistant Professor*

Sherry Webb, DNP  
Assistant Professor  
Cindy Adymy, MSN  
*Instructor*

Hallie Bensinger, MSN  
*Instructor*

Teresa Britt, MSN  
*Instructor*

Alise Farrell, MSN  
*Instructor*

Kathleen Gaffney, MSN  
*Instructor*

Irma Jordan, MSN  
*Instructor*

Sandra Madubonwu, MSN  
*Instructor*



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# COLLEGE OF PHARMACY

847 Monroe Avenue, Suite 226  
Memphis, Tennessee 38163

**Dick R. Gourley, Pharm. D., Dean**

James C. Eoff III, Pharm. D., Executive Associate Dean

Duane D. Miller, Ph.D., Associate Dean for Research and Graduate Programs and  
Chair, Department of Pharmaceutical Sciences

Glen E. Farr, Pharm. D., Associate Dean for Continuing Education and East Tennessee

Peter A. Chyka, Pharm. D., Associate Dean, Knoxville Campus

Debbie C. Byrd, Pharm. D., Assistant Dean, Knoxville Campus

David K. Solomon, Pharm. D., Associate Dean for VA and Hospital Affairs

George C. Wood, Ph.D., Associate Dean for Academic Affairs

Bobby Thomas, M.P.A., Assistant Dean for Administration

Raoul A. Arreola, Ph.D., Assistant Dean for Assessment

D. Todd Bess, Pharm. D., Assistant Dean, Nashville

Richard A. Helms, Pharm. D., Chair, Department of Clinical Pharmacy

John Autian, Ph.D., Professor and Dean Emeritus

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# GENERAL INFORMATION

## History

The School of Pharmacy was organized in 1898 as a part of The University of Tennessee, Knoxville and in 1906 was transferred to the Department of Medicine at the University of Nashville. In 1909, the School of Pharmacy became a part of the College of Physicians and Surgeons in Memphis and since 1911 has been an integral part of the UT Health Science Center in Memphis.

The College of Pharmacy designation was made in 1959, consistent with the other colleges of The University of Tennessee Health Science Center.

Historically, the College of Pharmacy has been greatly influenced by its location in the Health Science Center in close proximity to a wide spectrum of health facilities. In recent years, deliberate efforts have been made to integrate the teaching, research and service programs of the College with similar activities of sister colleges, hospitals and health facilities throughout the city and the state. These efforts have made possible the extension of the professional and postgraduate programs to embrace clinical and advanced professional training.

The College also has a new campus in Knoxville and Clinical Education Centers in Kingsport and Nashville as part of the statewide commitment to pharmacy education and public service. These units assist in coordinating continuing education and professional experience programs for practitioners and students.

## Programs of Study

The Doctor of Pharmacy degree is granted upon successful completion of the professional curriculum and compliance with the requirements of the University for graduation.

Graduate study is offered in the Department of Pharmaceutical Sciences as part of the College of Graduate Health Sciences with emphasis in the areas of medicinal chemistry, pharmaceutical technology, or health sciences administration. A dual Pharm. D./Ph.D. program is available to select students. Postgraduate fellowships and residencies are also offered by the Department of Pharmacy.

## Doctor of Pharmacy Degree

The College of Pharmacy offers the Doctor of Pharmacy degree (Pharm. D.) This is an entry-level professional doctorate similar to that of other health sciences (e.g., Medicine, Dentistry, Optometry). The course of instruction covers eight semesters over four academic years (see Curriculum).

The curriculum includes lecture and laboratory courses, and a strong clinical component. Clinical instruction is emphasized in the third and fourth years of the

curriculum to provide the student with experiential training both in traditional practice settings of community and hospital pharmacy as well as advanced clinical roles in internal medicine, pediatrics, mental health, parenteral nutrition, ambulatory care, and other specialty areas.

Students will gain a general competence in all basic required areas as well as have an opportunity to take advanced elective clerkships, externships, and courses in their area of interest.

Students may be required to complete a portion of the clerkship and externship experiences outside Memphis. These experiences may be at one of several locations throughout the state. International professional experiences are available to a limited number of students in England, New Zealand, Australia, Japan, Spain, Ireland, Sweden, Hungary, The Netherlands, Thailand, and France.

## **Faculty**

The faculty is organized to constitute functional units in the major disciplines of the pharmacy curriculum. In addition to the full-time and part-time members of the College of Pharmacy, teaching personnel includes faculty of the College of Medicine, the College of Dentistry and the Graduate School of the University.

## **National Standing**

The College of Pharmacy is fully accredited by the Accreditation Council on Pharmaceutical Education. The College is a member of the American Association of Colleges of Pharmacy and is fully recognized by all states, thus qualifying its graduates to be eligible for all state Board of Pharmacy examinations. The College's continuing education program, offering seminars and independent study courses throughout the state, is approved by the Accreditation Council on Pharmaceutical Education as a provider of continuing education.

## **Alumni Affairs**

The Pharmacy Alumni Association of The University of Tennessee sponsors programs and projects that are beneficial to the College, the University and the profession. Pharmacy graduates automatically become members of the University of Tennessee National Alumni Association and receive the news publications and other services of the Alumni Office.

## **Admission Requirements**

The first three years of the pharmacy program consist of a pre-professional curriculum completed in a university or a college that holds membership in its regional association. Courses for the pre-pharmacy curriculum are not offered at The University of Tennessee Health Science Center. In order to be admitted to the College of Pharmacy, a student must have completed 90 semester hours of required course work at an accredited institution (see Pre-pharmacy Curriculum).

The quality of work completed in the pre-pharmacy curriculum must have been such as to predict success in a professional school. A grade of “C” or above must be achieved for each required pre-pharmacy course and the overall academic average for all courses completed must not be less than a 2.5 on a 4.0 scale. In addition, the student must satisfactorily complete the national Pharmacy College Admission Test (PCAT).

A minimum 40th percentile score with individual subject area percentile scores not less than 25 is required for interview. The minimum percentile score is not a competitive score. Students should take the exam (PCAT) in June, August, or October of the third pre-professional year. The January test date should be reserved should the applicant be required to retake the exam. To apply for the PCAT testing, contact Harcourt Assessment at [www.PCATweb.info](http://www.PCATweb.info). Personal interviews and a minimum of three letters of recommendation are also required as a part of the admission process.

It should not be assumed that completion of the minimal course requirements assures admission to the College. Admission is through a Committee on Admissions and is based on the overall qualifications of the applicant. Academic record, references and information included in the application are all considered. Any candidate may be required to complete additional course work without regard to his academic average at the time of evaluation. Admission is in the fall semester only, beginning in mid August.

Twelve hours of electives must be scheduled in the social sciences and humanities (e.g., Sociology, Economics, Political Science, History, etc.) The remaining fourteen hours of electives may be scheduled in the natural sciences, business administration, humanities or other areas pertinent to the individual’s personal or professional interest. Should there be questions relative to the completion of prerequisite courses, please communicate with the Office of Admissions, College of Pharmacy; The University of Tennessee Health Science Center; Memphis, TN 38163 Telephone (901) 448-6120.

## Prepharmacy Curriculum\*

### Prerequisite Courses:                      Credit Hours

#### BIOLOGY SEQUENCE

General Biology/Zoo 1 & 2* .....	8
Anatomy-Physiology 1 & 2 ** .....	8
Microbiology *** .....	4
Immunology .....	3

#### CHEMISTRY SEQUENCE

General Chemistry 1 & 2 .....	8
Organic Chemistry 1 & 2 .....	8
Biochemistry 1 & 2 **** .....	6

#### MATH & OTHER SCIENCE

Statistics .....	3
Calculus .....	3
Physics .....	4

## ENGLISH

English Composition .....6  
Communications/Speech .....3

## ELECTIVES

Social Science Electives 6 (Sociology, Psychology, Political Science, Economics)

Humanities Electives 6 (Literature, Language, History, Philosophy)

General Electives 14 (Any courses &/or specific undergraduate requirements)

## TOTAL CREDIT HOURS: 90

- \* Botany cannot be substituted for the general biology/zoology requirement.
- \*\* Human anatomy & human physiology may be taken as separate courses totaling 8 hours. If the college attended is on quarters, the two courses may only total 7 hours.
- \*\*\* Microbiology may only be available as a 3-hour course (while the 4-hour course is preferred, the 3-hour course will be acceptable IF a lab is included)
- \*\*\*\* Biochemistry lab is NOT required, but recommended. If the college attended only offers ONE general biochemistry course, you can replace the Biochemistry 2 requirement with an additional upper level biology course such as Cell Biology or Genetics.

An undergraduate degree is valuable and the majority of students accepted to the College of Pharmacy have a degree prior to admission. However, if you are able to successfully complete all 90 hours of pre-requisite courses within 3 academic years you should apply to the College during the 3rd year of your pre-requisites.

