

University of North Texas
Health Science Center at Fort Worth

Graduate School of Biomedical Sciences



1998-2000 Catalog

Information Guide

UNT Health Science Center Switchboard	817-735-2000
Graduate School of Biomedical Sciences	
Admissions Office, ME1-819	817-735-0258
<i>Admissions information, applications and status reports for new and former students</i>	
Dean's Office, ME1-804	817-735-2560
Public Health Program, ME1-819	817-735-2401
Academic Departments	
Anatomy and Cell Biology, ME2-202	817-735-2045
Integrative Physiology, ME2-302	817-735-2080
Molecular Biology and Immunology, ME2-416	817-735-2112
Pharmacology, ME2-334	817-735-2056
Public Health and Preventive Medicine, ME1-416	817-735-2252
Central Clinic , 855 Montgomery, Second floor	817-735-2228
Accounting (Student Receivables), ME1-832B	817-735-2548
Financial Aid , ME1-116	817-735-2520
Registrar , ME1-502	817-735-2201
Student Affairs , ME1-116	817-735-2505



**University of North Texas
Health Science Center at Fort Worth**

Graduate School of Biomedical Sciences

3500 Camp Bowie Boulevard
Fort Worth, Texas 76107-2699
817-735-2560

1998-2000 Graduate Catalog

This catalog is an official bulletin of the University of North Texas Health Science Center Graduate School of Biomedical Sciences and is intended to provide general information. It contains policies, regulations, procedures and fees in effect as of January 1, 1998. The health science center reserves the right to make changes at any time to reflect current board policies, administrative regulations and procedures, amendments by state law and fee changes. Information provided by this catalog is subject to change without notice and does not constitute a contract between the University of North Texas Health Science Center Graduate School of Biomedical Sciences and a student or an applicant for admission. The institution is not responsible for any misrepresentation or provisions that might arise as a result of errors in preparation.

Students are responsible for observing the regulations contained herein; therefore, they are urged to read this catalog carefully. This catalog does not contain all institutional rules, regulations and policies for which a student is responsible. Students should also consult the Student Handbook.

The health science center reserves the right to withdraw a student for cause at any time.

The University of North Texas Health Science Center at Fort Worth is an equal opportunity/affirmative action institution. It is the policy of the health science center not to discriminate on the basis of race, color, religion, sex, age, national origin, disability, or disabled veteran or veteran of the Vietnam era status, in its educational programs, activities, admissions or employment policies. Questions or complaints should be directed to the Equal Opportunity Office, 817-735-2357.

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AUG 10 1998
STATE APPROVING AGENCY

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S.A.A.

President's Message



Welcome to an institution that is excited about what is in store for the coming millenium. Not since the early 1960s has the exploration of new discoveries in medicine and the biomedical sciences been so inspiring.

We are active players in the many opportunities facing the biomedical science community — unlocking the secrets of the human genome, tapping into new discoveries in molecular biology and immunology, taking our findings to the medical application stage through participation in biotechnology.

We also understand the challenges we are being asked to take on — the resurgence of potentially fatal infectious diseases, the spread of these diseases with our growth into a global community, and the overwhelming task of finding the answers to the numerous medical problems of our rapidly growing elderly population.

In all these efforts we recognize you as one of our most valued team players — the inquisitive minds and hard work of our student researchers and public health students. Your presence here not only guarantees that the future of medicine, health and biomedical research holds promise. It also teaches us the growing

importance of integrating our efforts to make the health of individual patients, communities and future generations dependent on each of us, and on all of us.

Our goal is to assure you a competitive edge as well. We strive to provide you a supportive and stimulating atmosphere where you can question, collaborate and succeed under the guidance of some of the best teaching scientists in the nation.

Mastering the mysteries of health and science for the betterment of humankind is an infinite effort. Thank you for joining us on the journey.

David M. Richards, D.O.
President



Dean's Message

Thank you for your interest in our graduate school. Your commitment to pursue a career in biomedical and health sciences has come at a most important time in the history of medicine and science.

With the advent of the human genome project, transgenic models and molecular genetics, gene therapy has become a reality, but there is still much to be learned. As we approach the new millennium, we are increasingly aware of the enormous opportunities that science and technology have provided and what new discoveries await in our future.

The Graduate School of Biomedical Sciences is a community of scholars dedicated to creating an environment that is stimulating, creative and challenging. Our faculty are recognized nationally and internationally for research programs that utilize state-of-the-art technology. Our public health program is rapidly gaining recognition as a community-based program providing hands-on experiences and evening classes. Our nine centers of research excellence are providing leadership in biotechnology, biomedical and health science research for our region and our future.

Our curriculum is integrated, providing a broad knowledge base for training for biomedical scientists and public health professionals. Our curriculum teaches a team approach to solving the complexities of disease and in understanding the promotion of healthy lifestyles. Our goal is to provide you with the skills and knowledge needed to undertake the challenges of tomorrow.

We are please that you have selected University of North Texas Health Science Center at Fort Worth for your graduate training. The graduate faculty and I welcome you aboard for a most interesting expedition into the future.

Thomas Yorio, Ph.D.
Professor and Dean

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Accreditation

The University of North Texas Health Science Center at Fort Worth is approved by the Texas Higher Education Coordinating Board and is a member of the Alliance for Higher Education, the Association of Academic Health Centers, the Council for the Advancement and Support of Education, and the Council of Graduate Schools. The University of North Texas Health Science Center at Fort Worth is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award master's and doctoral degrees. Texas College of Osteopathic Medicine is fully accredited by the Bureau of Professional Education of the American Osteopathic Association which is recognized by the U.S. Office of Education. TCOM is approved by the Texas State Board of Medical Examiners and is a member of the American Association of Colleges of Osteopathic Medicine.

For further information regarding the institution's accreditations and state approval or to review related documents, contact the Office of Educational Planning and Development, Medical Education Building 1-864, 817-735-2510.

1998-99 Academic Calendar

	FALL 98	SPRING 99	SUMMER 1 99	SUMMER 2 99
ADMISSIONS				
U.S. application deadline. All application materials must be submitted for consideration.	June 1	Nov 2	April 1	April 1
Non-U.S. application deadline. All application materials must be submitted for consideration.	May 1	Oct 1	Mar 1	Mar 1
New Student Orientation (mandatory)	Aug 4-6	Dec 3	—	—
Convocation and White Coat Ceremony (mandatory)	Aug 7	—	—	—
REGISTRATION				
Last day to submit completed Advising Clearance Form for regular registration.	July 17	Nov 13	Apr 16	Apr 16
Last day to submit completed Advising Clearance Form for late registration.	Aug 12	Dec 4	May 14	May 14
IMPORTANT CLASS DAYS				
Classes begin. *Combined TCOM/Graduate School classes begin earlier.	Aug 24*	Jan 11*	June 1	July 5
12th class day (Fall & Spring)/4th class day (Summer I & II)	Sept 8	Jan 27	June 4	July 8
Final examinations	Dec 14-21	May 17-21	July 2	Aug 5
SCHEDULE CHANGES				
Last day for change of schedule other than a drop.	Aug 31	Jan 19	June 2	July 7
Last day to drop a course or withdraw from the health science center with a grade of W for courses that a student is not passing. After this date, a grade of WF may be recorded.	Oct 2	Feb 19	June 11	July 16
Beginning this date, instructors may drop student with a grade of WF for non-attendance.	Oct 5	Feb 26	June 18	July 30
Last day to drop a course with consent of the instructor.	Nov 3	March 26	June 25	Aug 1
First day that a student may request a grade of incomplete.	Nov 16	April 5	June 28	Aug 2
Last day to withdraw from the health science center. Process must be completed by 5 p.m. in the Registrar's Office.	Nov 30	April 30	June 30	Aug 3
FEE PAYMENT DEADLINES				
Last day to pay tuition and fees in full or pay first installment for payment plan. Summer session tuition must be 100% paid upon deadline date.	Aug 21	Jan 8	Due upon registration	Due upon registration
Second installment due	Sept 25	Feb 15	—	—
Third installment due	Oct 30	Mar 22	—	—
Payment deadline for tuition, fees and other charges to avoid blocks and delinquent payment fees. Late charges will be assessed.	Dec 1	April 23	—	—
REFUNDS				
<i>Note: If all courses for the semester are dropped, see Withdrawal Refunds, below.</i>				
Last day for refund of any course dropped.	Sept 9	Jan 28	June 4	July 8
Last day for any partial refund of tuition upon withdrawal.	Sept 18	Feb 20	June 7	July 12
WITHDRAWAL REFUNDS				
Last day for 100% refund.	Aug 21	Jan 8	May 28	July 2
Last day for 80% refund.	Aug 28	Jan 15	June 3	July 7
Last day for 70% refund.	Sept 4	Jan 25	—	—
Last day for 50% refund.	Sept 11	Feb 1	June 7	July 12
Last day for 25% refund.	Sept 18	Feb 8	—	—

1998-99 Academic Calendar

	FALL 98	SPRING 99	SUMMER 1 99	SUMMER 2 99
GRADUATION DEADLINES				
Last day for graduation applicants to complete final comprehensive examination and file original copy of thesis or dissertation in graduate dean's office to avoid registration requirement for the semester of graduation.	Aug 14	Dec 18	May 28	—
Last day to file Intent to Graduate.	Sept 30	Feb 15	June 4	—
Last day for degree candidates to: 1. file thesis, problem-in-lieu of thesis or dissertation in graduate dean's office for binding; and 2. pay all graduation fees; 3. remove grades of I in all courses required for degree (exceptions: thesis and dissertation).	Nov 20	May 21	July 30	—
Last day for departments to report to the graduate dean's office the results of final comprehensive examination for graduating students.	Nov 20	May 21	—	—
Commencement	Dec 19	June 5	Aug 14	—
HOLIDAYS/SPECIAL EVENTS				
Classes will not be held on the following days due to holidays and/or special events. *Pending Board of Regents approval.				
White Coat Ceremony and Convocation	Aug 7	—	—	—
Labor Day*	Sept 7	—	—	—
Thanksgiving*	Nov 26-27	—	—	—
Winter Break*	Dec 24-Jan 1	—	—	—
Martin Luther King, Jr. Holiday	—	Jan 18	—	—
Spring Break	—	Mar 15-19	—	—
Research Appreciation Day	—	Mar 24	—	—
Memorial Day*	—	—	May 31	—

1999-00 Academic Calendar

	FALL 99	SPRING 00	SUMMER 1 00	SUMMER 2 00
ADMISSIONS				
U.S. application deadline. All application materials must be submitted for consideration.	June 1	Nov 1	April 3	April 3
Non-U.S. application deadline. All application materials must be submitted for consideration.	May 3	Oct 1	Mar 1	Mar 1
New Student Orientation (mandatory)	Aug 3-5	Dec 2	—	—
Convocation and White Coat Ceremony (mandatory)	Aug 6	—	—	—
REGISTRATION				
Last day to submit completed Advising Clearance Form for regular registration.	July 16	Nov 12	Apr 14	Apr 14
Last day to submit completed Advising Clearance Form for late registration.	Aug 11	Dec 3	May 12	May 12
IMPORTANT CLASS DAYS				
Classes begin.	Aug 23	Jan 10	May 30	July 3
12th class day (Fall & Spring)/4th class day (Summer I & II)	Sept 7	Jan 26	June 2	July 7
Final examinations	Dec 13-20	May 15-19	June 30	Aug 14
SCHEDULE CHANGES				
Last day for change of schedule other than a drop.	Sept 2	Jan 18	June 1	July 19

1999-00 Academic Calendar

	FALL 99	SPRING 00	SUMMER 1 00	SUMMER 2 00
Last day to drop a course or withdraw from the health science center with a grade of W for courses that a student is not passing. After this date, a grade of WF may be recorded.	Oct 1	Feb 18	June 9	July 14
Beginning this date, instructors may drop student with a grade of WF for non-attendance.	Oct 4	Feb 25	June 16	July 28
Last day to drop a course with consent of the instructor.	Nov 2	Mar 31	June 23	Aug 1
First day a student may request a grade of Incomplete.	Nov 15	April 3	June 26	July 31
Last day to withdraw from the health science center. Process must be completed by 5 p.m. in the Registrar's Office.	Nov 30	April 28	June 28	Aug 2

FEE PAYMENT DEADLINES

Last day to pay tuition and fees in full or pay first installment for payment plan. Summer session tuition must be 100% paid upon deadline date.	Aug 20	Jan 7	Due upon registration	Due upon registration
Second installment due.	Sept 24	Feb 14	—	—
Third installment due.	Nov 2	Mar 27	—	—
Payment deadline for tuition, fees and other charges to avoid blocks and delinquent payment fees. Late charges will be assessed.	Dec 1	April 21	—	—

REFUNDS

Note: If all courses for the semester are dropped, see Withdrawal Refunds, below.

Last day for refund of any course dropped.	Sept 8	Jan 27	June 2	July 7
Last day for any partial refund of tuition upon withdrawal.	Sept 17	Feb 7	June 5	July 11

WITHDRAWAL REFUNDS

Last day for 100% refund.	Aug 20	Jan 7	May 26	June 30
Last day for 80% refund.	Aug 27	Jan 14	June 1	July 6
Last day for 70% refund.	Sept 3	Jan 24	—	—
Last day for 50% refund.	Sept 10	Jan 31	June 5	July 11
Last day for 25% refund.	Sept 17	Feb 7	—	—

GRADUATION DEADLINES

Last day for graduation applicants to complete final comprehensive examination and file original copy of thesis or dissertation in graduate dean's office to avoid registration requirement for the semester of graduation.	Aug 13	Dec 17	May 26	—
Last day to file Intent to Graduate.	Sept 30	Feb 14	June 2	—
Last day for degree candidates to: 1. file thesis, problem-in-lieu of thesis or dissertation in graduate dean's office for binding; and 2. pay all graduation fees; 4. remove grades of I in all courses required for degree (exceptions: thesis and dissertation).	Nov 19	May 19	July 28	—
Last day for departments to report to the graduate dean's office the results of final comprehensive examination for graduating students.	Nov 19	May 19	July 28	—
Commencement	Dec 18	June 3	Aug 12	—

HOLIDAYS/SPECIAL EVENTS

Classes will not be held on the following days due to holidays and/or special events. *Pending Board of Regents approval.

White Coat Ceremony and Convocation	Aug 6	—	—	—
Labor Day*	Sept 6	—	—	—
Thanksgiving*	Nov 25-26	—	—	—
Winter Break*	Dec 24-Jan 1	—	—	—
Martin Luther King, Jr. Holiday	—	Jan 17	—	—
Spring Break	—	Mar 20-24	—	—
Research Appreciation Day	—	Mar 29	—	—
Memorial Day*	—	—	May 29	—
Independence Day*	—	—	—	July 4

The Health Science Center



ONE

Overview

The University of North Texas Health Science Center at Fort Worth is the learning center of choice for more than 500 students and over 1,700 graduates. The talents and energies of more than 170 faculty members, over 800 staff and some 300 volunteer physicians are dedicated to the fulfillment of the health science center's missions in education, research and service.

Located in the heart of Fort Worth's Cultural District, the UNT Health Science Center is a prominent and continually growing medical care/research complex. The center contains two schools: the Texas College of Osteopathic Medicine and the Graduate School of Biomedical Sciences.

Over 400 medical students – who will earn the D.O., or doctor of osteopathic medicine, degree – follow an innovative curriculum based on the century-old osteopathic traditions of disease prevention and the promotion of healthful living. Their education emphasizes comprehensive primary care, the unique benefits of osteopathic diagnosis and treatment, patient education, good nutrition and fitness, and being sensitive to the cost of health care to the patient and society. The health science center's first undergraduate program, offering a bachelor of science degree with a major in physician assistant studies, began in the summer of 1997.

More than 180 students are pursuing their M.P.H., M.S. and Ph.D. degrees in the graduate school. Biomedical Science students specialize in anatomy and cell biology, biochemistry and molecular biology, integrative physiology, microbiology and immunology, and pharmacology. Public health students focus on the specialty fields of administrative medicine, environmental health, epidemiology, community health, health behavior, health administration, health economics and health services research.

The University of North Texas Health Science Center strives to create knowledge as well as teach it. Among the center's physicians and scientists are nationally respected faculty members who are leaders in areas such as the biochemistry of aging, vision, cancer, heart disease, DNA and genetics, substance abuse, wound healing, osteoporosis and nutrition. In less than 25 years, this growing team of experts has fostered the creation of nine centers of research excellence at the health science center and garnered over \$25 million in cumulative active research grants.

The health science center has one of the most advanced medical libraries in the southwest. The

Gibson D. Lewis Health Science Library has virtually 100 percent of the world's current medical information available through a sophisticated computer-search system and communications network.

Mission Statement

The University of North Texas Health Science Center at Fort Worth is committed to achieving excellence in its programs of education, research and service. The health science center maintains the mission and traditions of the Texas College of Osteopathic Medicine and a longstanding relationship with the University of North Texas. The center also shares programs with other health-related and academic institutions.

The health science center educates osteopathic physicians and other health professionals dedicated to careers in health care, teaching and research. Through its graduate programs, the center provides educational opportunities to biomedical scientists and public health professionals for roles in academic institutions, government agencies and industry. Primary health care is central to the mission of the institution. The center has a special mission to meet the needs of individuals in the geographic areas, and within the age, ethnic and socioeconomic groups, in which primary health care is most needed. Health care education and services emphasize promotion of health, prevention of disease and concern for the costs to the patient and to society.

Education

Undergraduate, graduate and postgraduate teaching programs provide strong foundations of knowledge and skills in the basic and clinical sciences. A focus is on the promotion of health and social, psychological, emotional and lifestyle factors that affect healthful living. Health care services delivered by the institution provide a critical educational arena where faculty serve as both teachers and role models in providing care. Each student is guided along a path of learning that has as its goals the development of critical thinking, problem solving and independent lifelong learning. Particular attention is given to developing attitudes, ethical behavior and personal attributes that characterize a caring health professional sensitive to the special need for primary health care.

Research

The health science center is a community of scholars who are members of the international scientific community. As members of scientific societies and other professional groups, faculty contribute to national and international dialogues in the sciences, medicine and health care. By engaging in scholarly pursuits that contribute to further understanding of health and disease, the faculty and students serve the community, the state and the nation.

Service

The health science center serves the community, the state and the nation, contributing to the exchange of knowledge and its application. Faculty, staff and students take part in outreach programs providing health care professionals, clinical services and education throughout the community, including primary care to underserved individuals. The health science center serves as an educational resource to further the continuing education of practicing physicians and other health professionals.

(Accepted by the UNT Health Science Center Board of Regents May 1996.)

Graduate School of Biomedical Sciences

History

The Graduate School of Biomedical Sciences has its roots in the Texas College of Osteopathic Medicine, which began in 1970 as a private school. In 1972, TCOM's basic science courses were taught at North Texas State University (now the University of North Texas) in Denton. In addition to the basic sciences faculty hired by TCOM, certain additional North Texas faculty were contracted to participate in teaching these courses. All TCOM faculty in the basic science departments received joint appointments in the university's Departments of Biomedical Sciences, Biological Sciences or Biochemistry. They also received either full or associate graduate faculty status at the university. These appointments were important because they permitted TCOM basic science faculty to mentor graduate students either in the biomedical sciences master's degree program, or Ph.D. students in biology or biochemistry.

The successful collaboration of the two schools earned the confidence of state government leaders

and, in 1975, TCOM became a state-supported medical school under the jurisdiction of the governor-appointed North Texas State Board of Regents.

Over the years, TCOM grew in physical facilities as well as basic and clinical sciences faculty. In addition, the number of graduate students seeking training in the health sciences also grew. Until 1993, the students still were officially registered under the University of North Texas graduate program.

In 1992, TCOM faculty were training more than 70 graduate students seeking either the M.S. degree in biomedical sciences or the Ph.D. in biological sciences or biochemistry. These students received virtually all their training at TCOM, in courses taught by TCOM faculty and in laboratories on the TCOM campus in Fort Worth. Because these students wanted doctoral training in the health sciences, it was preferable that they receive a Ph.D. in biomedical sciences with specialties in anatomy and cell biology, biochemistry and molecular biology, physiology, pharmacology and microbiology and immunology.

Because it would benefit students to have their degrees in biomedical sciences and awarded by a health science center, the university and TCOM requested the Texas Higher Education Coordinating Board to transfer the M.S. degree in biomedical sciences and degree-granting authority from the university to the medical school, which was geared to evolve into a health science center, and to establish a Ph.D. degree in biomedical sciences.

On January 25, 1993, the chancellor and TCOM's president submitted the following requests to the Texas Higher Education Coordinating Board: to transfer from UNT to the proposed UNT Health Science Center the Department of Biomedical Sciences and degree-granting authority for the M.S. degree in biomedical sciences; and to approve degree-granting authority to award the Ph.D. degree in biomedical sciences.

On July 15, 1993, the Texas Higher Education Coordinating Board approved the request to transfer the M.S. degree in biomedical sciences and the Department of Biomedical Sciences from UNT, and to establish a Graduate School of Biomedical Sciences at the proposed UNT Health Science Center.

During the summer of 1993, the Texas Legislature unanimously approved the redesignation of TCOM as the University of North Texas Health Science Center, specifying that the center would continue to be a separate and independently

functioning institution, not a department or school within the University of North Texas.

The request for a Ph.D. in biomedical sciences was approved on October 28, 1993, and as of November 1, 1993, the UNT Health Science Center began offering both M.S. and Ph.D. degrees in biomedical sciences.

Recognizing the demand in the North Texas area for public health professionals, the UNT Health Science Center and University of North Texas developed a cooperative Master of Public Health program, which was approved by the Coordinating Board in July 1995.

Mission Statement

The Graduate School of Biomedical Sciences is committed to achieving excellence in education, research and service. The graduate school offers students opportunities to earn advanced degrees in the biomedical sciences.

The graduate school provides an innovative educational environment that encourages rigorous investigation in areas of health science research, exemplary teaching skills and service to the community.

The graduate school, in conjunction with the Texas College of Osteopathic Medicine, has a further goal to train students for D.O./M.S., D.O./M.P.H. and D.O./Ph.D. degrees for future positions as physician scientists in academic medicine and for public health careers. Graduates fill positions in health science centers, colleges and universities, community health centers, federal agencies and industry.

Institutes for Discovery Cardiovascular Research Institute

The Cardiovascular Research Institute, established in 1995, provides advanced training for predoctoral and postdoctoral students in support of the basic and clinical science needs of the north Texas area. Special emphasis is on integrating basic molecular research into the development of new treatments for cardiovascular disease and then studying the outcomes of those new treatments. Institute faculty members teach graduate students, medical students and clinical fellows, as well as conduct continuing medical education and community education outreach programs. The institute also sponsors monthly research forums where faculty members and students discuss the integration of basic molecular biology with organ system physiology.

Center for Osteoporosis Prevention and Treatment

The center was established in 1993 by the Department of Internal Medicine's Division of Rheumatology to foster collaborative research between clinical and basic science faculty dedicated to fighting this debilitating affliction. Osteoporosis is an epidemic in America, resulting in widespread concern about the ability of the health care system to cope with this growing problem.

Basic science departments, the Department of Public Health and Preventive Medicine, the Department of Obstetrics and Gynecology, other departments of the medical school and other health care institutions participate in institute projects.

Goals are: to foster research and clinical efforts to improve the diagnosis, prevention and treatment of osteoporosis; to provide devices and drugs to initiate and validate new preventive techniques and therapies; to forge partnerships with other medical schools since these studies involve large numbers of patients and multi-center research activities; and to develop programs and service models to educate the public and health care providers about osteoporosis. Research efforts are enhanced by the use of a DEXA X-ray densitometer, which facilitates the early diagnosis of bone mineral density abnormalities.

Geriatric Education and Research Institute

The Geriatric Education and Research Institute, established in 1996, is committed to the promotion of health, quality of life and independence among the nation's elderly through scientific research, education and community service.

Activities to better understand the biology of aging will bring together basic and clinical scientists to lead biomedical research programs that will break new ground in areas such as wound healing, vision loss and memory loss.

Activities regarding health promotion and older adults will reflect the osteopathic philosophy of promoting the health and well-being of individuals and not waiting for ill patients to arrive at the door of a health care provider. The institute plans to establish and evaluate health programs within the community that promote the physical, psychological and social well-being of the elderly.

Activities in clinical geriatric care will go beyond the traditional research goals of solving acute care problems of the aged. Geriatricians, gerontologists, social workers, faculty and medical staff of the institute will address the issue of establishing new clinical programs as well as evaluating their effectiveness.

Other activities in geriatrics training will support the health science center's educational mission.

Institute of Forensic Medicine

The Institute of Forensic Medicine, established in the early 1980s, is an academic and research partnership between UNT Health Science Center's Department of Pathology and DNA/Identity Laboratory and the Tarrant County Medical Examiner's Office.

The institute's goals are to increase the quantity and scope of research projects in forensic medicine as well as the number of graduate students studying toxicology, molecular biology and criminalistics. The collaborative strength and variety of the institute's teaching and research activities provide students a comprehensive training arena while building the health science center's forensic medicine research funding.

Institute of Nutrition and Chronic Disease Prevention

The Institute of Nutrition and Chronic Disease Prevention was established in 1995 and represents the combined efforts of the Department of Internal

Medicine and the Department of Molecular Biology and Immunology, as well as the talents of other interested faculty members.

The long-term mission of this institute is to promote good health by preventing the development and progression of chronic diseases through an emphasis on sound nutritional practices. The institute has three broad areas of focus: higher education, public education and community service, and basic and applied research.

Research activities address the role of nutrition in preventing cardiovascular disease, cancer and diabetes, and the improvement of the quality of life during aging. Efforts focus on the nutritional components and molecular mechanisms of disease processes at the cell, organ and whole organism levels.

North Texas Eye Research Institute

The North Texas Eye Research Institute was formed in 1992 to serve as an academic and research focus for basic and clinical science activities within the visual science community of Fort Worth and north Texas.

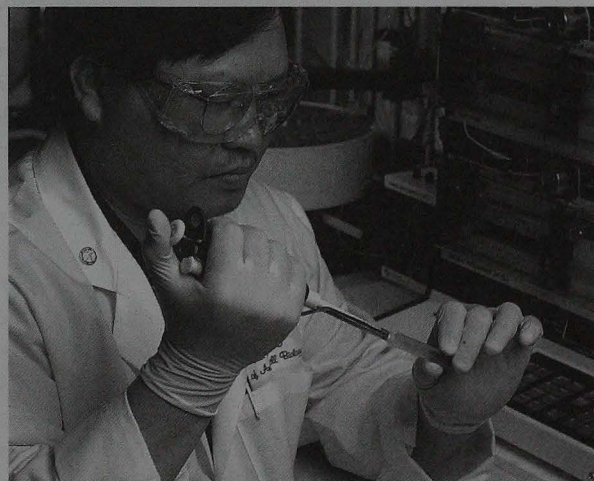
The institute faculty consists of basic and clinical scientists who have primary appointments at the health science center, private practice or industry. They are heavily involved in the training of medical students, graduate students and postdoctoral fellows.

Their research programs cover aspects of eye disease such as retinal degenerations, glaucoma, diabetic complications, aging and cataracts.

The institute sponsors a monthly Distinguished Visual Scientist Seminar Series, a weekly journal club, continuing medical education courses for health professionals and an annual eye health fair. Institute faculty also conduct clinical trials for testing the safety and efficacy of various therapeutic drugs and devices.

Substance Abuse Institute of North Texas

The Substance Abuse Institute of North Texas, established in 1993 by the Department of Pharma-



cology and the Department of Psychiatry and Human Behavior, is a consortium of professionals with expertise in substance abuse. Scientists and physicians in physiology, pathology, public health/preventive medicine, general and family practice and medicine also participate.

The institute's missions are to foster clinical and basic science research, train professionals whose efforts focus on the prevention and treatment of substance abuse, and serve as an information resource for area substance abuse treatment programs. The institute hosts research conferences and cosponsors seminars with area substance abuse prevention groups and pharmaceutical industries. The institute also regularly sponsors visits by international scholars to the health science center and the Fort Worth/Dallas Metroplex, and provides faculty consultants to state, federal and international agencies. Outreach programs involving many institutions from the North Texas area are being developed.

Wound Healing Research Institute

A key role of the Wound Healing Research Institute, established in 1992, is to translate research results into viable treatments that minimize the pain and suffering caused by debilitating consequences of problem wounds.

Its five-fold mission includes: expanding knowledge of the process of injury and wound healing using novel *in vitro* models and molecular biology techniques; application of innovative approaches such as the use of hyperbaric medicine, growth factors, tissue replacement therapies to problem wounds to prevent amputation and permanent disability; training graduate and medical students, interns and residents in new and interdisciplinary approaches to problem wounds; disseminating knowledge and experience through courses, seminars, conferences and symposia as a part of continuing medical education; and evaluating new pharmaceuticals and devices through all phases of the FDA approval process.

Funding from federal, state and private agencies and organizations supports various projects conducted within the institute. Faculty from basic science departments and the departments of general and family practice, internal medicine, pathology, surgery and hyperbaric medicine make up the research staff of the institute.

Institutional Support Services Office of Research and Biotechnology

The Office of Research and Biotechnology develops policies and administers programs to enhance research and scholarly activity and to assure institutional compliance with all mandated requirements related to research. The office assists in proposal development, identification of and negotiations with potential sources of support, and post-award management of research funds, intellectual property, and patent and copyright matters.

The office coordinates all basic and applied research, clinical trials and biomedical technology programs, including the centers of research excellence. Programs that promote these activities include seminars and workshops, faculty research programs, summer research training programs, collaborative and community outreach activities and a variety of programs to encourage students to enter careers in the health sciences.

The office also plays a leadership role in establishing and nurturing new research partnerships, technology transfer, and commercialization with industry and the private sector.

Biomedical Communications

The Department of Biomedical Communications is an educational service unit that supports development and implementation of health science center programs. Composed of medical arts/photography, print services, audio-visual/television and electronic engineering, the department's primary functions are the design and production of various forms of learning materials and the repair of equipment used by faculty and students.

Videotaping of procedures, patients or lectures, as well as production of specialized educational or promotional programs, is available both in the studio and on location. New video teleconferencing technology links the health science center and the University of North Texas in Denton to teach courses and conduct meetings. The department also receives programs on a variety of medical and policy issues via satellite.

Classroom playback of instructional videos, setup of audio-visual equipment for classroom use, student equipment checkout, maintenance of biomedical and electronic equipment, audio-visual systems design, and duplicating and offset printing are additional services offered by the department.

Medical arts personnel create charts, graphs, illustrations, posters, brochures, newsletters and magazines for the various educational, research and community service endeavors of the institution. Medical photographers provide the prints and slides to complete these instructional and promotional materials, as well as on-site photography of patients, procedures and important events.

Information Technology Services

Information Technology Services provides quality computer and telecommunication services to all academic, academic administrative and fiscal administrative areas of the health science center.

Academic Information Services administers the National Board of Medical Examiners and United States Medical Licensing Examinations, and provides scoring for classroom examinations. The effectiveness of the graduate curriculum is monitored through course and instructor evaluations. Using academic performance databases, this division provides analysis and reporting for a variety of academic and administrative applications.

Systems and Programming Services designs and implements computer systems and programs for fiscal and academic administrative areas of the institution. Currently, the division is completing a project to integrate all management information, from areas both internal and external to the health science center, into an enterprise-wide data system.

Network and Microcomputer Services is responsible for the design, installation and maintenance of academic and administrative local-area networks (LANs) on campus. Computer users connected to the LAN have access to a variety of software programs and are able to exchange data and electronic mail with users across the institution and off campus. Dial-in access is available for both IBM and Macintosh platforms.

The division provides consultation and user assistance to computer users relative to hardware and software use, communications, printing and planning a computer purchase.

Telecommunication Services operates and maintains the campus-wide telephone system with state-of-the-art equipment and software, and maintains and produces an in-house telephone directory for faculty and staff. This division also manages the telephone voice mail system, as well as all pagers and answering services, and advises users about cellular telephones.

Records Management maintains a program for the economical and efficient management of

institutional records. The division is responsible for the preparation and maintenance of the records-retention schedule and approves all requests for the disposal of state records and the conversion of paper files to CD-ROM and optical disk.

Gibson D. Lewis Health Science Library

The health science center's library supports the educational, patient-care, research and community-service missions of the institution by meeting the information needs of faculty, students, staff and the local health sciences community.

Featuring the latest information technology, this spacious and attractive facility provides the physical and intellectual resources needed for study, instruction and research. The library collection contains over 140,000 volumes and 2,100 journal titles in the basic biomedical sciences, clinical medicine and affiliated fields. Special Collections preserves historically significant materials, including over 2,100 volumes of osteopathic and nineteenth century medicine, The William G. Sutherland Collection, and institutional archives, photographs and oral histories documenting the school's first 25 years.

The library uses the Library Information System (LIS) to provide access to the library's collections and to the National Library of Medicine's MEDLINE database. LIS may be accessed in the library, via telephone modem or through the Internet. Library instruction on LIS, MEDLINE and other library services, as well as reference services and mediated computer searches, are readily available.

Materials not owned by the library may be obtained through interlibrary loan from many sources. The library has been a resource library in



the National Network of Libraries of Medicine since 1991. In addition, the library is a member of the South Central Academic Medical Libraries Consortium, which provides access to all 14 academic medical/health science center libraries in Texas, Arkansas, Louisiana, Oklahoma and New Mexico.

The library's Learning Resource Center houses an audio-visual collection of over 5,000 titles, over 300 computer software programs and about 100 anatomical models. The collection includes titles with a broad appeal to both medical/scientific users and the general public. Sixteen viewing rooms and 18 carrels are equipped with video playback and slide-tape projectors.

Three networked microcomputer labs, with Macintosh and IBM-compatible computers, are available in the LRC for student, staff and faculty use. Monthly computer classes are also offered. The Internet can be accessed in all three labs by users who have registered with Information Technology Services and have received a password. Portable computers are also available for overnight and weekend checkout.

All health science center students receive the full range of library services, including borrowing privileges, individual and group study areas, photocopying, computer searches, reference help, document delivery services, print indexes, personal instruction in the use of the library and access to the library's collections. Students must have I.D. badges to borrow materials and gain access to the library's various study rooms.

Copy cards are available for purchase. The library is a member in the Copyright Clearinghouse Center to ensure compliance with the copyright law.

Office of Multicultural Affairs

The Office of Multicultural Affairs was created to coordinate all multicultural activities of the institution. Members of the multicultural affairs office assist in the recruitment, retention and mentorship of underrepresented students, faculty and staff. The office also interacts with all other administrative and academic departments on issues relating to underrepresented groups such as outreach and enrichment programs, community services and institutional activities.

The Office of Multicultural Affairs sponsors several student organizations to encourage peer support, networking and community service. It also fosters interest in science and medicine by coordinating various programs for students from elementary school to college.

Information in this chapter is current as of Jan. 1, 1998

Admission



TWO

Application

An application for admission can be obtained from the graduate office by writing to:

Graduate School of Biomedical Sciences
UNT Health Science Center at Fort Worth
3500 Camp Bowie Boulevard
Fort Worth, Texas 76107-2699
or through our web site at : www.hsc.unt.edu

All applicants applying for the first time to the Graduate School of Biomedical Sciences must pay a non-refundable application fee: \$25 for U.S. citizens, \$50 for non-U.S. citizens. The fee must be paid in U.S. currency. This application fee is valid for one year from the application date.

Deadlines

The following deadlines for submission of complete application materials apply to all students:

	U.S.	Non-U.S.
Fall 98	June 1	May 1
Spring 99	Nov 2	Oct 1
Summer	April 1	March 1
Fall 99	June 1	May 3
Spring 2000	Nov 1	Oct 1
Summer 2000	April 3	March 1

It is highly recommended that non-U.S. citizens apply well in advance of these deadlines to allow preparation of immigration documents.

Requirements for Admission

General Admission Requirements

All applicants for admission to the Graduate School of Biomedical Sciences must meet the following requirements, whether or not admission to a specific degree program is sought. All materials submitted in the application become the property of UNT Health Science Center and cannot be returned.

1. The applicant must hold a bachelor's degree or its equivalent from a regionally accredited institution.
2. Specific grade point average (GPA) requirements for non-degree and degree-seeking students follow. The GPA is calculated by dividing the total number of grade points earned by the total

number of semester hours attempted (A equals four grade points, B equals three, C equals two, D equals one, F equals zero). The applicant must have at least a 3.0 GPA on the last 60 undergraduate semester hours of course work before receiving the bachelor's degree, or on all undergraduate work, in order to receive unconditional admission to the Graduate School of Biomedical Sciences. Applicants who have already completed a master's degree must have at least a 3.0 GPA on the master's or meet the undergraduate GPA standards just listed in order to be admitted unconditionally. *Non-degree seeking students will be allowed to take only 12 semester credit hours.*

3. All students seeking a graduate degree are required to take the Graduate Record Examination (GRE). Specific requirements are listed later in this chapter.
4. The applicant may be required to take entrance examinations, either oral, written, or both, before admission to the Graduate School of Biomedical Sciences is granted.
5. The health science center requires an applicant from a foreign country to demonstrate satisfactory proficiency in oral and written English before being granted admission in addition to supplying official documentation of minimum scores for the Test of English as a Foreign Language (TOEFL) exam. More detail on international admission requirements are listed in this chapter.
6. To be considered for admission, the applicant must file the following official credentials with the dean of the Graduate School of Biomedical Sciences at the address given above:
 - an application for admission to the Graduate School of Biomedical Sciences
 - complete official transcripts from all colleges or universities attended
 - official scores from the Educational Testing Service on the required entrance test or tests (see below)
 - the application fee
 - two letters of evaluation by individuals in a position to comment on the applicant's potential as a graduate student and future professional. Applicants to the Ph.D. program in Public Health/Preventive Medicine must supply four letters of evaluation
 - a written statement of personal career goals

An applicant who has attempted graduate work at another institution within the six-year period

immediately before first enrollment in the Graduate School of Biomedical Sciences but has not received a graduate degree will be required to make up any grade point deficiency below a B average either at the institution at which graduate work was attempted or at the health science center. (See "Time Limitations" in the Master's Degree Program section of this catalog for details concerning validity of previous graduate work.)

Admission to the Graduate School of Biomedical Sciences does not imply candidacy for a graduate degree.

Applicants for admission are furnished written notification of their admission status by the dean of the Graduate School of Biomedical Sciences. Statements by other health science center personnel concerning the applicant's admissibility are not valid until confirmed by the dean in writing.

Students who are admitted to a graduate degree program and do not enroll in the semester for which they have applied must contact the Graduate School of Biomedical Sciences to have their file re-evaluated.

Other Admission Requirements

In addition to meeting the general requirements for admission stated above, applicants must also meet the following requirements.

1. An applicant desiring to pursue graduate work in any subdiscipline or track whose undergraduate record does not show completion of the courses prerequisite to this subdiscipline or track will be required to make up such deficiencies in a manner prescribed by the student's major department.
2. Students wishing to change from one subdiscipline or track to another must make application in the office of the graduate dean, must meet all specific program admission requirements for the new subdiscipline and must be in good standing at the time the request is made.

Graduate Record Examination Requirements

All students seeking admission to a graduate degree program are required to take the Graduate Record Examination (GRE). Applicants to the D.O./M.S, D.O./M.P.H. or D.O./Ph.D. programs may substitute an appropriate Medical College Admissions Test (MCAT) score with the approval of the dean. Only official score reports from the Educational Testing Service are acceptable.

The GRE requirements may be waived by the graduate dean for the individual student only in exceptional cases and only on petition by the student to the graduate dean.

Admission of Continuing Students

A continuing student is defined as a student who enrolls one time during four consecutive semesters. Example: enrolls Summer I 1998; no enrollment Summer II 1998, Fall 1998 or Spring 1999; re-enrolls Summer I 1999.

Continuing students do not need to reapply to the Graduate School of Biomedical Sciences to enroll if they meet all of the following conditions:

1. The student has not received a degree from the health science center since last enrollment.
2. The student does not have any current blocks on his or her record, i.e., GRE or academic.
3. The student has not attended any other academic institution during his/her absence from the health science center.

Students who are unsure that they meet all of the above conditions for re-enrollment should contact the Graduate School of Biomedical Sciences before the registration period.

Readmission of Former Graduate Students

Students who previously have been admitted to the Graduate School of Biomedical Sciences but have not enrolled here once during the last four consecutive semesters (i.e., Fall, Spring, Summer I and Summer II) must follow these re-enrollment procedures:

1. File an admission application.
2. Submit transcripts from all colleges attended (if any) since leaving the health science center, showing eligibility to re-enroll at each institution.

Former students who have not enrolled elsewhere since leaving the health science center and are in good academic standing are required only to submit an admission application.

Courses Taken for Doctoral Credit by Students Completing the Master's Degree

Students completing the master's degree at the health science center who plan to continue work toward the doctorate degree are required to submit application for readmission to the Graduate School of Biomedical Sciences in doctoral status. Those who wish to begin taking courses to be credited on the doctorate before receiving the master's degree must declare this intention in the office of the graduate dean at the time of registration in doctoral status, so that doctoral work may receive proper credit. Final acceptance of such work will not be granted until the student has secured full admission to a specific doctoral program of study.

Admission of Students to Non-Degree Status

The health science center recognizes that some students may wish to be admitted to the Graduate School of Biomedical Sciences for the purpose of taking courses not necessarily leading to an advanced degree. Admission to the Graduate School of Biomedical Sciences may be granted subject to the following provisions.

1. The applicant must meet all of the general admission requirements described above and must meet all application deadlines.
2. The student in this status is required to receive credit in all graduate courses taken, and must maintain a GPA of 3.0 on all such courses attempted.
3. A student who is admitted to non-degree status has no assurance that work completed under this status will be applicable toward degree requirements should he or she subsequently be admitted to a degree program at the health science center. *A maximum of 12 semester hours* earned before admission to a degree program may be counted toward degree requirements. Exceptions to this policy can be approved only by the graduate dean upon recommendation of the student's advisory committee. Completion of departmental graduate courses by non-degree students does not obligate the Graduate School of Biomedical Sciences to grant admission to a degree program at a later date, unless all general and specific requirements for admission to that program have been met.