## Corequisites

All students must show evidence of being certified as competent in cardiopulmonary resuscitation (CPR) before progressing to the second term of the first professional year and must be recertified in their third professional year by a health promotion/heart saver course instructor. If students fail to be certified they will not be allowed to register for the next academic year.

## Advanced Placement Credit

Advanced placement in pre-professional subjects is accepted under the following guidelines:

1. Advanced placement will be accepted for subject examinations with a minimum score of three (3) and in the sciences a minimum grade of B in the equivalent number of hours of advanced course work in the subject (Test scored: 1 to 5).
2. College Level Examination Program (CLEP) subject examinations will be accepted with minimum grade of B and in the sciences a minimum grade of B in an equivalent number of hours of advanced course work in the subject.

3. Advanced placement policies of institutions for ACT and SAT credit will be accepted with minimum 90 percentile (college bound norms) and in sciences, a minimum grade of B in an equivalent number of hours of advanced course work in the subject.
4. Advanced credit test scores must be forwarded to The University of Tennessee Health Science Center, Office of Enrollment Services, by the testing agency.

## **Application Process**

Requests for admission to the Doctor of Pharmacy Program should be directed to the Pharmacy College Admission Service (PharmCAS) following the second year of pre-professional work. Application must be submitted online upon completion of two years of pre-pharmacy requirements and should be submitted no later than February 1 of the year in which admission is desired. In addition to the PharmCAS application, a supplemental application is required by the College. The PharmCAS and supplemental application forms must be completed by the candidate, along with appropriate nonrefundable fees.

## **Transfer Process**

Admission on an advanced standing basis is dependent on the availability of a position in the class. An applicant requesting admission as an advanced standing student, in consideration of courses completed satisfactorily in another pharmacy school, must present credentials duly certified by the proper authorities, as follows:

1. Honorable dismissal from the College(s) previously attended including satisfactory discharge of all financial obligations toward said institutions. A letter of good standing from the dean of the school will suffice.
2. Transcripts of grades for all courses pursued in other institutions, pre-pharmacy, and professional programs.

In addition, the applicant should provide:

3. Pharmacy College Admission Test (PCAT) scores.
4. Three letters of recommendation.
5. Course descriptions from current pharmacy curriculum.
6. Applicants for advanced standing will be required to appear for a personal interview.

Students from schools holding membership in the American Association of Colleges of Pharmacy will be allowed full course or subject credit for all courses completed satisfactorily. The last two years of study must be in The University of Tennessee Health Science Center, College of Pharmacy.

## **Academic Policies and Procedures**

### **Academic Standing and Promotions**

Student performance is evaluated through examinations by faculty members during each semester. Additionally, at the end of each semester a final examination period of five

days is provided. Written examinations on each subject taught during the preceding semester may be given during this period.

No student will be excused from an announced final examination except:

1. If illness of the student prevents taking an examination, the student must present a certificate from the University physician stating the fact; or
2. If illness or death in the family makes it necessary for the student to miss an examination, the facts must be presented in writing to the instructor of the course.

Each student's performance is determined by senior instructors or course coordinators of the subjects for which they registered. Students who meet the course(s) requirements will be promoted in the subsequent term.

The Academic Standing and Promotions Review Committee continually monitor the student's overall performance. The Committee adjudicates within the framework of the following guidelines:

Academic probation will be imposed upon a student when the student's academic performance meets either or both of the following conditions:

1. The grade point average earned at the conclusion of the first semester of the first professional year, or the cumulative grade point average at the conclusion of any semester thereafter, is less than 2.33.
2. The grade point average earned for any one semester is less than 2.00.

A period of academic probation will be in effect during the semester immediately following the conclusion of the semester in which the student's academic performance meets either or both of the conditions for imposition of probation. If at the conclusion of the semester during which a period of probation is in effect the student's academic performance continues to meet either or both of the conditions for imposition of probation, another period of probation will be imposed. If at the conclusion of the semester during which a period of probation is in effect the student's academic performance no longer meets either or both of the conditions for imposition of probation, another period of probation will not be imposed.

Conditions of academic probation will apply to a term of academic probation imposed upon a student.

1. During any term of probation, a student may not be elected to any office in any College recognized organization, and will not be eligible for College paid travel.
2. The following additional conditions shall apply to a student on probation two or more times.
  - a. Must resign any and all office(s) held in a College recognized organization(s).
  - b. Is not permitted to represent the College in any official capacity.

## **Imposition of Academic Probation**

Academic Probation will be imposed upon a student when the student's academic performance meets either or both of the following conditions:

1. The grade point average earned at the conclusion of the first semester of the first professional year, or the cumulative grade point average at the conclusion of any semester thereafter, is less than 2.33.
2. The grade point average earned for any one semester is less than 2.00.

## **Academic Dismissal Recommendation**

A student will be subject to dismissal recommendation when any one or more of the following conditions are met:

1. Academic performance at the conclusion of any semester is so poor as to predict strongly an inability to meet the overall requirements of the curriculum. It is recognized that this situation is most likely to occur during the first professional year, and may occur without a probationary period being imposed.
2. A period of probation is imposed for a second time and the cumulative grade point average is less than 2.33.
3. A period of probation is imposed for a third time, regardless of the cumulative grade point average.
4. A student who receives two or more final course grades of "D" or "F" in consecutive semesters OR a total of 3 or more final course grades of "D" or "F" throughout the curriculum regardless of GPA.

In addition, the minimum acceptable grade for any course attempted is a D. Courses in which an F is earned, both the original F in a course(s), as well as the newly earned grade will be used for the determination of the student's overall cumulative grade point average.

Students with outstanding deficiencies in the professional curriculum may not register for courses in the next professional semester without affirmative action by the Academic Standing and Promotion Review Committee.

Students may appeal any academic actions to the Academic Standing and Promotion Review Committee. The appeal must be submitted, in writing, within five (5) calendar days of receipt of notification of action. The Academic Standing and Promotion Review Committee will make a recommendation to the Dean who will make a decision on the appeal.

Further appeal from the decisions of the College of Pharmacy can be made to the Chancellor's office.

Appeals from denials of promotions occurring at the end of the spring and fall semesters will be heard immediately following the spring and fall semesters, respectively.



## Attendance Policy

The educational programs at The University of Tennessee Health Science Center have been developed by the faculty to provide students with the information and experience necessary to become practicing professionals. It is expected that students attend the various educational opportunities provided for them as a part of the curriculum of the college or school in which they are enrolled. It is not the policy of The University of Tennessee Health Science Center to require attendance at all classes. However, instructors may consider attendance mandatory for certain educational experiences. Students will be informed, in writing, where college policy requires class attendance.

## CPR Certification

All University of Tennessee College of Pharmacy students are required to obtain CPR certification for health professionals by the end of their first academic year. American Heart Association certification is valid for 2 years and Red Cross certification is valid for 1 year. Following initial certification, all University of Tennessee College of Pharmacy students must maintain active CPR certification during the P2, P3, and P4 years. If a student takes American Heart Association CPR they must be certified in the P1 and P3 years. If a student takes the Red Cross CPR certification they must be certified yearly. Students will not be allowed to enter the subsequent year without CPR certification. For the convenience of UT College of Pharmacy students, the UT Chapter of the APhA/Academy of Student Pharmacists (ASP) offers American Heart Association CPR to first and third year students.

## Grading System

The pharmacy student must maintain a minimum cumulative grade point average of 2.33 in all courses in the Doctor of Pharmacy program. The official university grading system, used in all official reports of students' grades, includes the following grades: A, A-, B+, B, B-, C+, C, C-, D, F, P, WP, WF, G, I, and Au.

<b>Grade Quality</b>	<b>Point</b>
A.....	4
A- .....	3.67
B+ .....	3.33
B.....	3.0
B- .....	2.67
C+ .....	2.33
C.....	2.0
C- .....	1.67
D.....	1.0
F.....	0

## Requirements for Graduation

In order to be eligible for the Doctor of Pharmacy degree, a student must comply with the following conditions:

1. Students must have been in residence as registered pharmacy students in an acceptable college of pharmacy for at least four annual sessions (8 semesters), of which at least the last two annual sessions (4 semesters) must have been in this College.
2. Students must have presented evidence of having completed the preliminary training required at the time of entry of that class of students with which they seek to graduate.
3. Students will be denied certification for graduation if their cumulative grade point average (including only courses in the professional curriculum of the College) is below 2.33.
4. Students must have successfully completed all clerkship courses attempted in the professional curriculum of the College. Any course in which an F is received or any clerkship in which an F is received must be repeated before a student is eligible to receive the Doctor of Pharmacy degree.
5. Students must have discharged all their financial obligations to the College.