4. A student who wishes to change from non-degree status to degree status must have satisfactory GRE scores on file in the Graduate School of Biomedical Sciences.

Admission Requirements for International Students

Applicants who are not U.S. citizens should apply for admission at least six months before the anticipated enrollment date, and should arrange to have test scores and transcripts in the graduate school at least 60 days before the enrollment date. If transferring from a college or university they must meet all normal UNT Health Science Center transfer admission requirements. Specific requirements are detailed below.

The health science center will not issue immigration papers for student visas until all admission credentials have been received and approved. A \$50 (U.S.) application fee is required and must be submitted with the application for admission. This fee is subject to change at any time.

Applicants who are graduates of foreign colleges or universities must present the following documents for application:

- application forms for admission to the Graduate School of Biomedical Sciences accompanied by \$50 (U.S.) application fee
- official reports from Educational Testing Service (ETS) on the Graduate Record Examination
- official reports from ETS showing a minimum score of 550 on Test of English as a Foreign Language (TOEFL) or evidence of successful completion of a non-credit intensive course in English
- official transcripts from each college or university attended both in English and the native language
- proof of financial resources available, filed with application for admission
- transfer credit from foreign universities. The amount of such credit that can be applied to a degree earned at the health science center will be determined by the graduate dean on recommendation of the student's advisory committee and major department or division. Recognition by the health science center of graduate credit earned elsewhere does not imply that degree credit will be allowed automatically.
- two letters of evaluation from individuals in a position to comment on the applicant's potential as a graduate student and future professional.

- English screening examination (see details below)
- a written statement of personal career goals

English Screening Examination

All international students and non-exempt permanent residents whose native language is not English are required to take the English Language Proficiency Screening Test after arrival at the health science center and before registering for classes. Information about test dates is available from the Graduate School of Biomedical Sciences at the health science center.

Exemptions from this test are made only for students who hold a bachelor's or graduate degree from an accredited U.S. college or university, or have completed four years of study at an accredited U.S. four-year secondary school. This screening test requirement is not eliminated by TOEFL scores or scores on other standardized tests (i.e., GRE), by English classes taken at other institutions or by completion of an intensive English program at another institution.

Students may take the screening test only one

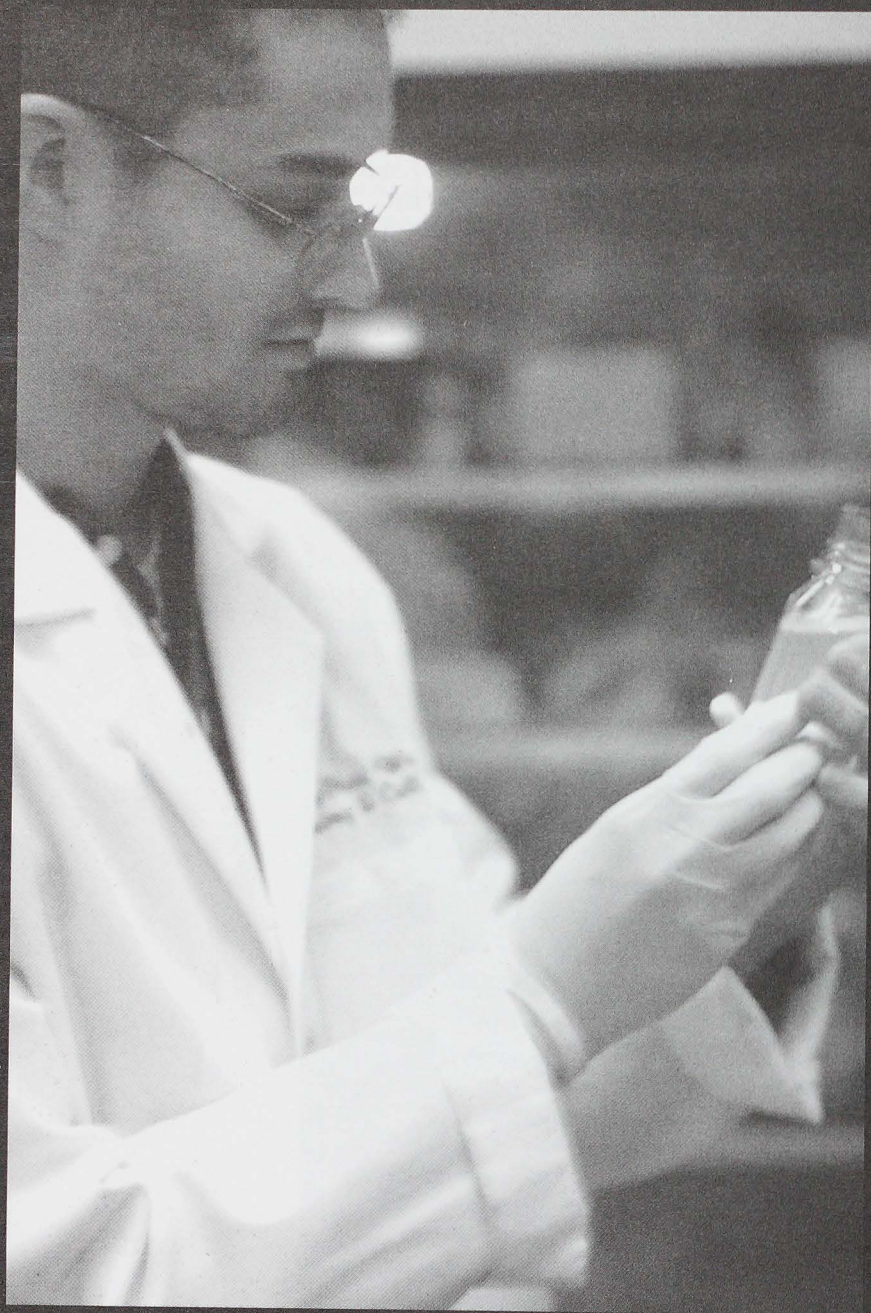
time for the semester of admission. Students may not retake the test later to get better results or to try to eliminate the requirement for English language classes mandated by the test.

A student's performance on the English Language Proficiency Screening Test determines the student's eligibility for (1) full-time health science center graduate study, (2) part-time health science center graduate study and part-time non-credit English as a Second Language (ESL) course work, or (3) full-time ESL course work. If ESL courses are required, they must be taken during the semester the screening test is taken. Required ESL courses may not be postponed and must receive first priority in the student's course scheduling. Students who do not successfully complete the required ESL course work during the first semester of enrollment will have restricted course registration or be blocked from further enrollment in the health science center. ESL courses are available at the University of North Texas.

There are no study aids available for the screening examination.



Academic Policies



THREE

The general policies of the Graduate School of Biomedical Sciences are determined by the Graduate Council and administered by the dean.

Standards, fees and other requirements may be modified at any time by the Graduate Council.

Students should review the Student Handbook for additional policies and procedures concerning their roles as students.

Absence for Religious Holidays

In accordance with state law, students absent due to the observance of a religious holiday may take examinations or complete assignments scheduled for the day missed within a reasonable time after the absence if the student has notified the instructor of each class of the date of the absence within the first 15 days of the semester.

Religious Holy Day Request Forms may be obtained from the Office of the Registrar. Instructor(s) may require a letter of verification of the observed holy day(s) from the religious institution.

Only holidays or holy days observed by a religion for which the place of worship is exempt from property taxation under Section 11.20 of the Tax Code may be included. A student who is excused under this provision may not be penalized for the absence, but the instructor may respond appropriately if the student fails to satisfactorily complete the assignment or examination.

Academic Misconduct

Cheating and plagiarism are types of academic misconduct for which penalties are described and assessed under the health science center's Code of Student Conduct and Discipline.

The term "cheating" includes, but is not limited to: (1) use of any unauthorized assistance in taking quizzes, tests or examinations; (2) dependence upon the aid of sources specifically prohibited by the instructor in writing papers, preparing reports, solving problems or carrying out other assignments; and (3) the acquisition, without permission, of tests or other academic material belonging to a faculty or staff member of the health science center.

The term "plagiarism" includes, but is not limited to, the use, by paraphrase or direct quotation, of the published or unpublished work of another person without full and clear acknowledgment. Plagiarism also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.

Specific penalties can be assigned by a faculty member for certain cases of academic misconduct (including cheating and plagiarism). These penalties include: giving a failing grade for the test or assignment; reducing or changing the grade for the test, assignment or course; requiring additional academic work not required of other students; and assigning a failing grade in the course. Other specific penalties can be recommended by a faculty member to the appropriate administrative/academic authority, including denial of the degree, expulsion from the health science center or revocation of a degree already granted.

All graduate students are responsible for making themselves aware of the definitions and implications of academic misconduct. For further information on academic misconduct, penalties and appeal procedures, the student should refer to the Student Honor Code available through the Office of Student Affairs.

Annual Performance Review

Every graduate student accepted into a degree program will undergo an annual performance review by the major professor which will be reported to the graduate school through the department graduate advisor. The review process is designed to assist students in meeting departmental expectations and document students' annual progress toward degree.

Appeal Processes

Specific policies and procedures have been established for students seeking to appeal a grade in a course, denial of admission, qualifying or comprehensive examination scores or seeking an extension of time to complete a degree.

The grade appeal policy and procedures are listed below. The policy and procedures for requesting an extension of time to complete a degree are available through the office of the graduate dean.

Appeals concerning admission to graduate school should be addressed to the graduate dean.

Advice concerning how to pursue appeals on any other matter can be sought from the graduate dean.

Grade Appeal Policy and Procedures

1. Any graduate student who believes that a grade has been inequitably awarded should first contact the instructor who awarded the grade in order to discuss the issue and attempt to resolve

the differences. Any instructor no longer associated with the health science center at the time of the appeal will be represented in these proceedings by the chair of the department in question. The student who is unable to resolve the differences with the instructor has 30 days following the first class day of the succeeding semester to file a written appeal with the chair of the instructor's department, or of the equivalent administrative unit.

2. The chair may follow any of the four procedures below, or a combination of them.
 - The chair may confer with the instructor.
 - The chair may request that the instructor submit a written reply to the student's complaint.
 - The chair may conduct a meeting of the two parties.
 - The chair may refer the case directly to the appropriate departmental committee, as outlined below.

In following any of the first three procedures noted above, the chair should make a judgment on the merits of the case and recommend a specific action in regard to the disputed grade. Either the student or the instructor may appeal the recommendations of the chair.

3. The appropriate departmental committee to hear cases sent directly to it by the chair or appealed to it by either the student or the instructor shall be constituted as follows and shall perform the following four duties.
 - It shall be an *ad hoc* committee consisting of three faculty members. Two of the members will be chosen from the department in which the grade is being questioned, one by the student and the other by the instructor. If either party to the dispute declines to choose a member of the committee, the department chair will select that member. The third faculty member of the committee, who will serve as chair, will be chosen either from within or outside the department by agreement of the student and the instructor. If they cannot agree upon a third member, the member shall be chosen by the chair of the department, with the provision that the student and the instructor may agree to stipulate that the third member of the committee be chosen from a related department or academic administrative unit rather than from the department in question.
 - This *ad hoc* committee should require written statements from each participant in the dispute. Judgments may be rendered upon the basis of

these statements, upon other evidence submitted in support of the statements and upon the basis of oral hearing, if such a hearing seems necessary.

- The committee must make a recommendation for disposition of the case within 30 days of its appointment.
 - All records in the case will be filed with the chair of the department in which the grade was originally awarded.
4. Either party to the dispute has 15 days following the rendering of the *ad hoc* committee's recommendation to appeal that recommendation to the dean of the graduate school, if the appeal is based solely upon alleged violations of established procedures. Substantive matters, up to and including the refusal of the instructor to act in accordance with the *ad hoc* committee's recommendation or the student's refusal to accept the verdict, may not be appealed to the graduate dean.
 5. The dean of the graduate school will, after a review of the submitted written materials (and oral hearings if desired), make within 15 days a ruling about procedural questions. The ruling may be appealed by either the student or the instructor to the Graduate Council of the graduate school.
 - The Graduate Council will have 30 days from the date of the appeal to complete its work.
 - The Graduate Council shall operate within the guidelines set out for departmental *ad hoc* committees above.
 - All rulings made by the Graduate Council regarding procedural questions shall be final.
 - All documents related to the case shall be returned to the chair of the originating department for departmental files.

Application for the Completion of the Graduate Degree

It is the responsibility of the student to keep aware of progress toward the degree and to file an Intent to Graduate in the office of the graduate dean. Consult the Academic Calendar for the proper dates. The applicant's grade point average on all graduate work attempted must be at least 3.0 for the application to graduate to be accepted.

Because of the time required to receive transcripts, students otherwise eligible for graduation who complete their last course or courses elsewhere will not graduate at the end of the semester or summer session in which the work is completed, but will receive their degrees at the close of a

subsequent graduate school semester or summer session.

Information concerning graduation fees is furnished on request by the office of the graduate dean, and is contained in the annual Tuition and Fee Register, available from the graduate office. Students anticipating graduation should consult the Academic Calendar for final dates for payment of fees and meeting other graduation requirements.

Auditing

With the written permission of the department chair and the dean of the graduate school, an individual fully eligible to enroll in the graduate school may sit in a class as an auditor without receiving graduate credit. The auditor's name will not be entered on the class roll, and the instructor will not accept any papers, tests or examinations.

Attendance as an auditor may not be used as the basis of a claim for credit in the course. Students who are enrolled for credit may audit classes without payment of additional fees; others pay an auditor's fee as shown in the Tuition and Fee Register.

A person 65 years of age or older may enroll as an auditor and observer without credit and without payment of an audit fee if space is available and if approved by the department chair and the dean. Such enrollment entitles the person to library privileges, but not the use of laboratory equipment and supplies, health and hospital benefits.

Change of Subdiscipline or Track

Any student requesting a change of subdiscipline or track must be in good academic standing and have approval of the major professor, graduate advisor or track director, and department chair of both the original and the requested subdiscipline or track.

Class Attendance

Regular and punctual class attendance is expected. Although in general students are graded on intellectual effort and performance rather than attendance, absences may lower the student's grade where class attendance and class participation are deemed essential by the faculty member. In those classes where attendance is considered as part of the grade, the instructor should so inform students at the semester's beginning by a *written notice*. Any instructor who informs students in *writing* about the necessity of class attendance may

request of the Registrar that a student be dropped from the course with a grade of WF upon the accumulation of the stated number of absences. If the instructor-initiated drop action falls within the time that the student is eligible to drop with instructor consent and without penalty, the Registrar's Office notifies the student that a WF will be recorded unless the student initiates the drop procedure, in which case a W will be assigned.

Departments and similar academic units have authority to establish a department-wide or course-wide policy, so long as the policy is in accord with the above stipulations.

Commencement Exercises

Commencement exercises are held in June at the health science center and in December and August with UNT commencement ceremonies held in Denton. Diplomas may be obtained from the registrar after graduation has been verified.

Concurrent Enrollment at another Institution

Graduate students must secure written permission from the graduate dean before registering for any course or courses at another institution while registered for any courses at the health science center.

Failure to secure the required permission for concurrent enrollment prior to registration at the second institution may cause the health science center to refuse degree credit for the work taken elsewhere. In no case may the combined total of semester hours enrolled for at the two institutions exceed the maximum load permitted to graduate students.

Course Changes

Adding Courses

Graduate students must initiate all requests for adding courses in the office of the dean of the Graduate School of Biomedical Sciences. All requests must be made in writing. Consult the Academic Calendar for dates during which adds are allowed.

Dropping Courses

Students who wish to drop a course must obtain a form from the Registrar's Office and must first receive the written consent of their instructor before dropping a course. The instructor may

withhold consent for students to drop for any reason providing the instructor has informed students *in writing* at the beginning of the semester.

The grade of W is recorded for any course dropped with the instructor's consent before the end of the sixth week of classes (summer term, eight class sessions). After that time the student must have a passing grade in order for the instructor to assign a grade of W for a dropped course; otherwise, the grade WF is recorded.

Instructors may drop students with grades of WF from courses for non-attendance at any time after the sixth week of classes (summer term, eight class sessions). See "Class Attendance" above.

Drop procedures must be completed by 5 p.m. on the deadline dates specified in the Academic Calendar. After these dates a student may not drop a course for any reason.



Courses of Instruction

Courses normally meet one hour per week in lecture for each semester credit hour (SCH). For the exceptions, the course descriptions in each department will explain meeting times.

Individual courses of instruction are subject to change or withdrawal at any time and may not be offered each semester of every year. Any course may be withdrawn from current offerings if the number of registrants is too small to justify conducting the course.

Enrollment Certification

Enrollment verification and loan deferments are completed in the Registrar's Office based upon the

student's having registered and paid tuition and fees according to the criteria listed under "full-time enrollment" below.

International students may also request the International Student and Scholar Office (ISSO, Kendall Hall, Room 103, University of North Texas, Denton, TX) to issue letters of enrollment for the use of foreign governments, embassies, scholarship agencies and banks. See the graduate office of the health science center for details.

Final Examinations

Faculty members are expected to administer final examinations at the designated times during the final week of each long semester and during the specified day of each summer term.

If a final examination is not given in a particular course, the faculty member is expected to use the final examination period for summary, evaluation or other productive purposes.

Students who have as many as three final examinations scheduled on one day may appeal to the graduate dean to reschedule one of those examinations on another day during the final examination period.

Full-time Enrollment

A student must enroll for 12 semester hours for each long semester to be considered full-time. Enrollment in a total of six semester hours is considered full-time for the summer.

An M.S. or M.P.H. student who has completed all but the thesis or problem-in-lieu of thesis requirements for the degree, enrollment in three semester hours is considered full-time. Doctoral students who have advanced to candidacy (i.e., successfully complete the qualifying examination which consists of defending a grant proposal) will also be considered full-time if enrolled for three semester hours. This applies to long semesters. Such students are required to enroll in three semester hours during one summer semester.

Students are responsible for meeting enrollment requirements for federal or state financial aid purposes.

Grading System

Courses numbered 5000 or higher ordinarily are taken by students working toward master's and doctoral degrees; those numbered 6000 or higher are open principally to doctoral students.

The Graduate School of Biomedical Sciences' grading system uses the letters A, B, C, D, F, P, NP,

I, PR, W, WF and Z. The letter Z is used to indicate that a grade was not properly received and/or recorded for a course.

- A** Excellent work; four grade points for each semester hour. (90-100)
- B** Good work; three grade points for each semester hour. (80-89)
- C** Fair work; two grade points for each semester hour. (70-79)
- D** Passing work; one grade point for each semester hour. Courses in which the grade is D may not be counted toward a graduate degree. (60-69)
- F** Failure; given when a student: 1) has failed the course while still officially enrolled at the end of the semester; 2) is failing in a course and misses the final examination without satisfactory explanation; or 3) stops attending class without completing an official drop or withdrawal. (59 and below)
- P** Passed; a credit grade on pass/no pass option in selected graduate individual problems and research courses.
- NP** Not passed; a failing grade on the pass/no pass option; nonpunitive.
- I** Incomplete; a nonpunitive grade given only during the last one-fourth of a semester and only if a student is: 1) passing the course; 2) has justifiable reason why the work cannot be completed on schedule; and 3) arranges with the instructor to finish the course at a later date by completing specific requirements which the instructor must list on the grade sheet. For information on removal of I, see "Removal of I" below.
- PR** Assigned at the close of each semester or summer term in which the graduate student is enrolled in thesis (5950) or dissertation (6950). No credit hours are shown when the grade of PR is assigned. When the thesis or dissertation has been completed and submitted to the graduate dean, appropriate grades and credit hours will be shown on the student's record for the required number of enrollments.
- W** Drop or withdrawal without penalty. Given when a student drops a course or withdraws from the graduate school according to the dates in the academic calendar. See regulations for dropping and withdrawing.
- WF** Drop or withdrawal with failing grade. May be assigned after the dates listed in the academic calendar. See regulations for dropping and withdrawing.

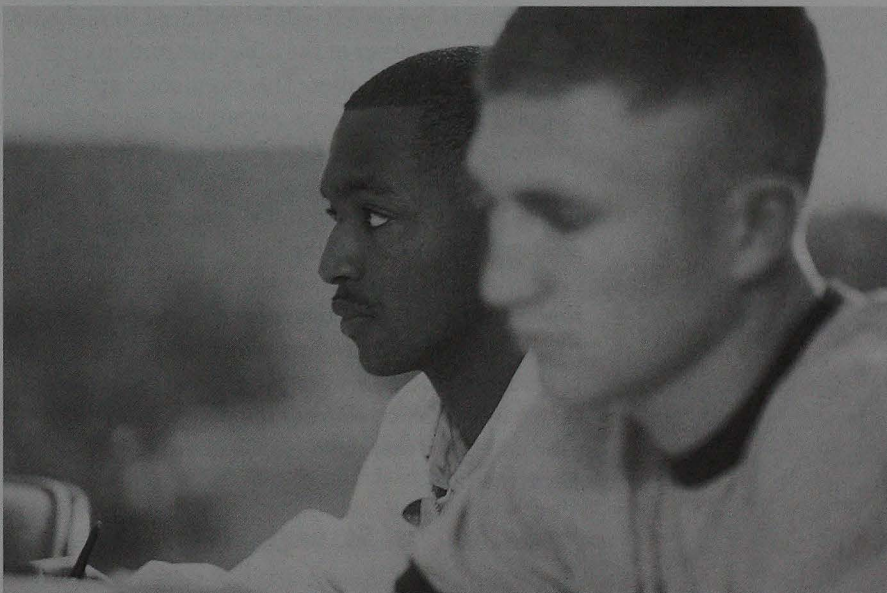
At the graduate level, courses assigned D, F, I, NP, PR, W, WF or Z are not counted toward the degree but do count as courses attempted.

A complete record of all previously used grades and grading systems is detailed on the official transcript.

Grade Point Average

The overall grade point average (GPA) is used to determine student class loads, eligibility for admission to the graduate school and certain programs and eligibility for graduation. It is calculated by dividing the total number of grade points by the total number of semester hours attempted. All GPA calculations are subject to postaudit and correction by the Registrar's Office.

The number of semester hours attempted includes all courses with grades of A, B, C, D, F



and WF unless replaced by a later grade. Courses with grades of I, NP, P, PR, W or Z are not counted as courses attempted.

Graduate Advisor

The graduate advisor is the official representative of the graduate dean in matters affecting graduate students in the advisor's academic unit. There should be a close working relationship between the advisor and the staff of the Graduate School of Biomedical Sciences. The graduate advisor is the liaison between the graduate dean and the department. The graduate advisor should keep the department chair informed on matters pertaining to graduate education. The dean is

dependent upon the experience and judgment of graduate advisors and upon their recommendations in matters requiring the dean's action. The dean's staff provides information to the advisor on a continuing basis and responds to requests for special assistance.

The graduate advisor is responsible for supervising graduate study in the department, ensuring that each graduate student is assigned an individual faculty advisor within the department, and representing the graduate faculty as a member of the Graduate Council.

Quality of Work Required

Graduate students must maintain a 3.0 GPA on all courses that receive graduate credit, whether or not the courses are to be applied toward a graduate degree.

The student whose GPA earned at another institution is below 3.0 will be required to make up the deficiency either at the other institution or at the health science center. This regulation applies not only to graduate work attempted elsewhere before the student was first admitted to the Graduate School of Biomedical Sciences, but also to graduate work attempted elsewhere after the student's admission at the health science center.

Students must make satisfactory progress toward completion of degree requirements in order to remain in good standing within a specific degree program. Students whose progress is unsatisfactory may be removed from the program by the graduate dean on recommendation of the major department.

Probation and Suspension

A student who fails to maintain the required GPA of 3.0 on all courses carrying graduate credit may initially be subject to academic probation. If the student's grades do not improve, the student may be subject to suspension for a period of up to one calendar year before becoming eligible to re-enroll for further graduate courses. Graduate work completed elsewhere during a period of graduate suspension at the health science center may not be counted for graduate credit at the health science center.

The student whose graduate school GPA falls below 3.0 must make up the deficit, either by repeating courses in which the grades are low, or by completing other graduate school courses with grades high enough to bring the graduate school GPA up to 3.0. Low grades made in graduate

courses at the health science center may not be duplicated at other institutions.

Course Duplications

A student may enroll for a course a second or subsequent time and have it counted as part of the semester's load. If a course is repeated, the last grade recorded will be considered by the graduate dean in calculating the GPA and in certifying the student's eligibility for graduation.

The responsibility for initiating the official recording of a grade duplication lies entirely with the student. In the absence of such a request the registrar will include a repeated course in the student's cumulative record of hours attempted and grade points earned.

Grade Changes

No grade except "I" may be removed from a student's record once properly recorded. Changes are not permitted after grades have been filed except to correct clerical errors.

Requests for error correction must be initiated immediately after the close of the semester for which the grade was recorded.

A faculty member who believes that an error has been made in calculating or recording a grade may submit *in person* a request for a grade change to the department chair and the graduate dean. The registrar accepts requests for grade changes only from the graduate dean.

Grade Reports

A grade report for each student is mailed to the student's permanent address at the close of each semester. It includes a statement of current academic status. If the grade report or the academic status is believed to be in error, the student should contact the Registrar's Office within 30 days.

At midsemester in the long sessions, instructors may provide individual written warnings to students who are doing unsatisfactory class work. These warnings are mailed from the Registrar's Office upon request of the instructor.

Pass/No Pass Grading

Any department of the health science center may elect to assign pass/no pass grades in graduate-level courses in which the student is engaged in individual research and is not attending an organized class. The student should inquire at the

office of the Graduate School of Biomedical Sciences at the time of registration for such courses whether a letter grade or a pass/no pass grade will be granted. Pass/no pass grades are not taken into account in computing the student's graduate grade point average.

Removal of I

A student may remove a grade of "I" within one year of receiving the initial grade by completing the stipulated work, obtaining signatures of the instructor and the graduate dean (on a permit form from the dean's office), paying a \$5 fee in the graduate school office and returning the permit form to the instructor. The instructor then files the permit form in the graduate school office, along with the grade, and the grade point average is adjusted accordingly. If a student does not complete the stipulated work within the time specified (not to exceed one year after taking the course), the instructor may change the grade of "I" to a grade of F, if appropriate, or the "I" will remain on the transcript and the student will be required to register for and repeat the course for it to count toward the degree plan. The GPA is adjusted accordingly.

A student who could not complete final examinations because of illness may remove a grade of "I" without payment of the fee. The graduate dean is authorized to waive the fee upon certification of illness signed by the attending physician.

Open Records Policy

Pursuant to the provisions and intent of Article 6252-17a, Texas Civil Statutes, known as the Open Records Act, and the Family Educational Rights and Privacy Act of 1974 as amended, known as the Buckley Amendment, the graduate school has established a policy relating to the accessibility of information in the custody of the University of North Texas Health Science Center.

Student records that include general information concerning the student and the student's individual relationship to the educational institution are available on request to health science center personnel who have an educational interest in the records, the student, and the student's parent or legal guardian if the student is a dependent for income tax purposes of the parent or legal guardian.

For information regarding the health science center's policy on access to records and to request

accessibility to center records, contact the designated Custodian of Public Records, Office of the Vice President and General Counsel, UNT Health Science Center.

Policies

Policies and regulations are explained or printed in full in the Student Handbook, available in the Office of Student Affairs. All health science center policies are subject to change throughout the year.

Student Load

Graduate students may schedule as many as 16 hours during any semester of the regular session, or seven hours in any summer term, if in the latter case the seven-hour load includes a four-hour laboratory course. For purposes of fulfilling the graduate residence requirement, a load of 12 semester hours is considered to be a full load.

Special restrictions apply to the load permitted to graduate teaching fellows and teaching assistants. The total load of course enrollment and teaching assignment may not exceed 16 semester hours in any long semester. Approval of the graduate dean is required for loads in excess of this amount, but approval will not be granted for a combined load in excess of 18 semester hours.

Summons

In the event a student's conduct or behavior is found to be in violation of a published policy or regulation, a summons may be issued. A summons is an official request that the student appear before a health science center administrator. It is always important and must have the student's immediate attention. Failure to answer a summons can result in disciplinary action.

Withdrawal from the Health Science Center

A student may withdraw from the health science center at any time prior to the deadline in the Academic Calendar by making a request in the Registrar's Office. For withdrawals processed by the relevant deadline, the grade of W is recorded for each course in which a withdrawn student was enrolled. After this date a withdrawn student receives a grade of W only for those courses in which there were passing grades at the time of withdrawal; otherwise the grade WF is recorded.

Official dates and deadlines for withdrawing are specified in the Academic Calendar.

Biomedical Sciences



FOUR

The Graduate School of Biomedical Sciences offers both M.S. and Ph.D. degrees in biomedical sciences. The graduate school encourages students to acquire a broad base of knowledge in those disciplines that flourish in the environment of a health science center and requires each student to pursue specialized research and study in a particular area of biomedical and health science. The training students obtain equips them for professional careers in health science centers, universities, health care industry, pharmaceutical and biotechnology companies. Although students obtain a degree in biomedical sciences, a concentration in a subdiscipline may be chosen from anatomy and cell biology, biochemistry and molecular biology, integrative physiology, microbiology and immunology and pharmacology.

Core Curriculum Requirements

Entering graduate students are expected to complete the core requirements described below. The integrative biomedical sciences curriculum is designed to provide a broad background in biochemistry, microbiology, molecular biology, cell biology, immunology, cancer, pharmacology, and physiology.

M.S. Core Program

BMSC	5600	Integrative Biomedical Sciences I	7 SCH
BMSC	5610	Integrative Biomedical Sciences Workshop I	2 SCH
BMSC	5700	Integrative Biomedical Sciences II	6 SCH
BMSC	5710	Integrative Biomedical Sciences Workshop II	2 SCH
BMSC	5940	Seminar in Current Topics	1 to 3 SCH
BMSC	5960	Biomedical Ethics	1 SCH
Advanced Subdiscipline Courses and Electives and			
BMSC	5950	Thesis	3 to 6 SCH
or			
BMSC	5920	Problem-in-Lieu of Thesis	6 SCH

Ph.D. Core Program

BMSC	5200	Biostatistics I	3 SCH
BMSC	5600	Integrative Biomedical Sciences I	7 SCH

BMSC	5610	Integrative Biomedical Sciences Workshop I	2 SCH
BMSC	5700	Integrative Biomedical Sciences II	6 SCH
BMSC	5710	Integrative Biomedical Sciences Workshop II	2 SCH
BMSC	5940	Seminar in Current Topics	1 to 3 SCH
BMSC	5960	Biomedical Ethics	1 SCH
BMSC	5970	Techniques in Biomedical Sciences	3 SCH
BMSC	6010	Qualifying Examination for Doctoral Students	3 SCH
BMSC	6940	Individual Research	3 to 12 SCH
BMSC	6950	Doctoral Dissertation	3 to 12 SCH
Advanced Subdiscipline Courses and Electives			

In addition, Ph.D. students must demonstrate competency in computer literacy. Competency may be demonstrated by successful completion of BMSC 6500 and 6510 or the equivalent or by successful completion of a comprehensive examination in computer literacy.

Master of Science Degree General Requirements

The candidate for a master of science degree must earn 30 or more semester credit hours (SCH), depending upon the specific degree requirements. These degree requirements are determined by the graduate catalog currently in force at the time the student's degree plan is approved by the graduate dean.

The requirements set by the graduate school are that a minimum of 30 SCH must be taken for thesis and 36 SCH for problem-in-lieu of thesis of which 17-20 SCH are core requirements plus three hours of thesis or six hours of problem-in-lieu of thesis. The use of special problems course numbers (5900, 5910) is limited to a maximum of six SCH.

Consult subsequent sections of this publication for the specific course requirements for the master of science degree.

Time Limitations

All requirements for the Master of Science degree must be completed within six years.

As individual courses exceed this time limit they lose all value for degree purposes. Credits that are more than six years old at the time of first registration for graduate work are not transferable from other institutions.

Time limits are strictly enforced. Students exceeding the time limit may be required to successfully complete a comprehensive exam, replace out-of-date credits with up-to-date work, and/or show other evidence of being up-to-date in their major fields. Students anticipating that they will exceed the time limit should apply for an extension before the normal time period to complete the degree expires. Holding a full-time job is not considered in itself sufficient grounds for granting an extension.

Time spent in active service in the U.S. armed forces will not be used in computing the time limit. However, career members of the armed forces should consult the graduate dean concerning the credit given to work completed before or during active military service.

Use of Transfer Credit

Subject to the approval of the graduate dean and the major department, a student who holds a bachelor's degree may apply up to six SCH of graduate work completed elsewhere toward a master of science degree. Only those courses with a grade of B or higher will be transferred.

Extension and correspondence credit earned at other institutions will not be counted toward a graduate degree at UNT Health Science Center.

It is the student's responsibility to insure that official transcripts of courses completed elsewhere are furnished to the office of the graduate dean, and that graduate credit has been assigned by the other institution or institutions to whatever courses are to be counted toward the health science center degree. Such courses, although listed on the health science center degree plan, will not be counted toward the degree until official transcripts showing graduate credit have been received and the credit has been approved by the graduate dean. All transfer courses are subject to the time limitation described above.

In accordance with the rules of the Texas Higher Education Coordinating Board, at least one-third of the semester credit hours required for any graduate degree must be completed in course work registered through UNT Health Science Center.

Degree Plan

A degree plan listing all courses must be completed by the student, approved by the student's advisory committee and department, and submitted to the graduate dean before the completion of 12 SCH.

The major professor and committee members are chosen on the advice of the department chair or graduate advisor in the major area. All subsequent requests for degree plan changes must be submitted in writing by the major professor to the graduate dean.

Master of Science degree requirements listed in the graduate catalog currently in force at the time the student's degree plan is approved by the graduate dean are those that should be completed by the student.

Master of Science Program Requirements

Each student is responsible for the completion of the Master of Science program according to the procedures that follow. Each item must be completed in the sequence and time period indicated. Forms are subject to revision at any time and should be obtained from the graduate office.

1. Acceptance into the graduate school. If a student has been accepted on probation, he or she must take a minimum of 9 SCH of formal graduate course work during the first regular semester of enrollment. A minimum GPA of 3.0 must be obtained.
2. Before the completion of 12 SCH, the student must select an advisory committee and file a Designation of Advisory Committee form in the graduate school. Enrollment will be restricted to prevent the accumulation of more than 12 SCH without a designated advisory committee.
3. The student must file a degree plan approved by the advisory committee with the graduate school before the completion of 12 SCH. Course work deficiencies will be stipulated at this time. In addition, the student and committee will select either the thesis option or the problem-in-lieu of thesis option. An MS degree resulting from selection of the latter option will be considered as a terminal degree from UNT Health Science Center's Graduate School of Biomedical Sciences. Enrollment will be restricted to prevent the accumulation of more than 12 SCH without an approved degree plan.
4. A research proposal must be approved by the committee and filed with the graduate school during the semester in which the student first enrolls in thesis or problem-in-lieu of thesis.
5. Once a student has enrolled in thesis, he/she must maintain continuous enrollment in a minimum of 3 SCH of thesis during each long semester and one summer session until the thesis has been accepted by the dean of the

graduate school. Failure to maintain continuous enrollment will either invalidate any previous thesis credit or will result in the student's dismissal from the degree program unless granted an official leave of absence by the graduate dean for medical or other exceptional reasons.

6. The completed thesis or problem-in-lieu of thesis should be submitted to the committee at least two weeks prior to the defense.
7. A formal seminar pertaining to the thesis or research problem will be presented in the department in the student's last semester.
8. A final oral defense of the thesis or research problem and related work will be given by the committee immediately following the seminar.
9. Three copies of the thesis or problem-in-lieu of thesis must be bound for institutional use. These are distributed to the major professor, major department and the reference section of the Gibson D. Lewis Health Sciences Library. An additional copy is also required. This fourth copy will remain unbound in the library archives.
10. The thesis must be prepared for digital submission according to the instructions in the Guidelines for Filing Dissertations, Theses and Problems-in-Lieu of Theses.

Doctor of Philosophy Degree Program

General Requirements

The candidate for a doctor of philosophy degree must earn 60 SCH beyond the master's degree or 90 SCH beyond the bachelor's degree. The degree requirements are determined by the graduate catalog currently in force at the time the student's degree plan is approved by the graduate dean.

This quantitative requirement must be regarded as a minimum. The quantity of course work to be completed by each candidate is arranged individually by the supervisory committee, subject to the approval of the graduate dean, and may be modified both as to quantity and as to type during the progress of the student's course work.

Consult subsequent sections of this publication for the specific course requirements for the doctor of philosophy degree.

Residency Requirement

Every candidate for the doctoral degree must complete the appropriate residency requirement at the health science center. The minimum residency requirement consists of two consecutive long semesters in the graduate school (fall and the following spring, or spring and the following fall), or a fall or spring semester and one adjoining summer session. During the long semesters a minimum of 12 SCH must be taken. During the combined summer terms a minimum load of 6 SCH must be taken.

Time Limitations

All work to be credited toward the doctoral degree beyond the master's degree must be completed within a period of 10 years from the date doctoral credit is first earned. No course credit beyond the master of science degree that is more than 10 years old at the time the doctoral program is completed will be counted toward the doctorate.

Time limits are strictly enforced. Students exceeding the time limit may be required to repeat the comprehensive exam, replace out-of-date credits with up-to-date work, and/or show other evidence of being up-to-date in their major fields. Students anticipating that they will exceed the time limit should apply for an extension *before* their ninth year of study. Holding a full-time job is not considered in itself sufficient grounds for granting an extension.

Time spent in active service in the U.S. armed forces will not be used in computing the time limit. However, career members of the armed forces should consult the graduate dean concerning the credit given to work completed before or during active military service.

Use of Transfer Credit

Depending on the student's previous preparation and needs, as many as 24 SCH of advanced study beyond the master of science degree or its equivalent completed at another institution may be accepted and credited toward the doctorate, providing the candidate's advisory committee recommends acceptance of transfer credit to the graduate dean.

The beginning doctoral student should bear in mind that the rule governing the time limit for doctoral credit applies also to transfer credits. Extension or correspondence credit earned

elsewhere may not be applied toward the doctorate at UNT Health Science Center.

In order to be applied to a doctoral program at the health science center, courses completed elsewhere must have been taken at an institution that offers the doctoral degree in the area in which the courses were taken, or in a closely related area. Only courses with a grade of B or higher will be transferred.

In accordance with the rules of the Texas Higher Education Coordinating Board, at least one-third of the semester credit hours required for any graduate degree must be completed in course work on the campus of UNT Health Science Center.

Degree Plan

Before the completion of 24 SCH, a degree plan listing all courses should be prepared by the student, approved by the student's advisory committee, graduate advisor, department chair and graduate dean.

The major professor and committee members are chosen on the advice of the department chair or graduate advisor in the major area. All subsequent requests for degree plan changes must be submitted in writing by the major professor to the graduate dean.

Doctoral degree requirements listed in the graduate catalog currently in force at the time the student's degree plan is approved by the graduate dean are those that must be completed by the student.

University Member

When the advisory committee is formed, the major professor and the student must file a Request for University Member Designation form to submit the names of at least three graduate faculty members outside of the major department. From this list, the graduate dean will appoint the university member.

The university member must be incorporated into the review and approval process of the doctoral dissertation, from the formal or substantive inception of the topic through the comprehensive examination and final approval of the dissertation.

The university member must take part in any formal hearing (proposal defense and qualifying examination). The university member must be a voting member of the final examination committee and will sign the dissertation fly pages.

The purpose of the university member on doctoral committees is to ensure that the policies and procedures of the Graduate School of Biomedical Sciences and UNT Health Science Center have been upheld. The presence of the university member is essential for the process of approval of dissertation proposals and defense examinations. The university member's signature on appropriate forms indicates that the integrity of the review process has been preserved. It is the responsibility of the university member to report to the graduate dean any inappropriate due process.

Qualifying Examination and Admission to Candidacy

The student who has completed all courses required for the degree (exclusive of dissertation) and has satisfied all admission and tool subject requirements should request that the major professor arrange for the qualifying examination to be held. The qualifying exam must be undertaken prior to the completion of 72 SCH. The student must be enrolled in BMSC 6010 and participate in a workshop offered by the Office of Research and Biotechnology on the completion of an NIH grant application. Consult the graduate advisor in the major area for specific information about qualifying examination requirements.

Dissertation enrollment is not permitted until a grade for BMSC 6010 has been recorded and the student has successfully completed the qualifying examination requirements. Students are admitted to candidacy for the doctoral degree by the graduate dean only after the successful completion of the qualifying examination.

Dissertation Requirement

A dissertation is required of all candidates for the doctorate. In general, 12 SCH are allowed for the dissertation. The student is required to enroll for dissertation credit and must maintain continuous enrollment in BMSC 6950 until the dissertation has been completed and submitted to the graduate dean. Enrollment in BMSC 6950 is limited to nine hours in each long term. Grades of PR will be recorded at the end of each semester until the dissertation is filed with the graduate school and approved by the graduate dean. Appropriate grades and credit hours will then be shown on the student's record. A minimum of three semester credit hours of dissertation enrollment are required during each long semester and one summer session to maintain continuous enrollment.

Before beginning the dissertation, the student should consult the graduate office for information concerning the proper form for preparation of the document.

When the dissertation is completed and has received preliminary approval of the advisory committee, the student's major professor will schedule the final comprehensive examination and notify the Graduate School of Biomedical Sciences of the date and time of the examination. The dissertation may not be submitted to the graduate dean until this examination has been passed.

No dissertation credit will be recorded until the dissertation has been approved by the student's advisory committee, submitted to the office of the graduate dean and finally approved by the graduate dean. Instructions for submission of the dissertation may be obtained from the office of the graduate dean.