## **Graduation with Honors**

The College of Pharmacy is authorized to grant honors for academic excellence. Students may graduate with honors, with high honors, or with highest honors in accordance with appropriate cumulative grade point averages based on performance in the professional curriculum only. Determination of honors will be made at the end of the fall semester of the 4th academic year.

## **Grade Point Designation**

3.50 - 3.69 with honors

3.70 - 3.84 with high honors

3.85 - 4.00 with highest honors

## **Legal Requirement for Practice**

All states require applicants for the State Board Examination to show evidence of graduation from a recognized college of pharmacy. Anyone who contemplates entering the profession will bar himself from the privilege of practicing in such states if he fails to complete the academic requirements.

## **Registration for the Tennessee Board of Pharmacy**

The Board of Pharmacy for the State of Tennessee is a member of the National Association of Boards of Pharmacy. A graduate in pharmacy is eligible for reciprocity in those states holding membership in the National Association. The Board of Pharmacy requires graduation from a recognized college of pharmacy. In addition to graduation, a candidate must have satisfied the internship requirements of 1500 hours under the supervision of a registered pharmacist. The Board accepts 1100 internship hours from the College of Pharmacy.

For further information regarding the State Board requirements in Tennessee, contact the Director of the Tennessee Board of Pharmacy, 500 James Robertson Parkway, Nashville, Tennessee, 37219. Telephone (615) 741-2718.

## **Other Expenses**

The cost of room and board in a University residence hall varies depending upon the type of room. In addition to room, board and tuition fees, students will need money for books, supplies and personal expenses. Expenses vary among students. The cost of textbooks and school supplies is approximately \$935.00 per year.

## **Loans and Scholarships**

The college offers a limited number of scholarships based on academic excellence, leadership, and/or financial need. There is a multitude of options for federal and private loans. For financial aid information, contact the Office of Financial Aid.

## **Awards and Prizes**

Lilly Achievement Award–The recipient will be the graduating senior student who has the highest academic average in the professional pharmacy curriculum.

Minority Scholastic Award–Presented to the graduating minority student with the highest GPA.

American Society of Health Systems Pharmacists Leadership Award– Presented to the graduating student who has displayed interest in institutional pharmacy practice and involvement in professional pharmacy organizations either student groups, state societies or national organizations. The recipient should have leadership experience with these groups and be in the upper one-half of his/her class.

Medicinal Chemistry Award–The recipient is the graduating student who has the highest scholastic average in Medicinal Chemistry courses.

Pharmaceutics Award–The recipient is the graduating student who has achieved a high scholastic average in courses offered in the Department of Pharmaceutics and is judged by the departmental faculty to have exhibited outstanding professional characteristics.

Pharmacy Administration Award–The recipient will be the graduating student who has the highest general average in all pharmacy administration courses.

Perrigo Award of Excellence in Non-prescription Medication Studies–Presented to the graduating student who demonstrates outstanding achievement in the student of OTC medication.

Tom Sharp Sr. Leadership Award–The recipient is a graduating student whose active participation and leadership in the affairs of the College is judged outstanding.

Pfizer Pharmaceuticals Outstanding Leader–The graduating student who has displayed accomplishment as a leader; nonacademic characteristics common in a leader; and is in the top 25% of the class.

Teva Pharmaceuticals Outstanding Student Award–Presented to the graduating student who excels in the study of pharmacy.

GlaxoSmithKline Clinical Patient Care Award–The graduating student who has demonstrated outstanding performance in community or hospital practice, communication skills, patient counseling, patient case presentation, therapeutic drug monitoring, drug information, Clinical Literature, health screening, etc.

Roche Pharmacy Communications Award–The recipient is selected on the basis of (1) demonstration of knowledge application in the practice of pharmacy to patients and to other health practitioners; (2) providing instructions and guidance to patients in the clinical practice of pharmacy; and (3) demonstration of commitment to the pharmacy profession, compassion towards patients and being career oriented.

Mylan Pharmaceuticals Excellence in Pharmacy Award–Recipient should be in upper 25% of class, demonstrate high professional motivation and the intent to enter practice upon graduation, demonstrate superior proficiency in provision of drug information services.

Facts and Comparisons Award Of Excellence in Clinical Communication–Recipient should be in top 25% of class academically and demonstrate superior verbal and written clinical communication skills.

Merck Award–(2 awards) Outstanding performance in the senior class. The specific criteria area: (1) academic excellence; (2) qualities that warrant other recognition.

Mortal & Pestle Professionalism Award Supported by McNeil Products–The graduating student selected by classmates as the person possessing the professional characteristics of an outstanding future pharmacy practitioner.

Who's Who Among Students in American Universities and Colleges–Graduating students who have demonstrated academic performance, participation in extracurricular activities, and community service.

## **Honor Society**

Rho Chi Alpha Nu Chapter of Rho Chi, National Pharmaceutical Honor Society, was established at the University of Tennessee in 1948. Eligibility for membership in the society is based on high attainment in scholarship, character, personality, and leadership.

All candidates selected for membership must have completed the third semester of the curriculum of the College of Pharmacy.

## **Leadership Society**

Phi Lambda Sigma Theta Chapter of Phi Lambda Sigma was established at the University of Tennessee College of Pharmacy in 1980. Phi Lambda Sigma means "Pharmacy Leadership Society." Founded in 1965, the goal of Phi Lambda Sigma is to identify and recognize those individuals who are outstanding leaders in the profession of pharmacy.

Membership includes pharmacy students, pharmacy faculty, practicing pharmacists and honorary members. Pharmacy students must have completed the third semester of scholastic work applicable toward the pharmacy degree and have attained a scholastic grade point average of at least 2.5 to be eligible for membership.

## **Graduate Study**

### **Graduate Programs**

Programs leading to the Master of Science and Doctor of Philosophy Degree are available to qualified graduates of the College of Pharmacy and other colleges and universities.

Students may major in medicinal chemistry, pharmaceuticals, pharmacoeconomics, health policy, and health systems management within the framework of the College of Graduate Health Sciences. Each program is flexible and may be varied to accomplish the objectives of each student. Students pursuing these programs will be required to complete a designed core of courses in the respective major and minor fields of study. Students will be required to present evidence of capacity to pursue independent investigational work and to complete a thesis assignment. For procedural details of the graduate program, students should consult with the College of Graduate Health Sciences and the Office of Enrollment Services.

### **Graduate Teaching and Research Assistantships**

Departmental fellowships and research assistantships are open to applicants who wish to assist in teaching and research and to pursue graduate study. Address inquiries to the chairman of the department in which the applicant desires to work.

### **American Foundation for Pharmaceutical Education Fellowships**

These fellowships are available to qualified students upon application to the American Foundation for Pharmaceutical Education. The fellowships include a stipend to cover the cost of tuition, books and academic fees in addition to an allowance for the individual needs of the fellow.

# Curriculum

The curriculum of the College of Pharmacy is monitored to maintain its quality and efficiency. As a result, the curriculum presented is adjusted to meet current and future needs for pharmacy practice on a continual basis.

## Doctor of Pharmacy Curriculum

### First Professional Year

<b>Fall Semester .....</b>	<b>Credit</b>
PHAR 111 Pharmacology 1 .....	4 (4-0)
PHSC 112 Medicinal Chemistry 1 .....	4 (3-2)
PHSC 114 Pharmaceutics 1.....	5 (4-4)
PHCY 111 Introduction to Pharmacy & Health Care Environment.....	2 (1-2)
PHCY 112 Basic Clinical & Communication Skills .....	2 (1-2)
PHCY 113 Human Values and Professionalism .....	1 (1-0)
<b>TOTAL.....</b>	<b>18 (14-10)</b>

<b>Spring Semester .....</b>	<b>Credit</b>
PHAR 121 Pharmacology 2 .....	4 (4-0)
PHSC 122 Medicinal Chemistry 2 .....	4 (3-2)
PHSC 123 Pharmaceutics 2.....	4 (4-0)
PHSC 124 Pharmaceutics 3.....	2 (1-4)
PHCY 121 Self Care and Non-Prescription Drugs.....	3 (3-0)
PHCY 122 Introduction to Patient Care .....	1 (0-2)
PHCY 214 Immunization.....	1 (1-0)
<b>TOTAL.....</b>	<b>19 (16-8)</b>

### Second Professional Year

<b>Fall Semester .....</b>	<b>Credit</b>
PHCY 211 Therapeutics 1.....	3 (3-0)
PHCY 212 Therapeutics 2.....	3 (3-0)
PHCY 213 Patient Assessment .....	2 (1-2)
PHSC 212 Pharmacokinetics and Dose Optimization.....	4 (3-2)
PHSC 214 Pharmacy Practice Management & Pharmacoeconomics.....	3 (3-0)
Didactic Elective .....	2 (2-0)
<b>TOTAL.....</b>	<b>17 (15-4)</b>