Doctoral Program Requirements

Each student is responsible for the completion of the doctoral program according to the procedures below. Each item must be completed in the sequence and time period indicated. See the graduate office regarding paperwork when completing each step.

1. A major professor should be selected by the student at the earliest possible time.
2. The student should meet with the intended major professor for guidance until a doctoral committee and degree plan are established.
3. The major professor and the student should select at least four doctoral committee members from the graduate faculty. The student has the responsibility for obtaining the agreement of the professors (using the Designation of Doctoral Advisory Committee form) and will file this in the graduate school before the completion of 24 SCH. At the time the committee is designated, the student should submit the names of at least three graduate faculty members from which the graduate dean will appoint the university member. Enrollment will be restricted to prevent the accumulation of more than 24 SCH without designation of an advisory committee and request for designation of university member.
4. The committee should meet and evaluate all credentials of the student pertinent to the development of the degree program. An approved degree plan will then be submitted to the graduate dean. The committee should meet with the student as needed to discuss progress, but must meet at least once per academic year. The doctoral committee has sole responsibility for quality control of the student's Ph.D. program and dissertation. Enrollment will be restricted to prevent the accumulation of more than 24 SCH without an approved degree plan.
5. An oral qualifying examination intended to establish the student's candidacy for the Ph.D. degree will be administered by the designated departmental committee upon fulfillment of the tool and course work requirements. Qualifying examinations consist of each student writing an NIH- or NRSA-style grant and defending the grant to the graduate faculty in their subdiscipline. The qualifying exam must be undertaken prior to the completion of 72 SCH. Results of the qualifying examinations will be sent to the graduate school in writing. Each student is required to write and defend a grant proposal as a minimum qualifying exam; however, individual



departments may have additional qualifying exam requirements, which are indicated in their graduate program descriptions. Enrollment will be restricted to prevent the accumulation of more than 72 SCH without successful completion of the qualifying examination.

6. A research proposal must be approved by the committee and filed with the graduate school during the semester in which the student first enrolls in dissertation. Enrollment will be blocked to prevent the student from registering for additional dissertation credits before an approved research proposal has been filed with the graduate school.
7. A student must maintain continuous enrollment in a minimum of 3 SCH of dissertation during each long semester and one summer session until the dissertation has been accepted by the dean of the graduate school.

Failure to maintain continuous enrollment will either invalidate any previous dissertation credits or will result in the student being dropped from the degree program unless granted an official leave of absence by the graduate dean for medical or other exceptional reasons.

8. Upon completion of the research and after consultation with the major professor, the student should submit a rough draft of the dissertation to the committee members at least one month before the receipt of the final draft. The final draft should be distributed to committee members at least two weeks prior to the defense. Committee members should return

corrected drafts to the student as soon as possible. Working through committee members at all times, the student and major professor will resolve comments arising from the rough draft and incorporate them into a final draft.

9. During the semester of graduation, the student will present a formal departmental seminar on the research. This seminar should be scheduled immediately prior to the final defense.
10. The doctoral committee will administer the final defense and sign final copies of the dissertation. The University Member must be present and sign final copies of the dissertation. The committee will notify the dean of the graduate school of results of the final examination.
11. Three copies of the dissertation must be bound for institutional use. These are distributed to the major professor, major department and the reference section of the Gibson D. Lewis Health Sciences Library. An additional copy is also required. This fourth copy will remain unbound in the library archives.
12. The dissertation must be prepared for digital submission according to the instructions in the Guidelines for Filing Dissertations, Theses, and Problems-in-Lieu of Theses.

Department of Anatomy and Cell Biology

James E. Turner, Ph.D. Chair

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Graduate Faculty: Agarwal, Aschenbrenner, Cammarata, Chaitin, M.Garner, Moorman, Orr, Roque, Rudick, Schunder, Sheedlo, Turner, Wordinger

Adjunct Faculty: Collier, W. Garner, McCartney

The Department of Anatomy and Cell Biology has a primary mission to provide instruction in the anatomical sciences, develop and maintain research programs, and participate in the service endeavors of the institution and profession. Research focuses on the eye involving retinal degenerations, glaucoma, diabetic complications and cataracts. Other research programs include axon growth and regeneration, cell secretory mechanisms and nervous system inflammatory mechanisms.

In support of the various research programs, the department maintains state-of-the-art facilities in microscopy, tissue culture and molecular biology. Over 8,000 square feet of research space is occupied by department faculty and staff.

The department is home to the North Texas Eye Research Institute which involves faculty from various basic science disciplines, as well as professionals in industry and private clinical practice.

Degree Plans

The following are typical degree plans for students in the anatomy and cell biology subdiscipline. It is advantageous to the student to begin graduate study in a fall semester. This degree plan may vary depending upon availability of course offerings in a given semester and each student's progress toward thesis and dissertation research.

M.S. Degree Plan for Anatomy and Cell Biology

Year 1

Fall

ANAT 6599	Current Topics in Anatomy	1 SCH
BMSC 5600	Integrative Biomedical Science I	7 SCH
BMSC 5610	Integrative Biomedical Science Workshop I	2 SCH
BMSC 5940	Seminar in Current Topics	1 SCH
Electives		<u>2 SCH</u>
		13 SCH

Spring

ANAT 6599	Current Topics in Anatomy	1 SCH
BMSC 5700	Integrative Biomedical Science II	6 SCH
BMSC 5710	Integrative Biomedical Science Workshop II	2 SCH
BMSC 5960	Biomedical Ethics	1 SCH
Electives		<u>3 SCH</u>
		13 SCH

Summer I

ANAT 5005	Introduction to Anatomical Sciences	6 SCH
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Year 2

Fall

ANAT 6599	Current Topics in Anatomy	1 SCH
BMSC 5950	Thesis	3 SCH
	or	
BMSC 5930	Problem-in-Lieu of Thesis	<u>3 SCH</u>
		4 SCH

Spring

ANAT 6599	Current Topics in Anatomy	1 SCH
BMSC 5940	Seminar in Current Topics	1 SCH
BMSC 5950	Thesis	3 SCH
	or	
BMSC 5930	Problem-in-Lieu of Thesis	<u>3 SCH</u>

		<u>5 SCH</u>
Total		41 SCH

Ph.D. Degree Plan for Anatomy and Cell Biology

Year 1

Fall

ANAT 5900	Special Problems	3 SCH
ANAT 6599	Current Topics in Anatomy	1 SCH
BMSC 5600	Integrative Biomedical Science I	7 SCH
BMSC 5610	Integrative Biomedical Science Workshop I	2 SCH
BMSC 5940	Seminar in Current Topics	<u>1 SCH</u>
		14 SCH

Spring

ANAT 6599	Current Topics in Anatomy	1 SCH
BMSC 5700	Integrative Biomedical Science II	6 SCH
BMSC 5710	Integrative Biomedical Science Workshop II	2 SCH
BMSC 5960	Biomedical Ethics	1 SCH
Electives		<u>3 SCH</u>
		13 SCH

Summer I		
ANAT 5005	Introduction to Anatomical Sciences	6 SCH
Year 2		
Fall		
ANAT 6030	Methods in Molecular Biology	4 SCH
ANAT 6599	Current Topics in Anatomy	1 SCH
BMSC 5940	Seminar in Current Topics	1 SCH
BMSC 6940	Individual Research	3-5 SCH
Electives		<u>3-5 SCH</u>
		12-16 SCH
Spring		
ANAT 6599	Current Topics in Anatomy	1 SCH
BMSC 5940	Seminar in Current Topics	1 SCH
BMSC 6010	Qualifying Examination for Doctoral Students	3 SCH
BMSC 6940	Individual Research	4-5 SCH
Electives		<u>3-5 SCH</u>
		12-15 SCH
Summer 1		
BMSC 5200	Biostatistics I	3 SCH
BMSC 6500	Computer Applications in Science and Medicine	1 SCH
BMSC 6940	Individual Research	<u>2 SCH</u>
		6 SCH
Year 3		
Fall		
ANAT 5900	Special Problems	3 SCH
BMSC 5940	Seminar in Current Topics	1 SCH
Electives		<u>6 SCH</u>
		10 SCH
Spring		
BMSC 6510	Automated Information Resources in Science and Medicine	1 SCH
BMSC 6950	Doctoral Dissertation	3 SCH
Electives		<u>4 SCH</u>
		8 SCH
Summer		
BMSC 6950	Doctoral Dissertation	3 SCH
Year 4		
Fall		
BMSC 6950	Doctoral Dissertation	3 SCH
Spring		
BMSC 6950	Doctoral Dissertation	<u>3 SCH</u>
Total		90-97 SCH

Qualifying Exam for Doctoral Students (BMSC 6010)

The qualifying examination for doctoral students in the anatomy and cell biology subdiscipline is conducted according to the following guidelines:

1. A student must pass BMSC 6010 (Qualifying Examination for Doctoral Students) to be admitted to candidacy for the doctoral degree.
2. The examination should be administered no later than the fifth semester of graduate study, excluding summer semesters. A justification for any delay of the examination must be submitted to the Graduate Affairs Committee of the department by the major professor.
3. The student's Advisory Committee will administer the qualifying examination. For the purpose of this examination, the department graduate advisor, in consultation with the department chair and the student's major professor, will appoint a chair of the examination committee. The student's major professor will not be a member of the examination committee.
4. The examination will consist of (a) a written, abbreviated NIH-style grant proposal to include a research plan and budget and (b) an oral defense of the written grant proposal.
5. The grant proposal will be based on a topic that is not directly related to the student's dissertation topic. During the first two weeks of the semester, the student will present two or three potential topics to the examination committee who, in consultation with the student, will select the topic of the proposal. The student will meet with the examination committee at least two times during the semester to review drafts of the proposal. The final written grant proposal must be distributed to the examination committee at least ten days prior to the examination.

Department of Integrative Physiology

Peter Raven, Ph.D., Chair

H. Fred Downey, Ph.D., Graduate Advisor

Medical Education Building 2-302

817-735-2080

Graduate Faculty: Barker, Barron, Caffrey, Downey, Grant, Gwartz, Mallet, Raven, Shi, Smith

Adjunct Faculty: Burke, Stoll

Physiology is an essential foundation for clinical and experimental medicine. The physiologist seeks an understanding of the physical and chemical mechanisms of biological processes. Thus, physiology is the study of the function of living organisms and their various components. It encompasses normal and abnormal function and ranges in scope from an understanding of basic molecular and cellular functions to a cognizance of biological control systems and of the integration of bodily functions among multiple organ systems.

The Department of Integrative Physiology maintains an active and productive research program with special emphasis on cardiovascular physiology. Research interests of the faculty include cardioprotection, myocardial energy metabolism, cardiac endocrinology, coronary flow and flow regulation, cardiovascular responses to exercise, and mechanisms of blood pressure and blood volume regulation. Faculty programs are funded by extramural sources including the American Heart Association, the National Institutes of Health and the National Aeronautics and Space Administration.

Students may enter the program with a variety of academic backgrounds, providing that they have fulfilled prerequisite courses in biology, chemistry, physics, and mathematics. The graduate training program involves basic courses in physiology, neurobiology, pharmacology, molecular biology and biochemistry, and advanced courses in selected topics. The program is designed to integrate the fundamental processes of molecular biology with organ system functions. Students participate in teaching and seminars and receive extensive training in techniques of contemporary physiological research. Doctoral students and Master of Science students selecting the thesis option perform original, publishable research and present their research findings at national scientific meetings. At the end of the first year, all graduate students must pass an oral physiology progress examination. One to two years are required to

M.S. Degree Plan for Integrative Physiology

Year 1

Fall

BMSC 5600	Integrative Biomedical Science I	7 SCH
BMSC 5610	Integrative Biomedical Science Workshop I	2 SCH
Electives		<u>3 SCH</u>
		12 SCH

Spring

BMSC 5700	Integrative Biomedical Science II	6 SCH
BMSC 5710	Integrative Biomedical Science Workshop II	2 SCH
BMSC 5960	Biomedical Ethics	1 SCH
PSIO 6699	Current Topics in Physiology	1 SCH
Electives		<u>2 SCH</u>
		12 SCH

Summer I

BMSC 5200	Biostatistics I	3 SCH
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Summer II

BMSC 5950	Thesis	3 SCH
	or	
BMSC 5920	Problem-in-Lieu of Thesis	<u>3 SCH</u>
		6 SCH

Year 2

Fall

BMSC 5950	Thesis	3 SCH
	or	
BMSC 5930	Problem-in-Lieu of Thesis	<u>3 SCH</u>

Total

33 SCH

Ph.D. Degree Plan for Integrative Physiology

Year 1

Fall

BMSC 5600	Integrative Biomedical Science I	7 SCH
BMSC 5610	Integrative Biomedical Science Workshop I	2 SCH
BMSC 6500	Computer Applications in Science and Medicine	1 SCH
Electives*		<u>2 SCH</u>
		12 SCH

Spring

BMSC 5700	Integrative Biomedical Science II	6 SCH
BMSC 5710	Integrative Biomedical Science Workshop II	2 SCH
BMSC 5960	Biomedical Ethics	1 SCH
BMSC 6500	Automated Information Resources in Science and Medicine	1 SCH
BMSC 5970	Techniques in Biomedical Science	<u>2 SCH</u>
		12 SCH

Summer I

BMSC 5200	Biostatistics I	3 SCH
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Summer II

BMSC 5210	Biostatistics II	<u>3 SCH</u>
		6 SCH

Year 2

Fall		
PSIO 6699	Current Topics in Physiology	1 SCH
BMSC 5970	Techniques in Biomedical Science	1 SCH
BMSC 6940	Individual Research	4 SCH
Electives*		<u>6 SCH</u>
		12 SCH

Spring		
BMSC 6940	Individual Research	3 SCH
Electives*		<u>9 SCH</u>
		12 SCH

Summer I		
Electives*		3 SCH

Summer II		
BMSC 6940	Individual Research	<u>3 SCH</u>
		6 SCH

Year 3

Fall		
BMSC 6010	Qualifying Examination for Doctoral Students	3 SCH
Electives*		<u>9 SCH</u>
		12 SCH

Spring		
BMSC 6950	Doctoral Dissertation	3 SCH
Electives*		<u>9 SCH</u>
		12 SCH

Summer I		
BMSC 6950	Doctoral Dissertation	3 SCH

Year 4

Fall		
BMSC 6950	Doctoral Dissertation	<u>3 SCH</u>
Total		90 SCH

complete the Master of Science degree requirements. Three to five years are required to complete the Doctorate of Philosophy degree requirements. It is expected that, prior to the awarding of the doctorate, the student will have published, have on press, or have submitted two first-author publications in peer-reviewed journals.

Graduates with advanced degrees find employment in higher education, industry and government agencies.

Degree Plans

Typical degree plans for students in the integrative physiology subdiscipline appear on the previous page and at left. It is advantageous to the student to begin graduate study in a fall semester. This degree plan may vary depending upon availability of course offerings in a given semester and each student's progress toward thesis and dissertation research.

Qualifying Exam for Doctoral Students (BMSC 6010)

Students in the integrative physiology subdiscipline are required to submit an NIH grant application to their advisory committee in fulfillment of the requirements for BMSC 6010, Qualifying Examination for Doctoral Students. The grant application will describe the student's dissertation research project, and will serve as the student's dissertation proposal. Following a public, oral presentation of the research proposed in the grant application, the student defends the application before the advisory committee. Advisory committee members may question the student on any area of physiology, whether or not it is directly related to the research proposed in the grant application.

*Electives Courses (18 SCH from the following):

PSIO 5100	Cardiovascular Physiology I	3 SCH
PSIO 5110	Cardiovascular Physiology II	3 SCH
PSIO 5200	Respiratory Physiology	3 SCH
PSIO 5300	Renal Physiology	3 SCH
PSIO 6050	Physiology of Skeletal and Smooth Muscle	3 SCH
PSIO 6060	Cardiovascular Regulation During Exercise	3 SCH
PSIO 6070	Advanced Endocrine Physiology	3 SCH
PSIO 6080	Advanced Autonomic Nervous System Physiology	3 SCH
PSIO 6090	Myocardial Metabolism: Concepts and Controversies	3 SCH

Department of Molecular Biology and Immunology

Ronald H. Goldfarb, Ph.D., Chair

Program in Biochemistry & Molecular Biology

Richard A. Easom, Ph.D., Graduate Advisor

Medical Education Building 2-402

817-735-2141

Graduate Faculty: Andreev, Borejdo, Dimitrijevic, Dory, Easom, Goldfarb, Gracy, B. Harris, Kitson, Kudchodkar, Kulkarni, Lacko, McConathy, Rao, Wu

Adjunct Faculty: Clark, Zachariah

The Department of Biochemistry and Molecular Biology offers comprehensive graduate training in molecular aspects of biological processes. Both M.S. and Ph.D. degree programs are designed to accommodate a broad spectrum of student and faculty interests and require a significant contribution to knowledge through original research. Research training is conducted in modern laboratories and is complemented by informative didactic course work, seminars and journal clubs.

Among the research interests of the faculty are molecular and biochemical aspects of cancer growth factors and signal transduction, cell matrix interactions in normal and injured tissues, mechanism of enzyme action; lipoprotein structure, function and metabolism; post-transcriptional regulation of protein synthesis; regulation of hormone biosynthesis and secretion, regulation of cytokine gene expression, age-related changes in protein structure and function, endothelial cells, arterial wall and steroid binding proteins.

Students with undergraduate science majors in areas such as biology, chemistry and biochemistry that fulfill prerequisite courses of organic and inorganic chemistry will be considered for admission. The graduate curriculum consists of a multidisciplinary core course that surveys the fundamental principles of biochemistry, molecular biology, cell biology, microbiology, immunology, pharmacology and physiology. This is followed by advanced courses that focus on the most recent progress in various areas of biochemistry and provide the student with a contemporary perspective in areas of greatest current scientific interest.

Most students complete the M.S. requirements in 1-2 years, while Ph.D. requirements are completed within 4-5 years.

Degree Plans

The following are typical degree plans for students in the biochemistry and molecular biology subdiscipline. It is advantageous to the student to begin graduate study in a fall semester. This degree plan may vary depending upon availability of course offerings in a given semester and each student's progress toward thesis and dissertation research.

M.S. Degree Plan for Biochemistry & Molecular Biology

Year 1

Fall

BIOC 5940	Seminar in Molecular Biology and Immunology	1 SCH
BMSC 5600	Integrative Biomedical Science I	7 SCH
BMSC 5610	Integrative Biomedical Science Workshop I	2 SCH
Electives		<u>2 SCH</u>
		12 SCH

Spring

BIOC 5940	Seminar in Molecular Biology and Immunology	1 SCH
BMSC 5700	Integrative Biomedical Science II	6 SCH
BMSC 5710	Integrative Biomedical Science Workshop II	2 SCH
BMSC 5960	Biomedical Ethics	1 SCH
Electives		<u>2 SCH</u>
		12 SCH

Summer I

BMSC 6940	Individual Research	3 SCH
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Summer II

BMSC 5950	Thesis	3 SCH
	or	
BMSC 5930	Problem-in-Lieu of Thesis	<u>3 SCH</u>
		6 SCH

Year 2

Fall

BMSC 5950	Thesis	3 SCH
	or	
BMSC 5930	Problem-in-Lieu of Thesis	<u>3 SCH</u>

TOTAL

33 SCH*

*Students selecting Problem-in-Lieu of Thesis option must complete 36 SCH

Ph.D. Degree Plan for Biochemistry and Molecular Biology

Year 1

Fall

BIOC 5940	Seminar in Current Topics	1 SCH
BMSC 5600	Integrative Biomedical Science I	7 SCH
BMSC 5610	Integrative Biomedical Science Workshop I	2 SCH
BMSC 6500	Computer Applications in Science and Medicine	1 SCH
Electives		<u>1 SCH</u>
		12 SCH

Spring		
BIOC 5940	Seminar in Current Topics	1 SCH
BMSC 5700	Integrative Biomedical Science II	6 SCH
BMSC 5710	Integrative Biomedical Science Workshop II	2 SCH
BMSC 5960	Biomedical Ethics	1 SCH
BMSC 5970	Techniques in Biomedical Science	1 SCH
BMSC 6510	Automated Information Resources in Science and Medicine	<u>1 SCH</u>
		12 SCH

Summer I		
BMSC 5200	Biostatistics I	3 SCH

Summer II		
BMSC 5970	Techniques in Biomedical Science	1 SCH
Electives		<u>2 SCH</u>
		6 SCH

Year 2

Fall		
BIOC 5940	Seminar in Current Topics	1 SCH
BMSC 5970	Techniques in Biomedical Science	1 SCH
BMSC 6940	Individual Research	6 SCH
Electives*		<u>4 SCH</u>
		12 SCH

Spring		
BIOC 5940	Seminar in Current Topics	1 SCH
BMSC 5970	Techniques in Biomedical Science	1 SCH
BMSC 6940	Individual Research	6 SCH
Electives		<u>4 SCH</u>
		12 SCH

Summer I		
BMSC 6940	Individual Research	3 SCH

Summer II		
BMSC 6940	Individual Research	<u>3 SCH</u>
		6 SCH

Year 3

Fall		
BIOC 5940	Seminar in Current Topics	1 SCH
BMSC 6010	Qualifying Examination for Doctoral Students	3 SCH
BMSC 6940	Individual Research	<u>8 SCH</u>
		12 SCH

Spring		
BMSC 6940	Individual Research	9 SCH
BMSC 6950	Doctoral Dissertation	<u>3 SCH</u>
		12 SCH

Summer I		
BMSC 6950	Doctoral Dissertation	3 SCH

Year 4

Fall		
BMSC 6950	Doctoral Dissertation	<u>3 SCH</u>
TOTAL		90 SCH

*Elective Core Courses (7-8 SCH from the following):

BIOC 5425	Advanced Biochemistry	4 SCH
BIOC 5435	Molecular Aspects of Cell Signaling	4 SCH
MICR 6300	Advanced Molecular Biology	3 SCH

Qualifying Exam for Doctoral Students (BMSC 6010)

The qualifying examination for doctoral students in the biochemistry and molecular biology subdiscipline is conducted according to the following guidelines:

1. A student must pass BMSC 6010 to attain status as a doctoral candidate.
2. The examination will consist of (a) a written, NIH-style (R01 or NRSA) grant proposal to include a research plan and budget and (b) an oral examination based on this proposal and fundamental principles of biochemistry.
3. Students must register for BMSC 6010 and meet corresponding deadlines for successful completion of the requirements.
4. The department graduate advisor serves as the examination coordinator, selecting an examination committee for each study which excludes faculty from the student's research laboratory and is composed of the graduate faculty, associate faculty or adjunct graduate faculty in the department.
5. The examination coordinator will: meet with all students enrolled in the course within two weeks of the beginning of the initial semester, review departmental guidelines and answer relevant procedural questions, discuss general guidelines for the selection of a topic, review the recommended written format for the preproposal and the final proposal, and supervise the random selection of committee members and appoint a chair for each examination committee. It is the responsibility of the examination committee chair to inform the student of impending deadlines and convey to the student the results of the examination committee meetings.
6. The grant proposal will be based on a topic that is not directly related to the student's dissertation topic. A written preproposal based on this problem will be developed and should include a hypothesis, specific aims and a brief description of the background and experimental plan. The examination committee shall evaluate the preproposal on the basis of originality and scientific soundness through a brief oral presentation by the student. The decision of the examination committee to accept or reject the preproposal as suitable for development into a final proposal will be by majority vote of the members. If the preproposal is accepted with some reservations, those reservations will be



conveyed in writing to the student by the chair of the examination committee.

7. The student will prepare the written proposal based on the approved topic without assistance of his/her major professor. Procedural questions which arise during this time may be addressed to either the examination committee chair or the examination coordinator.
8. The final proposal will be typed and presented to the examination committee at least two weeks prior to the date of the examination. Copies will also be provided for other interested faculty.
9. At the examination, the student will make an oral presentation and defense of the proposal before the examination committee and other interested faculty. The oral examination will focus on, but not be restricted to, the proposal. The oral examination will also focus on integration of principles and basic biochemistry associated with the hypothesis, specific aims, and experimental plan.
10. The written proposal and oral defense will be evaluated on the basis of originality, the ability to synthesize and communicate information, and knowledge of basic biochemical principles. The examination committee will recommend

either "pass" or "no pass" on the basis of the majority opinion of the committee. The examination committee will inform the examination coordinator in writing of the decision and the recommended grade for the student. If the grade is "pass", the entire faculty will assign a letter grade to the student based on the examination committee's recommendations and the student is advanced to candidacy. If the grade is "no pass," the student will be given one additional opportunity to rewrite and/or defend orally. A critique of the proposal and defense will be prepared by the examination committee chair and given to the student to aid in the rewrite and/or second defense. The second defense must occur by the next regularly scheduled deadline for such examinations in the department. All of the graduate, associate graduate and adjunct faculty of the department will be strongly encouraged to attend the second defense, and all faculty, with the exception of the major professor, will vote on the pass or fail. If the second defense is not successful, an F will be assigned to both semesters of enrollment and the student will be dismissed from the Ph.D. program.

Program in Microbiology and Immunology

Jerry Simecka, Ph.D., Graduate Advisor
Medical Education Building 2-428
817-725-2112

Graduate Faculty: Alvarez-Gonzalez, Goldfarb, E. Harris, Hart, Mathew, Romeo, Simecka

Adjunct Graduate Faculty: Atkinson, Keller, Pertusi

Infectious diseases have a major impact on health around the world. New infectious agents have emerged, and diseases caused by known pathogens have reestablished themselves. Many of these infections result in life-threatening diseases. To complicate matters, many of these infectious agents have developed resistance to antibiotics routinely used in treatments. Thus, prevention and treatment of these infections are of tremendous importance. The development of new antibiotics and vaccines are dependent on an in depth understanding of the mechanisms of disease caused by these organisms and their basic biology. Also, many findings arising from the investigation of the molecular biology of microbes has significantly contributed to our understanding of the molecular basis of cancer.

Cancer continues to be a significant health

problem, and is associated with genetic factors, diet and exposure to environmental insults and infectious agents. Cells of the body normally are limited in their growth. In contrast, cancer cells are derived from normal cells and divide uncontrollably, forming tumors. Also, cancer cells spread (metastasize) from primary tumors to distant tissues in the body. Understanding the biology of cancer and the process of metastasis will provide important clues in prevention and treatment of cancer.

Immunology is the study of the defense mechanisms of the host against infectious diseases, cancers and other diseases. By inducing immune responses, as in the case of vaccines, infections and disease can be prevented. Enhancement of appropriate immune responses can also result in the destruction of cancer cells. Research in immunology has a tremendous potential in developing new treatments to prevent or recover from cancer and infectious disease.

Faculty maintain active and productive research programs with special emphasis on infectious disease, microbiology, cancer and immunology. Research interests of the faculty include regulation of prokaryotic and eukaryotic gene expression; molecular biology of microbial virulence; regulation and molecular biology of bacterial carbohydrate metabolism; host response to respiratory infections; molecular immunology; tumor immunology, mRNA decay and RNA-based regulation mechanisms; structure and function of the human chromosome; vaccine development; cancer biology and metastasis. Faculty programs are funded by extramural sources including the National Science Foundation and the National Institutes of Health.

Students may enter the program with a variety of academic backgrounds, providing that they have fulfilled prerequisite courses. The graduate training program involves basic courses in microbiology and immunology, molecular biology, biochemistry and advanced courses in selected topics. Students participate in seminars and discussion of current research and receive extensive training in techniques of contemporary microbiology, molecular biology and immunology. Doctoral students and Master of Science students selecting the thesis option perform original, publishable research and present their research findings at national scientific meetings. About two years are required to complete the Master of Science. Approximately four to five years are required to complete the Doctorate of Philosophy.

Graduates with advanced degrees find employment in higher education, industry and government agencies.

Qualifying Exam for Doctoral Students (BMSC 6010)

BMSC 6010 is offered each semester and is coordinated by a member of the departmental graduate faculty.

Each student seeking a doctorate degree must successfully pass BMSC 6010, Qualifying Examination for Doctoral Students. A student may enroll in BMSC 6010 after all other course requirements designated on the student's degree plan are successfully completed. No more than 72 semester credit hours will be obtained by the student before seeking admission to candidacy.

Failure of the student to complete BMSC 6010 with a grade of A or B results in dismissal of the student from the doctoral program. A doctoral student who does not fulfill the BMSC 6010 requirements may be allowed to complete the requirements for a Master of Science degree.

Successful completion of BMSC 6010 requires the preparation and oral defense of an original research proposal. Two attempts to successfully accomplish this are allowed.

The qualifying examination coordinator assigns a committee of five graduate faculty, including a committee chair, to serve as the student's examination committee. Three committee members must be from within the department and at least one member must be from an outside department. The student's major professor may not serve as a committee member.

The qualifying examination coordinator instructs the student on the regulations of the course and assists in initiating and preparing the proposal. The student should submit a report which presents the hypothesis, experimental strategy and specific aims for the proposal to the examination committee by mid-semester. The proposal must consist of the student's original ideas and is expected to significantly extend scientific knowledge in the chosen research area if the proposed experiments were actually conducted. The committee must approve this summary of the research proposal.

The student must prepare a detailed written report of the research proposal in NIH format after the summary has been approved. The final proposal will be typed and presented to the committee at least two weeks prior to the oral defense. The written and oral defense will be evaluated on the basis of originality, ability to

M.S. Degree Plan for Microbiology and Immunology

Year 1

Fall

BMSC 5600	Integrative Biomedical Science I	7 SCH
BMSC 5610	Integrative Biomedical Science Workshop I	2 SCH
BMSC 5940	Seminar in Current Topics	1 SCH
BMSC 6940	Individual Research	<u>2 SCH</u>
		12 SCH

Spring

BMSC 5700	Integrative Biomedical Science II	6 SCH
BMSC 5710	Integrative Biomedical Science Workshop II	2 SCH
BMSC 5960	Biomedical Ethics	1 SCH
BMSC 5940	Seminar in Current Topics	1 SCH
BMSC 6940	Individual Research	<u>2 SCH</u>
		12 SCH

Summer I

BMSC 5200	Biostatistics I	3 SCH
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Summer II

BMSC 6940	Individual Research	3 SCH
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Year 2

Fall

BMSC 6940	Individual Research	10 SCH
MICR 5300	Current Topics in Molecular Microbiology	<u>2 SCH</u>
		12 SCH

Spring

BMSC 5950	Thesis	6 SCH
MICR 5300	Current Topics in Molecular Microbiology	<u>2 SCH</u>
		<u>8 SCH</u>

Total

50 SCH

Ph.D. Degree Plan for Microbiology and Immunology

Year 1

Fall

BMSC 5600	Integrative Biomedical Science I	7 SCH
BMSC 5610	Integrative Biomedical Science Workshop I	2 SCH
BMSC 5940	Seminar in Current Topics	1 SCH
BMSC 6500	Computer Applications in Science and Medicine	1 SCH
BMSC 6940	Individual Research	<u>2 SCH</u>
		13 SCH

Spring

BMSC 5700	Integrative Biomedical Science II	6 SCH
BMSC 5710	Integrative Biomedical Science Workshop II	2 SCH
BMSC 5940	Seminar in Current Topics	1 SCH
BMSC 5960	Biomedical Ethics	1 SCH
BMSC 6510	Automated Information Resources in Science and Medicine	1 SCH
BMSC 6940	Individual Research	<u>1 SCH</u>
		12 SCH

Summer I

BMSC 5200	Biostatistics I	3 SCH
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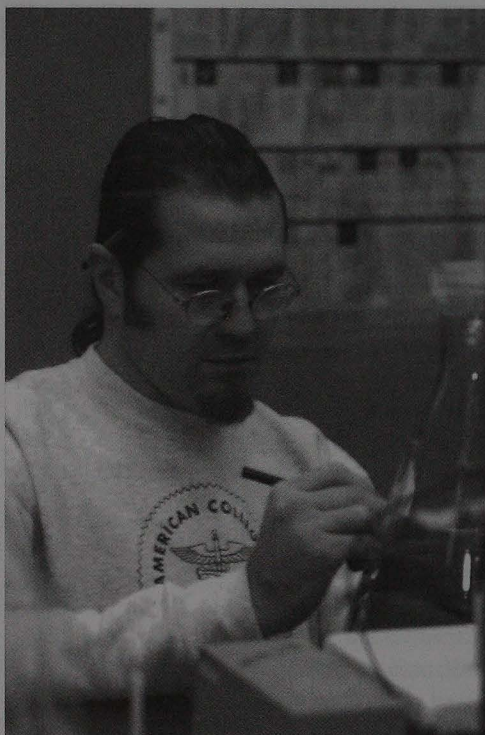
Summer II

BMSC 6940	Individual Research	3 SCH
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synthesize and communicate this information.

If the proposal and defense are satisfactory, the examination committee will recommend a grade to the examination coordinator, who will present the grade to the entire department faculty for approval and the student will be advanced to candidacy.

Should the student's performance prove unsatisfactory, a critique of the proposal and defense will be prepared by the examination committee chair and given to the student to aid in the rewrite and/or second defense. The examination committee chair is responsible for preparing the critique and communicating it to the student. The student receives a grade of Incomplete for the semester and will have only one opportunity to repeat the defense. The second defense must occur within the next four months. Failure to repeat the defense will result in a grade of F and dismissal from the program.



Year 2

Fall

MICR 5300	Current Topics in Molecular Microbiology	2 SCH
BMSC 5970	Techniques in Biomedical Science	1 SCH
BMSC 6940	Individual Research	<u>9 SCH</u>
		12 SCH

Spring

BMSC 5970	Techniques in Biomedical Science	2 SCH
BMSC 6940	Individual Research	5 SCH
MICR 6300	Advanced Molecular Biology	3 SCH
MICR 5300	Current Topics in Molecular Microbiology	<u>2 SCH</u>
		12 SCH

Summer I

BMSC 6940	Individual Research	3 SCH
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Summer II

BMSC 6940	Individual Research	<u>3 SCH</u>
		6 SCH

Year 3

Fall

BMSC 6010	Qualifying Examination for Doctoral Students	3 SCH
BMSC 6940	Individual Research	7 SCH
MICR 5300	Current Topics in Molecular Microbiology	<u>2 SCH</u>
		12 SCH

Spring

BMSC 6940	Individual Research	1 SCH
MICR 5300	Current Topics in Molecular Microbiology	<u>2 SCH</u>
		3 SCH

Summer I

BMSC 6940	Individual Research	3 SCH
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Year 4

Fall

BMSC 6940	Individual Research	1 SCH
MICR 5300	Current Topics in Molecular Microbiology	<u>2 SCH</u>
		3 SCH

Spring

BMSC 6950	Dissertation	3 SCH
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Summer I

BMSC 6950	Dissertation	<u>6 SCH</u>
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Total

91 SCH

Department of Pharmacology

Harbans Lal, Ph.D., Chair

Eugene Quist, Ph.D., Graduate Advisor

Medical Education Building 2-334

817-735-2056

Graduate Faculty: Das, deFiebre, Dillon, Forster, Lal, Luedtke, Martin, Oglesby, Quist, Wallis, Yorio

Adjunct Graduate Faculty: Bergamini, DeSantis, Dobbs, Hackett, Pang, Sharif

Pharmacology is a discipline which bridges the basic and clinical sciences. Classically, pharmacologists sought to understand the pharmacological responses, mechanisms and clinical uses of drugs. However, in recent decades, the scope of pharmacology has expanded dramatically and includes cutting edge research in signal transduction and molecular biology. The Department of Pharmacology has several active research programs and has graduated numerous Master of Science and doctoral students. The areas of active research in the department include behavioral pharmacology, substance abuse, aging, eye research, signal transduction and molecular biology. Students in the pharmacology subdiscipline will be provided with a broad scope of research and teaching opportunities in preparation for successful careers in academic, industry and government.

Degree Plans

Typical degree plans for students in the pharmacology subdiscipline appear on this page. It is advantageous to the student to begin graduate study in a fall semester. This degree plan may vary depending upon availability of course offerings in a given semester and each student's progress toward thesis and dissertation research.

Qualifying Exam for Doctoral Students (BMSC 6010)

Doctoral students must perform satisfactorily in the development, writing, public presentation and defense before a pharmacology faculty committee of an NIH-style grant proposal on a pharmacological research project. The topic of the proposal may be related to the student's dissertation topic with prior approval of the committee. Pharmacology faculty may question the student on any topic in pharmacology whether or not it is related to the topic of the research proposal.

M.S. Degree Plan for Pharmacology

Year 1

Fall

BMSC 5600	Integrative Biomedical Science I	7 SCH
BMSC 5610	Integrative Biomedical Science Workshop I	2 SCH
Electives		<u>3 SCH</u>
		12 SCH

Spring

BMSC 5700	Integrative Biomedical Science II	6 SCH
BMSC 5710	Integrative Biomedical Science Workshop II	2 SCH
BMSC 5960	Biomedical Ethics	1 SCH
Electives		<u>3 SCH</u>
		12 SCH

Summer I

BMSC 5200	Biostatistics I	3 SCH
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Summer II

BMSC 6940	Individual Research	<u>3 SCH</u>
		6 SCH

Year 2

Fall

BMSC 5950	Thesis	3 SCH
	or	
BMSC 5930	Problem-in-Lieu of Thesis	3 SCH

Spring

BMSC 5950	Thesis	3 SCH
	or	
BMSC 5930	Problem-in-Lieu of Thesis	<u>3 SCH</u>

Total

36 SCH

Ph.D. Degree Plan for Pharmacology

Year 1

Fall

BMSC 5600	Integrative Biomedical Science I	7 SCH
BMSC 5610	Integrative Biomedical Science Workshop I	2 SCH
BMSC 6500	Computer Applications in Science and Medicine	1 SCH
Electives*		<u>2 SCH</u>
		12 SCH

Spring

BMSC 5700	Integrative Biomedical Science II	6 SCH
BMSC 5710	Integrative Biomedical Science Workshop II	2 SCH
BMSC 5960	Biomedical Ethics	1 SCH
BMSC 6500	Automated Information Resources in Science and Medicine	1 SCH
BMSC 5970	Techniques in Biomedical Science	1 SCH
BMSC 5940	Seminar in Current Topics	<u>1 SCH</u>
		12 SCH

Summer I

BMSC 5200	Biostatistics I	3 SCH
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Summer II
Electives*

Year 2

Fall
BMSC 5940 Seminar in Current Topics
BMSC 5970 Techniques in Biomedical Science
BMSC 6940 Individual Research
Electives*

Spring
BMSC 6940 Individual Research
Electives*

Summer I
Electives*

Summer II
BMSC 6940 Individual Research

Year 3

Fall
BMSC 6010 Qualifying Examination for Doctoral Students
Electives*

Spring
BMSC 6950 Doctoral Dissertation
Electives*

Summer I
BMSC 6950 Doctoral Dissertation

Year 4

Fall
BMSC 6950 Doctoral Dissertation

Total

3 SCH
6 SCH

1 SCH
1 SCH
4 SCH
6 SCH
12 SCH

3 SCH
9 SCH
12 SCH

3 SCH

3 SCH
6 SCH

3 SCH
9 SCH
12 SCH

3 SCH
9 SCH
12 SCH

3 SCH

3 SCH
90 SCH

Department of Biomedical Sciences

Thomas Yorio, Ph.D., Chair and Graduate Advisor
Medical Education Building 1-804
817-735-2560

Graduate Faculty: Agarwal, Alvarez-Gonzalez, Andrear, Aschenbrenner, Barker, Barron, Bidaut-Russell, Borejdo, Caffrey, Cammarata, Chaitin, Coggin, Coleridge, Cunningham, Dansereau, Das, deFiebre, Dillon, Dimitrijevic, Dory, Downey, Easom, Eisenberg, Forster, M. Garner, Goldfarb, Gonzalez, Gracy, Grant, Gwartz, B. Harris, Hart, Kaman, Kitson, Knebl, Kudchodkar, Kurtz, Lacko, Lal, Licciardone, Luedtke, Lurie, Mains, Mallet, Marshall, Martin, McConathy, McGill, McQueen, Mills, Moorman, Motheral, Oglesby, Orr, Putthoff, Quist, Ramirez, René, Rao, Raven, Romeo, Roque, Rubin, Rudick, Sheedlo, Sherman, Shi, Shores, Simecka, Smith, Stern, Treviño, Turner, Urrutia-Rojas, Wallis, Weis, Wordinger, Wu, Yorio

Adjunct Graduate Faculty: Allen, Atkinson, Bergamini, Brender, Burke, Clark, Collier, DeSantis, Dobbs, W. Garner, Godwin, Gratton, Hackett, Jones, Keller, Kress, Lepley, McCartney, McGaha, Murname, Niessen, Pang, Pertusi, Sharif, Shulman, Simpson, Stoll, Vasquez, Zachariah

Dual Appointment with UNT: Graduate faculty of the Robert B. Toulouse School of Graduate Studies at University of North Texas in Denton are also members of the graduate faculty of UNT Health Science Center at Fort Worth and, thus, may serve as committee members of health science center graduate students appropriate to their graduate appointment. See UNT Graduate Catalog for UNT graduate faculty listings.

Degree Plans

Degree plans for students in the Biomedical Sciences subdiscipline are tailored to the individual student's interest and vary greatly due to the interdisciplinary nature of the program. However, all students must take the required biomedical sciences core curriculum described earlier in this chapter.

Qualifying Exam for Doctoral Students (BMSC 6010)

Doctoral students must perform satisfactorily in the development, writing, public presentation and defense before a graduate faculty committee of an NIH-style grant proposal. The topic of the proposal may be related to the student's dissertation topic with prior approval of the student's doctoral committee. Graduate faculty are invited to the presentation and may question the student on any topic in biomedical sciences that is related to the topic of the grant proposal.