<b>Spring Semester .....</b>	<b>Credit</b>
PHCY 221 Therapeutics 3.....	3 (3-0)
PHCY 222 Therapeutics 4.....	3 (2-2)
PHCY 223 Applied Therapeutics 1.....	2 (0-2)
PHCY 224 Applied Kinetics .....	2 (1-2)
PHSC 222 Pharmacogenomics.....	2 (2-0)
PHSC 223 Medication Therapy Management.....	3 (2-2)
Didactic Elective .....	2 (2-0)

TOTAL .....17 (13-6)

**Third Professional Year**

<b>Fall Semester .....</b>	<b>Credit</b>
PHCY 311 Therapeutics 5 .....	4 (4-0)
PHCY 312 Therapeutics 6 .....	4 (4-0)
PHCY 313 Applied Therapeutics 2 .....	2 (0-2)
PHCY 314 Drug Information & Literature Evaluation.....	3 (2-2)
PHCY 315 Pharmacy Law.....	3 (3-0)
Therapeutics Selective or Didactic Elective .....	2 (2-0)
TOTAL .....	18 (14-4)

**Final Three Semesters:**

Students must take the following during the last three semesters (P3 spring, P4 fall, P4 spring)

- 2 months .....Basic Rotations (Institution and Community)
- 6 months .....Patient Care Rotations
- 4 months .....Elective Rotations
- 2 months .....Elective Courses. TherSelective or Rotation
- 1 month .....OFF
- Interprofessional Experience (3 credit hours)

**Third Year Spring**

- January .....Month 1
- February .....Month 2
- March .....Month 3
- April .....Month 4
- May .....Month 5
- June .....Month 6

**Fourth Professional Year Fall**

- July .....Month 7
- August .....Month 8
- September .....Month 9
- October .....Month 10
- November .....Month 11

**Fourth Professional Year Spring**

- January .....Month 12
- February .....Month 13
- March .....Month 14
- April .....Month 15
- May .....Certification and IP 844

## **Elective/Selective Policy**

1. All students will take a minimum of 14 credit hours of electives & therapeutic selectives. (electives include the 1-hour certificate programs).
2. All students are required to take a minimum of one therapeutic selective course (2 credit hours) as a part of the minimum 14 credit hours of electives & therapeutic selectives.
3. Therapeutic selectives may be taken during the P-3 Fall semester or during a one-month block in the last 3 semesters of the program (the P-3 Spring, P-4 Fall, or P-4 Spring semesters).
4. All students will take a minimum of 2 credit hours of electives or therapeutic selectives in the P-2 Fall, P-2 Spring, and P-3 Fall semester (for a total of 6 credit hours of electives or therapeutic selectives before the end of the P-3 Fall semester.)
5. All students will take a minimum of 2 months of electives in the last 3 semesters of the program (the P-3 Spring, P-4 Fall, or P-4 Spring semesters) with a minimum total of 8 credit hours, which can include (a) elective courses or (b) therapeutic selectives or (c) certificate programs or (d) elective rotations based on availability. While most students will take 4 hours per month (with a maximum of 6 hours per month) the student will also be allowed to spread these minimum 8 hours over 3 or 4 months IF they choose.
6. Each student will take a minimum of 4 months of elective rotations in addition to the 6 months of required clinical rotations and 2 months of basic rotations.

## **Departmental Courses**

### **Department of Clinical Pharmacy**

Department Chair and Professor: Richard A. Helms, Pharm. D.

111 PHCY, Introduction to Pharmacy and the Health Care Environment. This course provides an introduction to the American health care delivery system and to the profession of pharmacy. Attention is focused on health delivery models, the environment in which health care is rendered, and providers of health care including pharmacists. Credit 2(1-2).

112 PHCY Basic Clinical and Communication Skills. This course emphasizes interpersonal relationships, patient counseling, and communications as they relate to pharmacy practice. Credit 2(2-1).

113 PHCY, Human Values and Professionalism 1(1-0)

121 PHCY, Self Care and Nonprescription Drugs. A course designed to acquaint the pharmacy student with the principles of self-care and actions, uses, adverse reactions, and contraindications of nonprescription drugs. Credit 3(3-0).

122 PHCY, Introduction to Patient Care. A structured clerkship designed to introduce the student to pharmaceutical care with emphasis on the proper utilization of patient records and recitations involving the presentation of case studies. Credit 1(0-2).



\*124 PHCY, Service Learning Project 1, Credit 1(0-4).

\*125 PHCY, Service Learning Project 1, Credit 1(0-4).

211 PHCY, Therapeutics I. This course consists of lectures and recitations designed to develop the student's ability to apply principles and concepts of clinical therapeutics to the care of patients with specific illnesses. Credit 3(3-0).

212 PHCY, Therapeutics II. This course is a continuation of Therapeutics I and consists of lectures and recitations designed to develop the student's ability to apply principles and concepts of clinical therapeutics to the care of patients with specific illnesses. Credit 3(3-0)

213 PHCY, Patient Assessment. This course consists of lectures and is designed to teach interpretation of clinical laboratory tests and skills of health assessment necessary to evaluate patient response to drug therapy. Credit 2(1-4).

214 PHCY, Immunization, Credit 1(1-0).

221 PHCY, Therapeutics III. This course is a continuation of Therapeutics II and consists of lectures and recitations designed to develop the student's ability to apply principles and concepts of clinical therapeutics to the care of patients with specific illnesses. Credit 3(3-0).

222 PHCY, Therapeutics IV. This course is a continuation of Therapeutics III and consists of lectures and recitations designed to develop the student's ability to apply principles and concepts of clinical therapeutics to the care of patients with specific illnesses. Credit 3(3-0).

223 PHCY, Applied Therapeutics I. Introduce concepts of pharmaceutical care into the curriculum prior to the 4th professional year by placing students in the clinical environment during the 3rd professional year. Students will have direct patient contact and will be required to present patient cases during small group recitations. Credit 2(0-4).

224 PHCY, Applied Pharmacokinetics. This course consists of lectures and recitations on the practical application of pharmacokinetic theory as it relates to the individualization of patient drug therapy, through the proper interpretation of drug serum concentrations. Credit 2(1-2).

\*240 PHCY, Special Problems in Pharmacy. The purpose of this course is to allow students to design and implement a specific project in pharmacy. After completion of the project a written report is required. Credit (variable).

\*241 PHCY, Special Problems in Pharmacy. A continuation of Clinical Pharmacy 240. Credit (variable).

\*242 PHCY, Special Problems in Pharmacy. Continuation of PHCY 241 (credit variable)

\*244 PHCY, Drugs of Abuse. This elective course explores the present state of the art regarding current trends and scientific knowledge about drugs and substances of abuse or misuse. Emphasis is directed toward the dilemmas or problems of drugs and society, and the role pharmacists can play as dispensers of clinical pharmacology and toxicology information and consultation in this area. Credit 2(2-0).

\*245 PHCY, Clinical Toxicology. This course discusses the diagnosis and treatment of commonly occurring poisonings. Emphasis will be given to the basic concepts of patient oriented toxicology. Credit 2(2-0).

\*249 PHCY, Community Pharmacy. This elective course is designed to provide the student with the basic principles of management required to solve problems in pharmacy location analysis, obtaining capital, purchasing, inventory control, pricing of products and services, financial analysis, computer applications, and pharmacy security. Credit 2(2-0).

\*256 PHCY, Personal Finance and Financial Planning. To help students gain a solid understanding of the principles that impact personal financial decisions, including those concepts of financial planning and investing necessary to meet personal goals. Credit 2(2-0).

\*257 PHCY, Top 200 Drugs. To familiarize the student with the generic names, common brand names, appropriate dosages, indications, contraindications, and common side and adverse effects of the 300 most commonly prescribed medications. Some basic pharmacology of the major drug classes will also be included in the lecture material. Credit 2(2-0).

\*258 PHCY, Design and Conduct of Clinical Research Studies. The objective of this course is to outline for students and trainees the process of conducting clinical research from a scientific, ethical, regulatory and managerial perspective. Educational activities that will complement various didactic presentations include review of original research articles, observation of an ongoing clinical research project, and preparation and presentation of a clinical research protocol by the participants. Credit 2(2-0).

\*259 PHCY, Complimentary and Alternative Medicine, Credit 2(2-0)

\*260 PHCY, CPR Instruction, Credit 2(2-0).