*Electives Courses (Must include 9 SCH in the following courses offered by the Department of Pharmacology):

PHRM 5010 Introduction to Pharmacology 4 SCH

(Required in addition to the 9 SCH for students beginning prior to Fall 1998)

PHRM 5070 Behavioral Pharmacology 3 SCH

PHRM 5900 Special Problems 3 SCH

PHRM 5910 Special Problems 3 SCH

PHRM 6020 Advances in Molecular Pharmacology 3 SCH

PHRM 6030 Advances in Behavioral Pharmacology 3 SCH

PHRM 6050 Ocular Pharmacology 3 SCH

PHRM 6080 Receptors and Drug Actions 3 SCH

PHRM 6699 Current Topics in Pharmacology 3 SCH

Public Health



FIVE

Public Health Program

Fernando Treviño, Ph.D., M.P.H., Executive Director
Gilbert Ramirez, Dr.P.H., Graduate Advisor
Medical Education Building 1-416, 817-735-2252

Graduate Faculty: Bidaut-Russell, Coggin, Gonzalez, Kaman, Licciardone, Lurie, Mains, Marshall, McQueen, Mills, Ramirez, René, Treviño, Urrutia-Rojas

Adjunct Faculty: Allen, Brender, Gratton, Jones, Kress, Lepley, McGaha, McGill, Murnane, Niessen, Shulman, Simpson, Vasquez

What is Public Health?

Many people think of public health as health care for the indigent. While this is often an important role assigned to public health agencies, public health is much more. There is a clear distinction between public health and clinical medicine. Health care professionals in traditional clinical settings approach health from an individual patient perspective while public health professionals work with entire communities to prevent disease and to promote health. Public health professionals monitor and evaluate the needs of entire communities, not just its individual members. They promote healthy practices and behaviors, and work to identify and eliminate environmental hazards to assure our populations stay healthy. Public health professionals have varied backgrounds including environmental health, nutrition, medicine, nursing, epidemiology, health education, administration and statistics, to name a few.

Career Opportunities

Public health provides career opportunities in the public and private sectors with upward and lateral career mobility depending on one's education and interests. The chart below (adapted from "You Can Make A Difference – Pursue a Career in Public Health" by the Association of Schools of Public Health, 1995) describes typical career opportunities and earnings potential within 1 to 3 years with a graduate degree in public health.

Master of Public Health

The objective of the Master of Public Health (M.P.H.) program is to prepare students to meet the needs of the growing health-care industry and the demand for trained public health workers in the public sector. Students in this program have the added benefit of interacting with health-care providers and students in the osteopathic medical program, as well as with faculty members engaged in significant public health research.

The M.P.H. program is a cooperative program with the University of North Texas (UNT) and has been designed to fully utilize, where appropriate, existing courses and program resources at both the university and the health science center. Courses offered at UNT are marked with an asterisk (*) throughout this chapter.

Courses in public health principles, biostatistics, epidemiology, health administration, environmental health, and social and behavioral sciences comprise the core curriculum. This degree is awarded with a concentration in one of eight specialty

Career Opportunities

Specialization	Salary Range	Administration/Management	Education	Community Practice	Research	Policy
Public Health Practice/ Program Management	\$26,125-64,750		Extremely High			High
Biostatistics	\$21,000-40,000	Moderate		Extremely High		Moderate
Biomedical and Laboratory Practice	\$20,000-40,000		High		Extremely High	Moderate
Environmental Health Sciences	\$28,250-91,250	High		Extremely High		
Epidemiology	\$24,250-86,500	Moderate		Extremely High		
Health Education & Behavioral Sciences	\$21,000-50,000	High		Extremely High		
Health Services Administration	\$23,500-102,500	Extremely High	High	Extremely High		High
International Public Health	\$20,000-55,000	Moderate	High	Extremely High		High
Nutrition	\$20,000-45,000		Extremely High			High
Occupational Safety and Health	\$26,000-80,000	Moderate	Extremely High			High

Levels of opportunity (moderate to extremely high) denote the highest frequency of opportunities in each area.

tracks. Specialty tracks include administrative medicine, community health, environmental health, epidemiology, health administration, health behavior, health economics and health services research.

Core Curriculum Requirements

Students entering the M.P.H. program are expected to complete the core requirements described below. In some instances, students may request to waive a core requirement, depending upon their backgrounds. This shall be determined by each student's advisory committee and approved by the graduate dean.

Students must complete 21 SCH of core courses in the M.P.H. program in addition to the courses required for their specific tracks, which are detailed in this chapter.

Core Curriculum Requirements

Core Curriculum: 21 SCH

PHPM 5100	Principles of Epidemiology	3 SCH
PHPM 5110	Behavioral Epidemiology	3 SCH
PHPM 5130	Principles of Public Health	3 SCH
PHPM 5200	Principles of Health Administration	3 SCH
PHPM 5210	Biostatistics for the Public Health Professional I	3 SCH
PHPM 5300	Environmental Health	3 SCH
BMSO 5200	Biostatistics for the Public Health Professional II	3 SCH

Track Curriculum: 18 SCH

Includes a Practicum (3 SCH), a Seminar (3 SCH) and required/elective courses (12 SCH).

Tracks: Administrative Medicine; Community Health; Environmental Health; Epidemiology; Health Administration; Health Behavior; Health Economics; Health Services Research.

Thesis/Non-Thesis Requirement: 6 SCH

BMSC 5950	Thesis	6 SCH
or		
BMSC 5920	Problem-in-Lieu of Thesis	6 SCH
or		
BMSC 5900	Special Problems	3 SCH
NTPH 5800	Capstone	3 SCH

Non-thesis options vary depending on specialty track.
Total Semester Credit Hours (SCH): 45 (minimum)

General Requirements

The candidate must earn a minimum of 45 SCH, depending upon the requirements for the specialty track. This quantitative requirement must be regarded as a minimum. The quantity of course work to be completed by each student is arranged individually by the supervisory committee, subject to the approval of the graduate dean, and may be modified both as to quantity and as to type during the progress of the student's course work.

Time Limitations

All requirements for the Master of Public Health degree must be completed within six years.

As individual courses exceed this time limit they lose all value for degree purposes. Credits that are more than six years old at the time of first registration for graduate work are not transferable from other institutions.

Time limits are strictly enforced. Students exceeding the time limit may be required to repeat out-of-date credits with up-to-date work, and/or show other evidence of being up to date in their major fields. Students anticipating that they will exceed the time limit should apply for an extension *before* the normal time period to complete the degree expires. Holding a full-time job is not considered in itself sufficient grounds for granting an extension.

Time spent in active service in the U.S. armed forces will not be used in computing the time limit. However, career members of the armed forces should consult the graduate dean concerning the credit given to work completed before or during active military service.

Use of Transfer Credit

Subject to the approval of the graduate dean and the department concerned, a student who holds a bachelor's degree may apply toward a Master of Public Health degree up to 12 SCH of graduate work completed elsewhere. Only those courses with a grade of B or higher will be transferred.

Extension and correspondence credit earned at other institutions will not be counted toward a graduate degree at the health science center.

It is the student's responsibility to make sure that official transcripts of courses completed elsewhere are furnished to the office of the graduate dean, and that graduate credit has been assigned by the other institution or institutions to whatever courses are to be counted toward the health science center degree. Such courses, although listed on the health science center degree plan, will not be counted toward the degree until official transcripts showing graduate credit have been received and the credit has been approved by the graduate dean. All transfer courses are subject to the time limitation described above.

In accordance with the rules of the Texas Higher Education Coordinating Board, at least one-third of the semester hours

required for any graduate degree must be completed in course work through UNT Health Science Center.

Degree Plan

A degree plan listing all courses must be completed by the student, approved by the student's advisory committee and department, and submitted to the graduate dean before the completion of 15 SCH.

The major professor and committee members are chosen on the advice of the department chair, graduate advisor or track director in the specialization area. All subsequent requests for degree plan changes must be submitted in writing by the major professor to the graduate dean through the graduate advisor.

Master of Public Health degree requirements listed in the graduate catalog currently in force at the time the student's degree plan is approved by the graduate dean are those that should be completed by the student.

Master of Public Health Program Requirements

Each student is responsible for the completion of the Master of Public Health program according to the procedures that follow. Each item must be completed in the sequence and time period indicated. Forms are subject to revision at any time and should be obtained from the graduate office.

1. Acceptance into the graduate school. If a student has been accepted on probation, he or she must complete a minimum of 9 SCH of formal graduate course work before probation is reevaluated. A minimum GPA of 3.0 must be obtained.
2. Before the completion of 15 SCH, the student must select an advisory committee and file a Designation of Advisory Committee form in the graduate school. Enrollment will be restricted to prevent the accumulation of more than 15 SCH without a designated advisory committee.
3. The student must file a degree plan approved by the advisory committee with the graduate school before the completion of 15 SCH. Course work deficiencies will be stipulated at this time. In addition, the student and the committee will select Option 1 (BMSC 5950, Thesis) or Option 2 (BMSC 5900 and NTPH 5800, Special Problems and Capstone). In some instances, students may be allowed a second non-thesis option (Problem-in-Lieu of Thesis). Enrollment will be restricted to prevent the accumulation of more than 15 SCH without an approved degree plan.
4. Once a student has enrolled in thesis or problem-in-lieu of thesis, he/she must maintain continuous enrollment in a minimum of 3 SCH of thesis or problem-in-lieu of thesis during each long semester and one summer session until the final document has been accepted by the dean of the graduate school. Failure to maintain continuous enrollment will either invalidate any previous credit or will result in the student's dismissal from the degree program unless granted an official leave of absence by the graduate dean for medical or other exceptional reasons.
5. The completed thesis will be submitted to the committee at least two weeks prior to the defense.
6. A formal seminar pertaining to the thesis will be presented in the department in the student's last semester. Students selecting a non-thesis option are also required to present a formal seminar pertaining to the problem topic during the final semester.
7. A final oral defense of the thesis or problem and related work will be given by the committee immediately following the seminar.
8. Three copies of the thesis or problem-in-lieu of thesis must be bound for institutional use. These are distributed to the major professor, major department and the reference section of the Gibson D. Lewis Health Sciences Library. An additional copy is also required. This fourth copy will remain unbound in the library archives.

Administrative Medicine

John Licciardone, D.O., M.S., M.B.A., Track Director
UNT Health Science Center
Medical Education Building I-422
817-735-2252

The track in administrative medicine is designed for mid-career physicians who wish to pursue graduate education in public health. The program is designed to allow individual tailoring of the degree plan based on the student's interest and future career goals. Track requirements include a practicum, seminar and twelve semester credit hours of elective MPH courses (other graduate courses may be substituted with the approval of the Track Director and Graduate Advisor). Students in this track must complete a thesis or one of two non-thesis options. The first non-thesis option includes the Special Problems and Capstone Courses. The second option includes six hours of Problem-in-Lieu of Thesis.

Administrative Medicine Track Curriculum

Practicum / Seminar Requirement: 6 SCH

PHPM 5140	Field Studies in Public Health	3 SCH
PHPM 5145	Seminar in Public Health Practice	3 SCH

Elective Courses (choose from the following): 12 SCH

PHPM 5135	Methods in Public Health	3 SCH
PHPM 5220	Family Health: Ethnic & Cultural Aspects	3 SCH
PHPM 5230	Health Education in the Clinical Setting	3 SCH
PHPM 5400	Community Health	3 SCH
PHPM 5450	Public Health Program Planning & Evaluation	3 SCH
PHPM 5500	Introduction to International Health	3 SCH
PHPM 5600	Advanced Epidemiology	3 SCH
PHPM 6100	Medicine and Public Health	2 SCH
PHPM 6190	Research Synthesis Methods	3 SCH
PHPM 6240	Epidemiological Research Methods	
PHPM 6300	Public Health Ethics	1 SCH
PHPM 6400	Managed Care and Health Care Delivery	3 SCH
BMSC 5910	Special Problems (Independent Study)	3 SCH

With approval of Track Director and Graduate Advisor, may substitute approved MPH courses from any track or graduate courses from other academic institutions as electives.

Community Health

Ximena Urrutia-Rojas, R.N., Dr. P.H., Track Director
UNT Health Science Center
Medical Education Building 1-510
817-735-2252

The track in community health utilizes a multidisciplinary approach in preparing practitioners with clinical backgrounds (e.g. medicine, nursing, allied health, social work, psychology, dentistry, physician's assistant, health education, etc) or traditional public health background to assume public health leadership roles in programs related to the health and well-being of families and communities. Using the practicum, seminar, track required and elective courses, the program can be tailored to an individual's previous experience and professional goals.

Community Health Track Curriculum

Practicum / Seminar Requirement: 6 SCH

PHPM 5140	Field Studies in Public Health	3 SCH
PHPM 5145	Seminar in Public Health Practice	3 SCH

Required Course: 3 SCH

PHPM 5400	Community Health	3 SCH
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Selective Courses (minimum): 6 SCH

PHPM 5135	Methods in Public Health	3 SCH
PHPM 5220	Family Health: Ethnic & Cultural Aspects	3 SCH
PHPM 5230	Health Education in the Clinical Setting	3 SCH
PHPM 5450	Public Health Program Planning & Evaluation	3 SCH

Elective Courses: 3 SCH

PHPM 5500	Introduction to International Health	3 SCH
PHPM 5560	Field Studies in International Health I	3 SCH
PHPM 5600	Advanced Epidemiology	3 SCH
PHPM 5610	Chronic Disease Epidemiology	3 SCH
PHPM 5620	Health Care Epidemiology	3 SCH
PHPM 5630	Acute Disease Epidemiology	3 SCH
NTPH 5310	Occupational/Environmental Epidemiology	3 SCH
BMSC 5910	Special Problems (Independent Study)	3 SCH

With approval of Track Director and Graduate Advisor, may substitute an elective course.

Environmental Health

Kenneth L. Dickson, Ph.D., Track Director
University of North Texas
General Academic Building 470
940-565-2694

The environmental health track is designed to accommodate students with various backgrounds and interests, who desire careers related to the environmental aspects of public health. Specifically, the track provides the expertise and experience to analyze, monitor, interpret and mitigate the effects of chemical contaminant and microbial and viral pathogens in water, air, soil and food on public health and ecological health. The track is managed by the Environmental Science Program in the Department of Biological Sciences at University of North Texas in collaboration with UNT Health Science Center in Fort Worth. Faculty at both institutions are actively engaged in research directed at assessing risks to public health and the environment. This track prepares students in the M.P.H. program for technical and administrative jobs in the governmental and private sectors.

Environmental Health Track Curriculum

Practicum / Seminar Requirement: 6 SCH

*BIOL 5005	Field Studies in Environmental Health	3 SCH
*BIOL 5005	Seminar in Environmental Science & Public Health	3 SCH

Required Course: 3 SCH

*BIOL 5040	Contemporary Topics in Environmental Sciences	3 SCH
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Selective Courses: 3 SCH

*GEOG 5600	Seminar in Environmental Laws and Policy	3 SCH
*PHIL 5700	Seminar in Environmental Ethics	3 SCH

Elective Courses : 6 SCH

*BIOL 5360	Chemistry of Water Pollution	4 SCH
*BIOL 5380	Fundamentals of Aquatic Toxicology	3 SCH
*BIOL 5880	Environmental Sciences Seminar	1 SCH
*BIOL 6300	Hazardous Waste Management	3 SCH
*BIOL 6360	Environmental Engineering	4 SCH
*GEOG 5400	Environmental Modeling	3 SCH
*GEOG 5500	Geographic Information Systems	3 SCH
NTPH 5310	Occupational Epidemiology	3 SCH

Epidemiology Track

Antonio René, Ph.D., Track Director
UNT Health Science Center
Medical Education Building 1-432
817-735-2252

The epidemiology track is designed for students seeking to acquire technical skills in the fundamental methods of disease investigation and prevention in large populations. The core and track courses emphasize basic and advanced epidemiologic principles and their application to current problems in public health and related disciplines.

Students in the epidemiology track are expected to use appropriate methods to plan, implement, and conduct epidemiologic research. Students are also expected to critically evaluate research methodology to assess validity and potential sources of bias. Expertise in computer use and statistics acquired in the public health program is used to analyze, interpret, and publish the results of epidemiologic investigation. All students must choose either the thesis or problem-in-lieu of thesis option.

Epidemiology Track Curriculum

Practicum / Seminar Requirement: 6 SCH

PHPM 5140	Field Studies in Public Health	3 SCH
PHPM 5145	Seminar in Public Health Practice	3 SCH

Required Course: 3 SCH

PHPM 5600	Advanced Epidemiology	3 SCH
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Selective Courses: 6 SCH

PHPM 5610	Chronic Disease Epidemiology	3 SCH
PHPM 5620	Health Care Epidemiology	3 SCH
PHPM 5630	Acute Disease Epidemiology	3 SCH
NTPH 5310	Occupational Epidemiology	3 SCH

Elective Courses: 3 SCH

PHPM 5135	Methods in Public Health	3 SCH
PHPM 5220	Family Health: Ethnic & Cultural Aspects	3 SCH
PHPM 5230	Health Education in the Clinical Setting	3 SCH
PHPM 5400	Community Health	3 SCH
PHPM 5450	Public Health Program Planning & Evaluation	3 SCH
PHPM 5560	Field Studies in International Health I	3 SCH
BMSC 5910	Special Problems (Independent Study)	3 SCH

With approval of Track Director and Graduate Advisor, may substitute an elective course.

Health Administration

Douglas Mains, Dr.P.H., Track Director
UNT Health Science Center
Medical Education Building 1-510
817-735-2252

The courses in the health administration track are designed to provide the competencies necessary for administrative careers in the public health profession. The program draws on the expertise of well-qualified faculty to provide competencies in program planning and administration, policy analysis, human resources management, and financial management.

Health Administration Track Curriculum

Practicum / Seminar Requirement: 6 SCH

PHPM 5140	Field Studies in Public Health	3 SCH
PHPM 5145	Seminar in Public Health Practice	3 SCH

Required Courses: 9 SCH

PHPM 5450	Public Health Program Planning & Evaluation	3 SCH
*PADM 5200	Public Personnel Management	3 SCH
*PADM 5430	Financial Accountability in Government	3 SCH

Elective Courses: 3 SCH

PHPM 5400	Community Health	3 SCH
PHPM 5620	Health Care Epidemiology	3 SCH
BMSC 5910	Special Problems (Independent Study)	3 SCH
*ECON 5180	Economics of Health Care	3 SCH

Health Behavior

Joseph Doster, Ph.D., Track Director
University of North Texas
Terrill Hall 351
940-565-2671

This track is designed for individuals who want professional careers in the application of behavioral science principles to the investigation and promotion of behavioral health and prevention of illness. Students will acquire skills to monitor, analyze, anticipate and influence the complex interaction of factors comprising the mind-body-environment matrix of health. The track is managed by the Behavioral Medicine Program in the Department of Psychology at the University of North Texas in collaboration with UNT Health Science Center in Fort Worth. An interdisciplinary faculty from four UNT/UNTHSC schools comprise program faculty with research interests in public health, including lifestyle behavior changes, the prevention of physical and psychological trauma, and the creation of environments supportive of personal well-being. A network of health care systems and organizations provides sites for field studies and other projects. This track prepares students in the public health program for technical and administrative jobs in community and private sectors related to the development, evaluation, and implementation of behavioral health programs.

Health Behavior Track Curriculum

Practicum / Seminar Requirement: 6 SCH

*PSYC 5050	Program Evaluation/ Consultation in Special Settings	3 SCH
*PSYC 5040	Psychological Aspects of Health	3 SCH

Required Courses: 10 SCH

*PSYC 5070	Medical and Behavioral Disorders	4 SCH
*PSYC 6110	Professional Issues in Behavioral Medicine	3 SCH
*BEHV 5250	Behavioral Intervention in Health and Medicine	3 SCH

Elective Courses: 3 SCH

*PSYC 4000	Abuse in Adult Relationships	3 SCH
*PSYC 5200	Psychology of Women: An Analysis of Dynamics, Stresses	3 SCH
*PSYC 5310	Crisis and Adjustment Demands	3 SCH
*PSYC 5340	Life Span Developmental Psychology	3 SCH
*PSYC 5350	Counseling for Sexual Dysfunction and Other Psychosexual Disorders	3 SCH
*PSYC 5600	Human Learning and Motivation	3 SCH
*PSYC 5780	Advanced Psychopathology	3 SCH
*PSYC 5790	Physiological Psychology	3 SCH
*PSYC 5840	Psychometric Theory	3 SCH
*PSYC 5860	Seminar on the Psychology of Aging	3 SCH
*PSYC 5870	Advanced Psychology of Personality	3 SCH
*PSYC 5890	Psychological Counseling for Late Maturity and Old Age	3 SCH
*PSYC 6130	Assessment and Treatment of Substance Abuse	3 SCH
*PSYC 6400	Research Methodology Applications	3 SCH
*PSYC 6570	Psychological Diagnostics and Intervention for Psychometric Disorders	3 SCH
*PSYC 6710	Psychological Responses to Ecological and Nutrient Influences	3 SCH
*PSYC 6760	Psychotherapy Methods and Behavioral Medicine	4 SCH

With approval of Track Director and Graduate Advisor, may substitute *PSYC 5700 and *PSYC 5030 for PHPM 5210 and BMSO 5200, respectively.