311 PHCY, Therapeutics V. This course is a continuation of Therapeutics IV and consists of lectures and recitations designed to develop the student's ability to apply principles and concepts of clinical therapeutics to the care of patients with specific illnesses. Credit 3(3-0)

312 PHCY, Therapeutics VI. This course is a continuation of Therapeutics V and consists of lectures and recitations designed to develop the student's ability to apply

principles and concepts of clinical therapeutics to the care of patients with specific illnesses. 4(4-0)

313 PHCY, Applied Therapeutics II. A continuation of PHCY 223 Applied Therapeutics I. Credit 2(0-4).

314 PHCY, Drug Information and Literature Evaluation. This course consists of lectures, recitations, and laboratory sessions designed to introduce pharmacy students to the resources available and services provided by the Drug Information Center and Library. In addition, it deals with the basics of experimental design, research methodology, and evaluation of the current drug literature. Emphasis is placed on search strategies and provision of drug and toxicology information to health care professionals. Credit 3(2-2).

315 PHCY, Pharmacy Law. A study of the numerous laws, both statutory and regulatory, which govern and control the practice of pharmacy and the manufacturing, distribution, and dispensing of drug products; and the delivery of clinical pharmacy services. An exploration of the professional conduct for pharmacy practice is included. Credit 3(3 0).

322 PHCY, Diabetes Certification, Credit 1(1-0).

323 PHCY, Asthma Certification, Credit 1(1-0).

324 PHCY, Basic Community Pharmacy. An introductory professional experience directed by volunteer faculty members practicing community pharmacy in the Memphis area. Credit 4(0-40).

325 PHCY, Basic Institutional Pharmacy. An introductory professional experience directed by volunteer faculty members practicing institutional pharmacy in the Memphis area. Credit 4(0-40).

\*342 PHCY, Advanced Nutrition Therapeutics Selective. This course will provide the student with an advanced understanding of specialized nutrition therapeutics in both hospitalized and home patients. Credit 2(2-0).

\*343 PHCY Psychotherapeutics Selective. This course is designed to expand the students' knowledge of the basic principles of psychopharmacotherapy. The course will develop a familiarity with the "second-line" and "atypical" agents used in psychiatry, as well as to expose the students to some of the controversies surrounding a number of therapeutic modalities. The course will require patient contact as a means of addressing the need for an awareness and understanding of the realities regarding psychiatric illness. Credit 2(2-0).

\*345 PHCY, Neonatal/Infant Therapeutics Selective. This course will focus on inpatient and ambulatory therapeutics in pediatric patients less than 1 year of life. The course will consist of lectures, case presentations, and a field trip. Each student will also be required to make a short presentation on a therapeutic controversy that affects this patient population. Credit 2(2-0).

\*346 PHCY, Critical Care Therapeutics Selective. This course will help students gain familiarity with the care and management of the critically ill patient. The course will assist in understanding the research associated with therapeutic interventions and provide a rationale for various treatment modalities utilized in a variety of diseases. Credit 2(2-0).

\*347 PHCY, Pediatrics Therapeutics Selective. This course is designed to strengthen the student's knowledge of common pediatric problems and to increase their confidence in optimizing pharmacotherapy in the patient population. 2(2-0)

\*348 PHCY, Ambulatory Care Therapeutics Selective. This course will further prepare the doctor of pharmacy student for the required ambulatory care clerkship in the 4th professional year. Topics pertinent to the ambulatory patient will be discussed, with special attention given to drug selection and patient education. An emphasis will also be given to basic physical assessment. Credit 2(2-0).

\*350 PHCY, Women's Health Selective. Focuses on a woman's life phases, including the young adult, midlife, mature and advanced years. Course content includes discussion on role and life cycle issues that affect health, patient/pharmacist interactions, physiology, sexuality and reproduction, etc. Particular emphasis will be placed on medication monitoring due to gender differences in disease presentation and incidence, pharmacokinetics, adverse effects, and on patient education. Credit 2(2-0).

\*351 PHCY, Infectious Diseases Selective. This course is designed to strengthen the students' antibiotic database so that he/she will be more knowledgeable and confident in optimizing antimicrobial pharmacotherapeutics. Particular emphasis will be placed on knowing antibiotics; specifically, the therapeutic use, adverse effects, pharmacokinetics, and patient education issues associated with these agents. Credit 2(2-0).

\*352 PHCY, Applied Infectious Disease Selective, Credit 2(2-0).

\*353 PHCY, Drug Induced Disease Selective, Credit 2(2-0).

\*354 PHCY, Oncology Therapeutics Selective, Credit 2(2-0).

\*355 PHCY, Cardiology Therapeutics Selective, Credit 2(2-0).

400 PHCY, Medicine I. A one-month structured rotation providing supervised development of clinical skills and concepts in the application and promotion of rational pharmacotherapeutics in the area of internal medicine. Credit 4(0-40).

401 PHCY, Medicine II. A continuation of PHCY 400. Credit 4(0-40).

402 PHCY, Medicine III. A continuation of PHCY 401 Credit 4(0-40).

406 PHCY, Contemporary Biotechnology. A one-month elective rotation that focuses on new and innovative therapies with an emphasis on biotechnology. Credit 4(0-40).

408 PHCY, Nephrology. A one-month elective rotation providing supervised development of clinical skills and concepts in the application and promotion of rational pharmacotherapeutics of nephrology. Credit 4(0-40).

410 PHCY, Adult Cardiology. A one-month structured rotation providing supervised development of clinical skills and concepts in the application and promotion of pharmacy in the area of cardiology. Credit 4(0-40).

411 PHCY, Adult Oncology. A one-month structured rotation providing supervised development of clinical skills and concepts in the application and promotion of rational pharmacotherapeutics in the area of oncology. Credit 4(0-40).

412 PHCY, Adult Oncology II. A continuation of PHCY 411 (0-40)

413 PHCY, Pulmonary. A one-month structured rotation providing supervised development of clinical skills and concepts in the application and promotion of rational pharmacotherapeutics in the area of pulmonary medicine. Credit 4(0-40).

414 PHCY, Infectious Diseases. A one-month structured rotation providing supervised development of clinical skills and concepts in the application and promotion of rational pharmacotherapeutics in the area of infectious diseases. Credit 4(0-40).

415 PHCY, Infectious Disease II. A one-month continuation of PHCY 414, Infectious Disease. Credit 4(0-40).

416 PHCY, Gerontology. A one-month elective rotation providing supervised development of clinical skills and concepts in the application and promotion of pharmacy in the area of gerontology. Credit 4(0-40).

417 PHCY, Gerontology II. A one-month continuation of CLPH 416, Gerontology Clerkship. Credit 4(0-40).

418 PHCY, Long Term Care I. A one-month externship conducted in long term care facilities, or pharmacies which service such facilities, and which promotes the development of pharmacy practice skills appropriate for long term care facilities. Credit 4(0-40).

419 PHCY, Long Term Care II. A continuation of PHCY 418 Credit 4(0-40).

420 PHCY, Emergency Medicine. A one-month elective rotation providing supervised development of skills and concepts in the application and promotion of rational pharmacotherapeutics in the area of intensive care medicine. Credit 4(0-40).

422 PHCY, Critical Care Medicine I. Rotation emphasizing the understanding and management of problems specifically related to critically ill patients, particularly trauma and surgical patients. Identification of patient problems according to major body systems and application of clinical therapeutics to the critically ill patient will be stressed. Specific topics discussed include hemodynamic and physiologic monitoring,

pharmacokinetic considerations and infectious problems in the critically ill ICU patient. Credit 4(0-40).

423 PHCY, Critical Care Medicine II. Rotation emphasizing the understanding and management of problems specifically related to critically ill patients, particularly burn patients. Identification of patient problems according to major body systems and application of clinical therapeutics to the critically ill patient will be stressed. Specific topics discussed include hemodynamic and physiologic monitoring, pharmacokinetic considerations and infectious problems in the critically ill ICU patient. Credit 4(0-40).

424 PHCY, Critical Care Medicine III. A continuation of 423 PHCY (0-40)

425 PHCY, Surgery/Transplant. A one-month elective rotation providing supervised development of rational pharmacotherapeutics in the area of surgery or transplant. Credit 4(0-40).

430 PHCY, Pediatric I. A one-month structured rotation providing supervised development of clinical skills and concepts in the application and promotion of rational pharmacotherapeutics in the area of pediatrics. Credit 4(0-40).

431 PHCY, Pediatric II. A one-month continuation of 430 PHCY, Pediatrics. Credit 4(0-40).

432 PHCY, Pediatrics III. A continuation of 431 PHCY, Pediatric II. Credit 4(0-40).

433 PHCY, Pediatric Oncology. A one-month structured rotation providing supervised development of clinical skills and concepts in the application and promotion of rational pharmacotherapeutics in the area of pediatric oncology. Credit 4(0-40).

434 PHCY, Neonatology. A one-month rotation which emphasizes the understanding and management of drug therapy issues related to the care of special problem newborns. Credit 4(0-40).

435 PHCY, Obstetrics-Gynecology. A one-month elective rotation providing supervised development of clinical skills and concepts in the application and promotion of rational pharmacotherapeutics in the area of obstetrics-gynecology. Credit 4(0-40).

436 PHCY, Clinical Toxicology. A one-month elective rotation providing experience with poisoning victims and the promotion of rational therapeutics for toxicologic problems. Credit 4(0-40).

440 PHCY, Nutrition I. A one-month structured rotation providing supervised development of clinical skills and concepts in the application and promotion of rational pharmacotherapeutics in the area of nutritional support. Credit 4(0-40).

441 PHCY, Nutrition II. A one-month continuation of PHCY 440, Nutrition. Credit 4(0-40).

- 442 PHCY, Nutrition III. A one-month continuation of PHCY 441 Nutrition. Credit 4(0-40).
- 444 PHCY, Home Infusion Therapy. A one-month rotation that emphasizes the development of clinical skills in the area of intravenous drug therapy conducted in the home. Such therapies include antibiotics, chemotherapy, pain control, nutrition and hydration. Credit 4(0-40).
- 450 PHCY, Ambulatory Care I. A one-month structured rotation providing supervised development of clinical skills and concepts in the application and promotion of rational pharmacotherapeutics in the area of ambulatory care. Credit 4(0-40).
- 451 PHCY, Ambulatory Care II. Continuation of CLPH 450. Credit 4(0-40).
- 452 PHCY, Ambulatory Care III. A continuation of PHCY 451 ambulatory care rotation Credit 4(0-40).
- 453 PHCY, Ambulatory Care, Community Pharmacy I. A one-month ambulatory care rotation conducted in a community pharmacy where there is a commitment to providing extensive clinical pharmacy services. Credit 4(0-40).
- 454 PHCY, Ambulatory Care, Community Pharmacy II. A continuation of PHCY 453 4(0-40)
- 456 PHCY, Ambulatory Care, Community Pharmacy III. A continuation of PHCY 454 4(0-40).
- 458 PHCY, Chemical Dependency. A one-month structured rotation providing supervised development of clinical knowledge and skills in the promotion of rational pharmacotherapeutics in the area of chemical dependency and alcohol and substance abuse. Credit 4(0-40).
- 460 PHCY, Drug Information. A One-month structured rotation providing supervised development of clinical skills and concepts in the application and promotion of rational pharmacotherapeutics in the area of drug information. Credit 4(0-40).
- 461 PHCY, Drug Information II. A continuation of PHCY 460 Credit 4(0-40)
- 462 PHCY, Therapeutic Quality Assurance. A one-month structured rotation providing supervised clinical experience to foster the development of concepts, knowledge and skills to enable implementation and participation in quality assurance activities in the institutional setting. Credit 4(0-40).
- 463 PHCY, Applied Pharmacokinetics. A rotation designed to focus on (a) clinical pharmacodynamics, (b) the basis for drug-specific target concentrations, including strengths and limitations of studies establishing the therapeutic ranges, and (c) recommended strategies for applying pharmacokinetic principles to individual patients. Credit 4(0-40).

464 PHCY, Managed Care, Credit 4(0-40).

465 PHCY, Clinical Research I. This one-month P-4 rotation will involve the Pharm. D. student in the procedures and techniques used in the laboratory analysis of patient samples from a variety of clinical studies. The student will learn proper procedures for sample preparation and analysis. Additionally, the student will learn several approaches to proper data handling, manipulation and preliminary statistical analysis. 4(4-0)

466 PHCY, Clinical Research II. A continuation of PHCY 465, Clinical Research I. 4(4-0)

470 PHCY, Mental Health. A one-month structured rotation providing supervised development of clinical skills and concepts in the application and promotion of rational pharmacotherapeutics in the area of mental health. Credit 4(0-40).

471 PHCY, Mental Health II. A continuation of PHCY 470. Credit4(0-40).

477 PHCY, Therapeutics Drug Monitoring. A rotation designed to focus on clinical pharmacodynamics, basis for drug-specific target concentrations, including strengths and limitations of studies establishing the “therapeutic ranges” and recommended strategies for applying pharmacokinetic principles to individual patients. Credit 3(3-0).

478 PHCY, Compounding Pharmacy 1, Credit 4(0-40).

479 PHCY, Compounding Pharmacy 2, Credit 4(0-40).

480 PHCY, Advanced Community Practice I. A one-month externship conducted in community pharmacies and which promotes the development of practice skills in comprehensive pharmaceutical care. Credit 4(0-40).

481 PHCY, Advanced Community Practice II. A continuation of PHCY 480. Credit 4(0-40).

482 PHCY, Advanced Community Practice III. A continuation of PHCY 481. Credit 4(0-40).

483 PHCY, Advanced Institutional Practice I. A one-month externship conducted in institutional pharmacies, most often hospitals, and which promote the development of practice skills in comprehensive pharmaceutical care. Credit 4(0-40).

484 PHCY, Advanced Institutional Pharmacy Externship II. A continuation of PHCY 483. Credit 4(0-40).

486 PHCY, Public Health. A one-month institutional externship conducted in a U.S. Public Health Service facility, most often Native American Service programs in Alaska, North Carolina, Arizona, and New Mexico. Credit 4(0-40).

487 PHCY, Community Pharmacy Management 1, Credit 4(0-40).



488 PHCY, Community Pharmacy Management 2, Credit 4(0-40).

489 PHCY, Advanced Institutional Management I. A one-month externship conducted in institutional pharmacies, most often hospitals, and which focuses upon the development of management skills appropriate for institutional pharmacy practice. Credit 4(0-40).

490 PHCY, Advanced Institutional Management II. A continuation of PHCY 489

491 PHCY, Pharmaceutical Marketing. A one-month externship directed by pharmacists employed by major pharmaceutical companies. A major objective of this experience is to provide the student with an appreciation of the influence of sales and marketing upon overall pharmaceutical care. Credit 4(0-40).

492 PHCY, Pharmacy Association Management I. This program is based at the headquarters of the Tennessee Pharmacists Association in Nashville. Student will participate in the day-to-day responsibilities of TPA staff and officers, including meeting planning, monthly journal publication, interfacing with Tennessee State Legislature and Tennessee Medicaid Office. Some interaction with the Tennessee Board of Pharmacy is also possible. Credit 4(0-40).

493 PHCY, Pharmacy Association Management II. A continuation of PHCY 492. Credit 4(0-40).

494 PHCY, Academic Administration, Credit 4(0-40).

495 PHCY, Medication Safety, Credit 4(0-40).

498 PHCY, Veterinary Pharmacy, Credit 4(0-40).

499 PHCY, International Studies. A one-month special externship conducted in pharmacy practice settings in Australia, New Zealand, Japan, England, Sweden, Denmark, or Spain. A major objective of this experience is to provide the student with an appreciation of cultural and political influences upon the practice of pharmacy. Credit 4(0-40).

### **\*Elective Courses**

## **Department of Pharmaceutical Sciences**

Department Chair and Professor: Duane D. Miller, Ph.D.

112 PHSC, Medicinal Chemistry I. A course devoted to the chemical basis for the interdisciplinary field of therapeutics. Synthetic entities and natural products, which are chemotherapeutic agents are studied. The course familiarizes the student with the chemistry of organic medicinal agents necessary for effective professional practice. Credit 4(3-2).

114 PHSC, Pharmaceutics I. A course designed to familiarize the student with the fundamental principles pertaining to and the techniques employed in the formulation of pharmaceutical agents. Credit 5(4-4).

122 PHSC, Medicinal Chemistry II. Continuation of Medicinal Chemistry PHSC 112. Credit 4(3-2).

123 PHSC, Pharmaceutics II. A continuation of PHSC 114 Credit 4(4-0).

124 PHSC, Pharmaceutics III. A continuation of PHSC 123 Credit 2(1-4).

213 PHSC, Pharmacokinetics and Dose Optimization. An introduction to concepts and techniques involved in quantitative processes associated with the absorption, distribution, metabolism and elimination of drugs. Kinetics of these processes will be rigorously developed, based on appropriate model systems. The didactic material and assigned problems will emphasize current pharmacokinetic literature and will familiarize the students with the latest advances in this rapidly expanding area. Credit 4(3-2).

214 PHSC, Pharmacy Practice Management & Pharmacoeconomics. This course acquaints students with the basic principles of management including planning, organizing, directing, coordinating, and controlling a practice, business, or organization. Attention is focused on management of capital, time, inventory, and human resources. Credit 3(3-0)

222 PHSC, Pharmacogenomics, Credit 2(2-0). The course is designed to educate students on the importance and application of patient-specific genetic information to individualization of pharmacotherapy. The course begins with a review of essential principles of genetics with an emphasis on genetic variation. The course goes on to develop the concept that individual variability in pharmacokinetic and pharmacodynamic response is related in many instances to genetic variation. The impact of genetic variation in key drug metabolizing enzymes, drug transporters, and receptor drug targets is explored in general as well as in a disease-specific context. Finally, students learn about the ethical and legal implications stemming from the availability of genetic information.

223 PHSC, Medication Therapy Management, Credit 3(2-2). The course explores the area of medication therapy management services and medication use by patients and health professionals from a social systems perspective with emphasizes information and behavior. This course is not designed to make students experts in Medication Therapy Management, nor totally prepare them to start up their own MTM practice after graduation. It is designed, however, to give students a good foundation on the practice and theory of Medication Therapy Management, a better understanding of various MTM practice settings, and provide students with practical MTM activities (during Recitation) to make them more comfortable with the MTM process.

\*240 PHSC, Introductory Research in Pharmaceutics I. A course designed to introduce the student to research techniques in the pharmaceutical sciences. Credit by arrangement with the Chairman of the department. Credit varies.

\*241 PHSC, Introductory Research in Pharmaceutics II. A continuation of Pharmaceutics 340. Credit by arrangement with the Chairman of the department. Credit varies.

\*242 PHSC, Introductory Research in Pharmaceutics III. A continuation of Pharmaceutics 241. Credit by arrangement with the Chairman of the department. Credit varies.

\*254 PHSC, Pharmacy Informatics. This course provides an introduction to (1) current information management needs in institutional pharmacy, (2) computer-based information systems in hospitals today, (3) concepts of informatics, (4) characteristics of computer databases, and (5) characteristics of expert systems. Credit 2(2-0).

\*258 PHSC, Introduction to Nuclear Pharmacy. The first of a three-course sequence to provide the 200 hour of didactic/laboratory material required by the NRC to become a nuclear pharmacist. Gives an overview of the use of radiopharmaceuticals in nuclear medicine, review of basic concepts of physics, atomic and nuclear structure, nuclear interactions, etc. Credit 2(2-0).

\*259 PHSC, Basic Nuclear Pharmacy. Second course in a three-course sequence. This course involves radiation safety, characteristics and use of the geiger-mueller counter, gamma ray scintillation spectrometry-single channel analyzer, background reduction, etc. Credit 3(2-3).

\*260 PHSC, Special Problems in Pharmaceutical Sciences 1. The purpose of this course is to allow the individual student to design and implement a specific project in pharmaceutical sciences. After completion of the project, a written report is required. Credit variable.

\*261 PHSC, Special Problems in Pharmaceutical Sciences 2. continuation of PHSC 260. credit variable.

\*262 PHSC, Special Problems in Pharmaceutical Sciences 3. continuation of PHSC 261. credit variable.

\*263 PHSC, Advanced Nuclear Pharmacy. The third course in a three-course sequence qualifying the student to become licensed as a certified nuclear pharmacist. This course includes cardiac studies, pharmacologic stress agents, renal studies, hepatobiliary imaging, thyroid studies, etc. Credit 2(1-3).

\*311 PHSC, Compounding Elective, Credit 2(1-2). The course will teach students to prepare dosage forms they have not previously made such as lollipops, animal treats, sticks, ophthalmics, injections, etc. Emphasis is placed on creating unique formulations that satisfy unique patient needs. Equipment used by compounding pharmacists to formulate preparations that satisfy these needs are discussed.

\*440 PHSC, Nuclear Pharmacy. An elective rotation designed to introduce the student to clinical application concepts associated with the field of radiomedications. Credit 4(0-40).

\*441 PHSC, Pharmacokinetics. A one-month elective rotation providing supervised professional experience in research applications of pharmacokinetic principles. Credit 4(0-40).

\*442 PHSC, Industrial Pharmaceutics. An elective rotation designed to give the student experience in the operation of a pilot plant scale production facility for nonsterile dosage forms of drugs. Credit 4(0-40).

\*445 PHSC, Biopharmaceutical Analysis. An elective course designed to introduce the concepts and principles of instrumental analysis especially as they apply to biopharmaceutics. It will involve didactic and laboratory instruction. Credit 2(1-4).

### **\*Elective Courses**

## **Department of Pharmacology**

Department Chairman and Professor: Burt Sharp, M.D.

111 PHAR, Pharmacy Pharmacology I. This course is designed to give students a fundamental knowledge of the interactions between drugs and living systems. Drug mechanisms of action and drug interactions are emphasized. Principles of drug metabolism, synergism, antagonism, accumulation and toxicity are also discussed. Credit 4(4-0).

121 PHAR, Pharmacy Pharmacology II. Continuation of Pharmacology 211. Credit 4(4-0).

# College of Pharmacy

## Departmental Faculty Listing

### Department of Clinical Pharmacy

Anita Airee, Pharm. D., Assistant Professor  
Katherine Barker, Ph.D., Instructor  
D. Todd Bess, Pharm. D., Associate Professor and Assistant Dean, Nashville Clinical Education Center  
Bradley A. Boucher, Pharm. D., Professor and Vice Chair  
Candace S. Brown, Pharm. D., Associate Professor  
Rex O. Brown, Pharm. D., Professor and Executive Vice Chair  
Debbie C. Byrd, Pharm. D., Associate Professor and Assistant Dean, Knoxville Campus  
Michael Christensen, Pharm. D., Stevens Professor of Pediatric Clinical Pharmacy and Director of Pharmacy, Le Bonheur Children's Medical Center  
Peter A. Chyka, Pharm. D., Professor and Associate Dean, Knoxville Campus  
Catherine Crill, Pharm. D. Assistant Professor  
L. Brian Cross, Pharm. D., Assistant Professor and Director, Kingsport Clinical Education Center  
Roland N. Dickerson, Pharm. D., Associate Professor  
Heather Draper, Pharm. D., Assistant Professor  
Benjamin T. Duhart, Pharm. D., Assistant Professor  
James C. Eoff, III, Pharm. D., Professor and Executive Associate Dean  
Glen E. Farr, Pharm. D., Professor and Associate Dean, Continuing Education/East Tennessee  
Shannon W. Finks, Pharm. D., Assistant Professor  
Joni Foard, Pharm. D., Assistant Professor  
Stephen Foster, Pharm. D., Assistant Professor  
Andrea Franks, Pharm. D., Associate Professor and Director of Education, Knoxville Campus  
Christa George, Pharm. D., Assistant Professor  
Alexander Guirguis, Pharm. D., Assistant Professor  
Emily B. Hak, Pharm. D., Associate Professor  
Lawrence J. Hak, Pharm. D., Professor  
Marsha Honaker-Jackson, Pharm. D., Assistant Professor  
Joanna Q. Hudson, Pharm. D., Assistant Professor  
Richard A. Helms, Pharm. D., Professor and Chair, Department of Clinical Pharmacy, and Director, Division of Clinical Pharmacy Le Bonheur Children's Medical Center  
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Shambria Nolan, Pharm. D., Assistant Professor  
Robert J. Nolly, M.S., Associate Professor  
Robert B. Parker, Pharm. D., Associate Professor  
Stephanie J. Phelps, Pharm. D., Professor, Vice Chair, and Director, Professional Experience Program  
Shaunta M. Ray, Pharm. D., Assistant Professor

Kelly Rogers, Pharm. D., Associate Professor  
P. David Rogers, Pharm. D., Ph.D., First Tennessee Chair of Excellence in Pharmacy  
Timothy H. Self, Pharm. D., Professor  
Eugene B. Smith, Jr. Pharm. D., Associate Professor  
Michael C. Storm, Pharm. D., Associate Professor  
Katie J. Suda, Pharm. D., Assistant Professor and Director, Drug Information Center  
Jeremy Thomas, Pharm. D., Assistant Professor  
J. Aubrey Waddell, Pharm. D., Associate Professor  
G. Christopher Wood, Pharm. D., Assistant Professor  
Michelle Zingone, Pharm. D., Assistant Professor

## **Full-Time Faculty**

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D. Todd Bess, Pharm. D., Associate Professor and Director, Nashville Clinical Education Center  
Bradley A. Boucher, Pharm. D., Professor and Vice Chair  
Candace S. Brown, Pharm. D., Associate Professor  
Rex O. Brown, Pharm. D., Professor and Executive Vice Chair  
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G. Christopher Wood, Pharm. D., Assistant Professor  
Michelle Zingone, Pharm. D., Assistant Professor

### **Part-Time Faculty**

Stephens P. Adams, Pharm. D., Assistant Professor  
Holly Kohls Allum, Pharm. D., Assistant Professor  
Alison Apple, Pharm. D., Associate Professor  
Anjali Arora, Pharm. D., Assistant Professor  
Jennifer Bean, Pharm. D., Assistant Professor  
Charles D. Bell, Pharm. D., Assistant Professor  
Cassandra E. Benge, Pharm. D., Assistant Professor  
Jay Bobo, Pharm. D., Assistant Professor  
Kelly Bobo, Pharm. D., Assistant Professor  
Ron Braden, Pharm. D., Associate Professor  
Gail Bridges, Pharm. D., Assistant Professor  
John D. Bridges, Pharm. D., Assistant Professor  
Kevin M. Brown, Pharm. D., Assistant Professor  
J. Richard Brown, Pharm. D., Professor  
Joyce E. Broyles, Pharm. D., Associate Professor  
Carrie A. Brusseau, Pharm. D., Assistant Professor  
Darla A. Busbey, Pharm. D., Assistant Professor  
Adrienne Butler, Pharm. D., Associate Professor  
Jennifer Campbell, Pharm. D., Assistant Professor  
Wes Carnahan, Pharm. D., Assistant Professor  
Jason Carter, Pharm. D., Assistant Professor  
Lawrence Carver, B.S., Assistant Professor  
Regina Cassidy, Pharm. D., Assistant Professor  
James Cathey, D.Ph., Associate Professor  
Carole C. Comish, Pharm. D., Assistant Professor  
Jeff Cooper, Pharm. D., Assistant Professor  
Krista Coval, Pharm. D., Assistant Professor  
J. Todd Crowell, Pharm. D., Assistant Professor  
Elisabeth Daley, Pharm. D., Assistant Professor

Janet Duke, Pharm. D., Assistant Professor  
Leigh B. Edwards, Pharm. D., Assistant Professor  
Medhat El Sabawy, Pharm. D., Assistant Professor  
Elizabeth Ewing, Pharm. D., Assistant Professor  
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Shannon Finks, Pharm. D., Assistant Professor  
Kevin L. Freeman, Pharm. D., Assistant Professor  
Keri N. Freeman, Pharm. D., Assistant Professor  
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William L. Greene, Pharm. D., Professor  
Heather Griffin, Pharm. D., Assistant Professor  
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Jennifer Jones, Pharm. D., Assistant Professor  
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Michelle Kidd, Pharm. D., Assistant Professor  
Amy Krauss, Pharm. D., Assistant Professor  
David Kuhl, Pharm. D., Associate Professor  
John Kuth, Pharm. D., Assistant Professor  
Kelley Lee, Pharm. D., Associate Professor  
Marilyn D. Lee, Pharm. D., Associate Professor  
Angela Link, Pharm. D., Assistant Professor  
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Ray E. Marcrom, Pharm. D., Assistant Professor  
Kim Mason, Pharm. D., Assistant Professor  
Jimmy N. McBride, Pharm. D., Assistant Professor  
M. Shawn McFarland, Pharm. D., Assistant Professor  
Jennifer Mendez, Pharm. D., Assistant Professor  
Elizabeth Miller, Pharm. D., Assistant Professor  
James L. Minnis, Pharm. D., Assistant Professor  
Timothy C. Morgan, Pharm. D., Assistant Professor  
Ted H. Morton, Pharm. D., Associate Professor  
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Cynthia Nettle, Pharm. D., Assistant Professor  
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N. Elizabeth Piana, Pharm. D., Assistant Professor  
Carrie Oliphant, Pharm. D., Assistant Professor  
Paula Paimore, Pharm. D., Assistant Professor  
Neelima P. Patil, Pharm. D., Assistant Professor  
Shiv Patil, Pharm. D., Assistant Professor



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Laura M. Pounders, Pharm. D., Assistant Professor  
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Joe Presley, Pharm. D., Assistant Professor  
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Mary E. Yates, Pharm. D., Assistant Professor

### **Volunteer/Affiliated Faculty**

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Karen Babb, Pharm. D., Assistant Professor  
Douglas Bailey, Pharm. D., Assistant Professor  
Marianne Bailey, Pharm. D., Assistant Professor  
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Daniel Boyle, Pharm. D., Assistant Professor  
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Stephen K. Huffines, Pharm. D., Assistant Professor  
Paul Hughey, D.Ph., Assistant Professor  
Holly A. Hughes, Pharm. D., Assistant Professor  
Paul Hughey, D.Ph., Assistant Professor  
Juli A. Hughs, Pharm. D., Assistant Professor  
William A. Humphrey, Ph.D., Assistant Professor  
Tiffany Hurst-Berry, D.Ph., Assistant Professor  
Jason D. Hutchens, Pharm. D., Assistant Professor  
Richard L. Jackson, Pharm. D., Assistant Professor  
Johnny James, Pharm. D., Assistant Professor  
William C. Johns, D.Ph., Assistant Professor  
Daniel C. Johnson, Pharm. D., Assistant Professor  
Joseph (Mike) Johnson, Pharm. D., Assistant Professor  
R. Steven Johnson, D.Ph., Assistant Professor  
Phillip Johnston, Pharm. D., Associate Professor  
Ami Jones, Pharm. D., Assistant Professor  
Bradley Jones, Pharm. D., Assistant Professor  
Jan Jones, D.Ph., Assistant Professor  
R. Jud Jones, Pharm. D., Assistant Professor  
Sandra Jones, D.Ph., Assistant Professor  
Jamie Kayler, Pharm. D., Assistant Professor  
David M. Kellogg, D.Ph., Assistant Professor  
Kimberlee Kilgore, Pharm. D., Assistant Professor  
Natalie Kittrell, Pharm. D., Assistant Professor  
Jason S. Kizer, Pharm. D., Assistant Professor  
James Knight, M.S., Associate Professor  
Jim A. Koestner, Pharm. D., Assistant Professor  
James Koren, Pharm. D., Assistant Professor  
Evgueni Krynetski, Ph.D., Associate Professor  
Chris Lamer, Pharm. D., Assistant Professor  
Steven H. Lane, Pharm. D., Assistant Professor  
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Emily P. Layne, Pharm. D., Assistant Professor  
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Chuck Longserre, Pharm. D., Assistant Professor  
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Robert Lucas, Pharm. D., Assistant Professor  
John T. Luebker, BS, Assistant Professor  
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Kim C. Mason, Pharm. D., Assistant Professor  
Chris Masters, Pharm. D., Assistant Professor  
Larry McClure, D.Ph., Assistant Professor  
W. Shannon McCool, D.Ph., Assistant Professor  
John N. McCormick, Pharm. D., Assistant Professor  
Lynn C. McDonald, D.Ph., Assistant Professor  
Mary Jane McDonald, D. Ph., Assistant Professor  
David McGee, D.Ph., Assistant Professor  
Catherine McGuire, D.Ph., Assistant Professor  
Barbara R. McKinnon, Pharm. D., Assistant Professor  
James R. McNally, D.Ph., Assistant Professor  
Bruce S. McNeil, R.Ph., Assistant Professor  
Kimberly Mendenhall, Pharm. D., Assistant Professor  
Melinda Micklewright, D.Ph., Assistant Professor  
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Anita P. Miller, Pharm. D., Assistant Professor  
Elisabeth Miller, Pharm. D., Assistant Professor  
Karla M. Miller, Pharm. D., Assistant Professor  
Shelia Mitchell, Pharm. D., Professor  
Thomas A. Moak, III, D.Ph., Assistant Professor  
Steve Y. Mok, Pharm. D., Assistant Professor  
Tara Moore, Pharm. D., Assistant Professor  
Kimberly Moyers, Pharm. D., Assistant Professor  
Susie Muir, D.Ph., Assistant Professor  
Sydney Mulder, Pharm. D., Assistant Professor  
Kara Murray, Pharm. D., Assistant Professor  
Bangalore Muniraju, Assistant Professor  
Erick L. Nash, Pharm. D., Assistant Professor  
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Wendy R. Perry, Pharm. D., Assistant Professor  
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Diane Pojanowski, Pharm. D., Assistant Professor  
Celeste H. Poppenheimer, Pharm. D., Assistant Professor  
Tara Pratt, Pharm. D., Assistant Professor  
Bradley Provence, Pharm. D., Assistant Professor  
Richard Randolph, Pharm. D., Assistant Professor  
Mark S. Rayburn, Pharm. D., Assistant Professor  
W. Shane Reeves, Pharm. D., Assistant Professor  
Judy Regan, M.D., Assistant Professor  
Mary V. Relling, Pharm. D., Associate Professor  
Paul Rettinger, Pharm. D., Assistant Professor  
Deborah Reynolds, Pharm. D., Assistant Professor  
Larry (Rick) Richardson, D.Ph., Assistant Professor  
Julie Richardson, Pharm. D., Assistant Professor  
Clark Rose, Pharm. D., Assistant Professor  
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