Health Economics

Kenneth A. Koelln, Ph.D., Track Director
University of North Texas
Wooten Hall 325
940-565-4542

The health economics track is designed to provide M.P.H. professionals with expertise to analyze alternative options for allocating scarce community resources to competing public health programs to maximize the benefits to society as a whole. This option will also establish the theoretical basis for public health (government provision of health services) as opposed to private health (market based provision of health care services).

Health Economics Track Curriculum

Practicum / Seminar Requirement: 6 SCH

*ECON 5990	Field Studies in Health Economics ¹	3 SCH
*ECON 5880	Seminar: Current Health Care Economics Research	3 SCH

Required Courses: 9 SCH

*ECON 5030	Microeconomic Analysis ²	3 SCH
*ECON 5150	Public Finance	3 SCH
*ECON 5180	The Economics of Health Care	3 SCH

Elective Courses: 3 SCH

*ECON 5460	Industrial Organization and Public Policy	3 SCH
*ECON 5640	Multivariate Regression Analysis	3 SCH
*ECON 5660	Economic Forecasting	3 SCH

¹ With approval of Track Director and Graduate Advisor, may substitute PHPM 5140 or

² A different economics course if student has taken an intermediate microeconomics course.

Health Services Research

Susan Brown Eve, Ph.D., Track Director
University of North Texas
Chilton Hall 390
940-565-2296

Health services research is an interdisciplinary field concerned with assessing the need for health care services, examining factors that influence the use of health care services, examining the types of services and organizations that can be used to deliver care, planning systems to deliver those services, monitoring the use of services, and assessing outcomes of delivery systems for patient populations. Students select courses from disciplines including sociology, anthropology, economics, geography, psychology, health education, gerontology, and rehabilitation studies. Health services researchers may be employed in academic settings in universities, health science centers, and schools of public health; by health care providers, such as hospitals or HMOs that need population-based planning for the delivery of health care; by local, state, national and international health care planning bodies, including state and county health departments, the national Public Health Service, and the World Health Organization.

Health Services Research Track Curriculum

Practicum / Seminar Requirement: 6 SCH

*SOCI 5900	Special Problem: Field Study in Health Services Research	3 SCH
*SOCI 5260/ or 6500	Topics in Sociology: Seminar in Public Health Practice	3 SCH

Required Courses: 12 SCH

*SOCI 5400	Seminar in the Sociology of Health	3 SCH
*ECON 5180	The Economics of Health Care	3 SCH
*GEOG 5960	Medical Geography	3 SCH
*AGER 5200	Seminar in Research Methods and Design	3 SCH

With approval of Track Director and Graduate Advisor, may substitute *SOCI 5200 and *SOCI 5210 for PHPM 5210 and BMSO 5200, respectively. Other substitutions for required courses may be approved on an individual basis by the Track Director and Graduate Advisor.

Doctor of Philosophy Degree*

Antonio René, Ph.D.

Graduate Advisor

Medical Education Building 1-432

817-735-2252

The Doctor of Philosophy in Biomedical Sciences with a concentration in Public Health and Preventive Medicine is intended for the health professional who seeks advanced graduate study to prepare for a career in research or teaching. The curriculum is modeled after the Medicine and Public Health Initiative. The Initiative is devoted to the joining of the two fields that focus on individual and population health with a stated goal of explicating the problems of the existing health care environment and produce innovative solutions to deal with the health needs of the people of the United States. By changing the education process and creating networks to translate Initiative ideas into action, the University of North Texas Health Science Center at Fort Worth has developed doctoral education which emphasizes engaging the community, creating joint research efforts, devising a shared view of health and illness, working together in health care provision and jointly developing health care assessment measures.

General Requirements

A minimum of 54 semester credit hours beyond the masters degree is required including three hours for the qualifying examination (BMSC 6010) and six hours of doctoral dissertation (BMSC 6950). Academic courses and mentored research projects must be completed in the established sequence. The doctoral student must successfully complete the qualifying examination which includes closed and open book exams, and an oral exam. Upon qualification, the doctoral candidate must submit the dissertation proposal for approval by the Dissertation Committee and the Institutional Review Board. Upon approval, the candidate may begin collecting and analyzing data. Degree requirements are completed with the dissertation defense.

Time Limitations

All work to be credited toward the doctoral degree beyond the master's degree must be completed within a period of ten years from the date doctoral credit is first earned. Time limits are strictly enforced.

Use of Transfer Credit

Transfer credit is not routinely accepted for this program of study.

University Member

When the dissertation committee is formed, the major professor and the student must file a Request for University Member Designation form to submit the names of at least three graduate faculty members outside of the major department. From this list, the graduate dean will appoint the university member.

The university member must be incorporated into the review and approval process of the doctoral dissertation, from the formal or substantive inception of the topic through the comprehensive examination and final approval of the dissertation.

The university member must take part in any formal hearing (proposal and dissertation defense and qualifying examination). The university member must be a voting member of the final examination committee and will sign the dissertation fly pages.

The purpose of the university member on doctoral committees is to ensure that the policies and procedures of the Graduate School of Biomedical Sciences and UNT Health Science Center have been upheld. The presence of the university member is essential for the process of approval of dissertation proposals and defense examinations. The university member's signature on appropriate forms indicates that the integrity of the review process has been preserved. It is the responsibility of the university member to report to the graduate dean any inappropriate due process.

Qualifying Examination and Admission to Candidacy

The student who has completed all courses required for the degree (exclusive of dissertation) and has satisfied all admission and tool subject requirements should request that the major professor arrange for the qualifying examination to be held. The qualifying exam cannot be undertaken until all academic courses have been completed. Consult the graduate advisor in the major area for specific information about qualifying examination requirements. Students are admitted to candidacy for the doctoral degree by the graduate dean only after the successful completion of the qualifying examination.

Dissertation Requirement

A dissertation is required of all candidates for the doctorate. In general, 6 SCH are required for the dissertation. The student is required to enroll for dissertation credit and must maintain continuous enrollment in BMSC 6950 until the dissertation has been completed and submitted to the graduate dean. Grades of PR will be recorded at the end of each semester until the dissertation is filed with the graduate school and approved by the graduate dean. Appropriate grades and credit hours will then be shown on the student's record. Three semester credit hours of dissertation enrollment are required during each long

*Under consideration for approval by the Texas Higher Education Coordinating Board.

semester and one summer session to maintain continuous enrollment.

Before beginning the dissertation, the student should consult the graduate office for information concerning the proper form for preparation of the document.

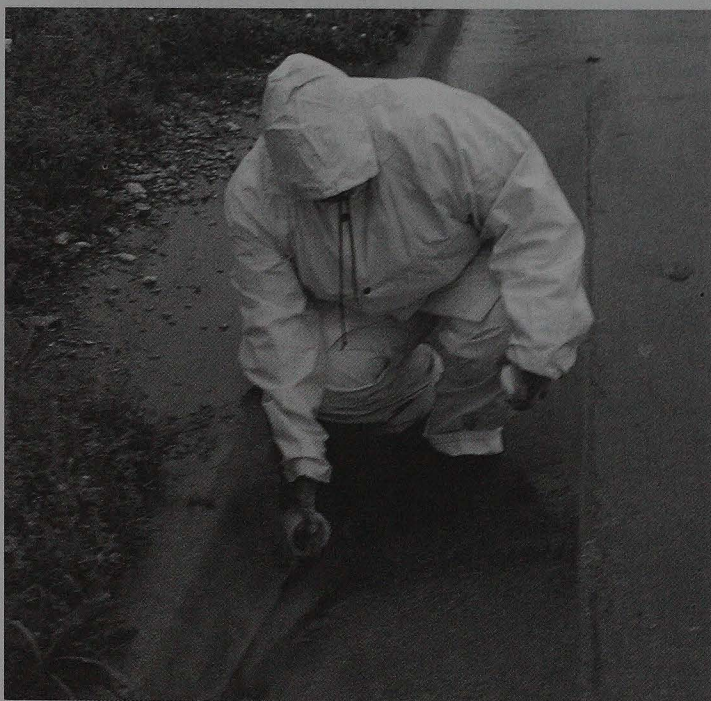
When the dissertation is completed and has received preliminary approval of the dissertation committee, the student's major professor will schedule the final defense and notify the Graduate School of Biomedical Sciences of the date and time. The dissertation may not be submitted to the graduate dean until this examination has been passed.

No dissertation credit will be recorded until the dissertation has been approved by the student's dissertation committee, submitted to the office of the graduate dean and finally approved by the graduate dean. Instructions for submission of the dissertation may be obtained from the office of the graduate dean.

Doctoral Program Requirements

Each student is responsible for the completion of the doctoral program according to the procedures below. Each item must be completed in the sequence and time period indicated. See the graduate office regarding paperwork when completing each step.

1. A major professor should be selected by the student at the earliest possible time, in any event, before enrollment in the student's second long semester.
2. The student should meet with the intended major professor for guidance until an advisory committee is established.



3. A doctoral advisory committee of three graduate faculty members plus one university member from the graduate faculty must be designated before completion of 18 semester credit hours. The committee is chaired by the doctoral advisor.

The student has the responsibility for obtaining the agreement of the faculty members (using the Designation of Advisory Committee form) and will file this in the graduate school before the completion of 18 SCH. Once the doctoral student has successfully passed the qualifying examination, the Advisory Committee is dissolved.

Enrollment will be restricted to prevent the accumulation of more than 18 SCH without designation of an advisory committee.

4. The advising committee should meet with the student as needed to discuss progress, but must meet at least once per academic semester.
5. A qualifying examination intended to establish the student's candidacy for the Ph.D. degree will be administered by the designated departmental committee upon fulfillment of the tool and course work requirements. The qualifying examination consists of a) a written, closed book examination; b) an open book examination; c) an oral examination. Results of the qualifying examinations will be sent to the graduate school in writing.
6. Upon qualification, the doctoral candidate must constitute a Dissertation Committee which must include 6 members, with one designated as the University Member. All members of the Dissertation Committee must hold a Category II or III Graduate Faculty appointment. The chair of the Dissertation Committee must hold a Category III appointment and be a full-time faculty member at UNT Health Science Center or at an institution which has affiliated graduate programs with UNT Health Science Center. The Dissertation Committee is responsible for overseeing the student's progress until the successful completion of the Qualifying Examination.
7. A student must maintain continuous enrollment in a minimum of 3 SCH of dissertation during each long semester and one summer session until the dissertation has been accepted by the dean of the graduate school.

Failure to maintain continuous enrollment will either invalidate any previous dissertation credits or will result in the student being dropped from the degree program unless granted an official leave of absence by the graduate dean for medical or other exceptional reasons.

A research proposal must be approved by the doctoral committee during the first semester in which a student is enrolled in Doctoral Dissertation (BMSC 6950). Enrollment will be restricted to prevent the accumulation of more than 3 SCH without an approved research proposal.

8. Upon completion of the research and after consultation with the major professor, the student will submit a rough draft of the dissertation to the dissertation committee members at least one month before the receipt of the final draft. The final

draft should be distributed to committee members at least two weeks prior to the defense. Committee members should return corrected drafts to the student as soon as possible.

Working through committee members at all times, the student and major professor will resolve comments arising from the rough draft and incorporate them into a final draft.

9. The dissertation committee will administer the final defense and sign final copies of the dissertation, if approved. The committee will notify the dean of the graduate school of results of the final examination.

10. Three copies of the dissertation must be bound for institutional use. An additional copy must be submitted that will remain unbound.

11. The dissertation must be prepared for electronic submission according to the instructions in the Guidelines for Filing Dissertations, Theses and Problems-in-Lieu of Theses.

Doctoral Degree Plan for Public Health and Preventive Medicine

Year 1

Fall		
PHPM 6200	Statistical Methods I	3 SCH
PHPM 6240	Epidemiological Research Methods	3 SCH
PHPM 6400	Seminar on Managed Care and Health Delivery Systems	<u>3 SCH</u>
		9 SCH
Spring		
PHPM 6100	Seminar on Medicine and Public Health	2 SCH
PHPM 6220	Statistical Methods II	3 SCH
PHPM 6260	Survey Research Methods	3 SCH
PHPM 6300	Public Health Ethics	<u>1 SCH</u>
		9 SCH
Summer		
BMSC 6940	Individual Research for Doctoral Students in Public Health: Mentored Research Project I	3 SCH
PHPM 6170	Qualitative Research Methods	3 SCH
PHPM 6600	Current Topics in Medicine and Public Health	<u>3 SCH</u>
		9 SCH

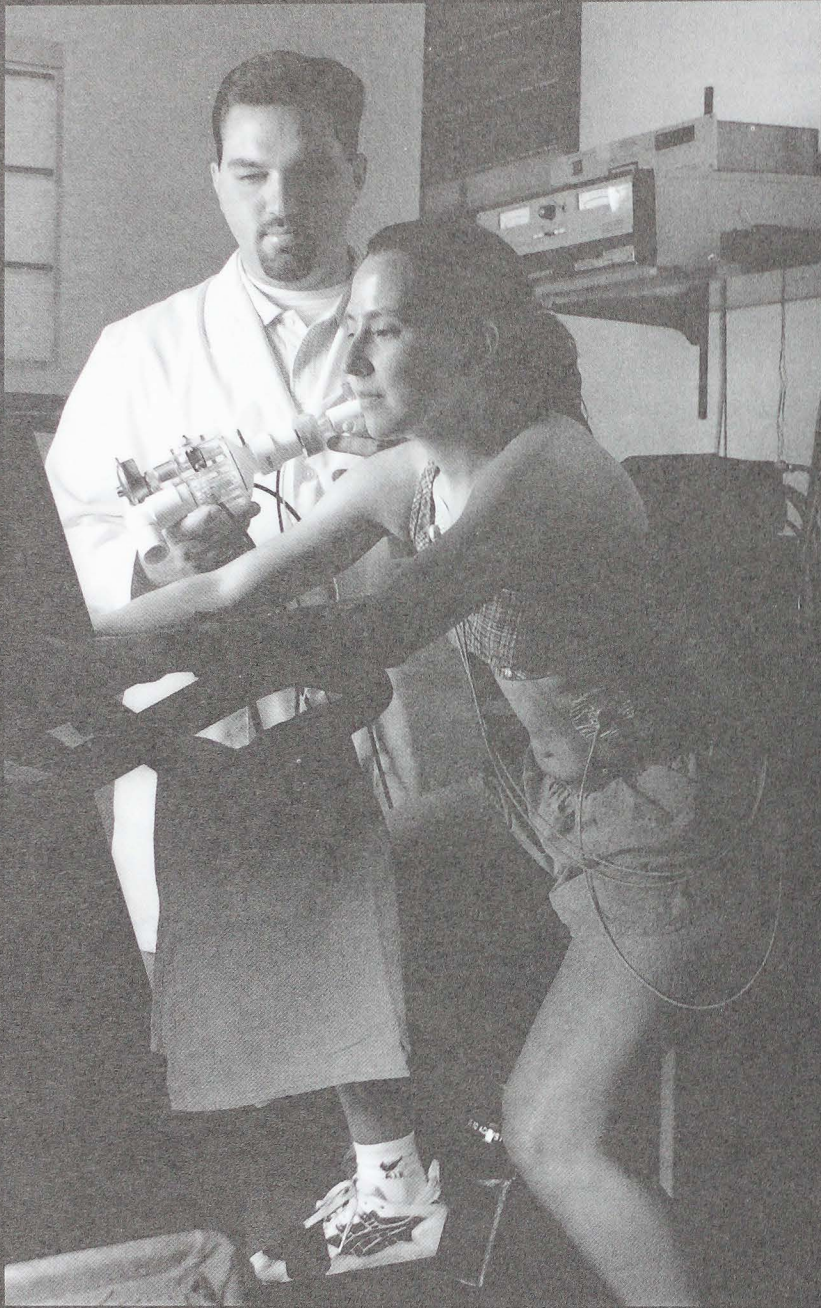
Year 2

Fall		
BMSC 6940	Individual Research for Doctoral Students in Public Health: Mentored Research Project I	3 SCH
BMSC 6940	Individual Research for Doctoral Students in Public Health: Mentored Research Project II	3 SCH
PHPM 6150	Health, Illness and Human Behavior	<u>3 SCH</u>
		9 SCH
Spring		
BMSC 6900	Special Problems	3 SCH
BMSC 6940	Individual Research for Doctoral Students in Public Health: Mentored Research Project II	3 SCH
PHPM 6190	Research Synthesis Methods	<u>3 SCH</u>
		9 SCH
Summer		
BMSC 6010	Qualifying Examination	3 SCH

Year 3 and beyond

BMSC 6950	Dissertation	6+SCH
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Dual Degree Programs



SIX

University of North Texas Health Science Center at Fort Worth offers several dual-degree programs within the institution and in cooperation with the University of North Texas and Texas A & M Baylor College of Dentistry. Because each degree program requires the student to follow a separate curriculum in each of two schools, each school will have administrative authority over its specific degree program.

Application Procedures

An applicant seeking entrance to the Medical Scientist Training Program (D.O./Ph.D.), D.O./M.S., or D.O./M.P.H. programs must first apply to the American Association of Colleges of Osteopathic Medicine Application Service (AACOMAS). Once the application is received from AACOMAS, a supplemental application is mailed from the Office of Medical Admissions. The applicant should indicate the dual-degree program in which he or she is interested on the supplemental application. Current students of University of North Texas or University of North Texas Health Science Center at Fort Worth may apply directly to the Office of Medical Admissions. Dual-degree applicants are reviewed by the Dual Program Admission Committee. It is highly recommended that applicants for the dual-degree programs apply early in the application season.

An applicant seeking entrance into the cooperative programs with University of North Texas or Texas A & M Baylor College of Dentistry must apply to each program separately.

Medical Scientist Training Program (M.S.T.P.)

Doctor of Osteopathic Medicine/ Doctor of Philosophy (D.O./Ph.D.)

General Description

The M.S.T.P. program is a course of study by which a student may concurrently pursue the D.O. degree through the Texas College of Osteopathic Medicine and the Ph.D. degree through the Graduate School of Biomedical Sciences. Students may choose from a wide range of disciplines including anatomy and cell biology, biochemistry and molecular biology, microbiology and immunology, physiology and pharmacology. The program is normally six years in duration. At the end of this time, the student is expected to have

completed the curriculum requirements for the D.O. degree in accordance with TCOM policies and for the Ph.D. degree in accordance with policies of the graduate school and the relevant department of the University of North Texas Health Science Center as they apply to the second degree.

Format

The general format of the dual-degree program is explained below. While the format may be regarded as the standard working format, it is understood that deviations from this format that meet the curriculum requirements are also acceptable. A degree plan is established by the student's major professor and advisory committee and filed in the graduate office.

Block 1. Block 1 consists of the preclinical years for the D.O. degree. During Block 1, the student will complete the first five semesters of the D.O. curriculum and will pass Part 1 of the National Board of Osteopathic Medical Examiners (NBOME). During this block the student will register only at TCOM.

An exception to this rule is if the student wishes to register for graduate courses which are not part of the D.O. curriculum during this block. In this case, the student will register for such graduate courses through the graduate school. During Block 1 the student will select a graduate advisory committee, and will file an approved graduate degree plan of at least 90 semester credit hours (SCH) with the graduate school, of which 45 hours are joint D.O./Ph.D. basic science courses.

Block 2. Block 2 consists of two years dedicated to graduate study. In order to maintain enrollment at TCOM during this block, the student will register for a three-hour course in directed studies each semester of this block. (Hours for directed studies will not apply toward the Ph.D.) However,

		D.O.	Ph.D.
Block 1	Year 1	Semesters 1-5	Individual Research
	Year 2	Semesters 1-5	Specialty Courses
Block 2	Year 3		Electives, Qualifying Exam, Individual Research
	Year 4		Individual Research, Dissertation
Block 3	Year 5	Clinical Science, D.O. Courses, Rotations	
	Year 6	Clinic Rotations, Research Rotation Elective	

the major course load for the student during Block 2 will be through the Graduate School of Biomedical Sciences. Thus, during Block 2 the student is expected to complete all course work required for the Ph.D. degree, with the exception of dissertation, pass the Qualifying Examination for Doctoral Students (BMSC 6010) and have an approved dissertation research proposal.

Block 3. During Block 3, the student will complete the required clinical rotations and electives and will pass Part 2 of the NBOME. During this block, the student may also continue work toward the Ph.D. dissertation.

At the end of Block 3 the student is expected to have completed the curriculum required for the D.O. degree and to have completed at least 45 additional hours of graduate courses under the Graduate School of Biomedical Sciences as required for the second degree, including the research dissertation. Following completion of the curriculum required for both degrees, the student is awarded the D.O. degree through TCOM and the Ph.D. through the Graduate School of Biomedical Sciences of the UNT Health Science Center.

Entrance Requirements

The entrance requirements for the M.S.T.P. are identical to those for the D.O. program at TCOM and the Ph.D. program in the Graduate School of Biomedical Sciences as described in the respective catalogs, including an overall undergraduate GPA of at least 3.0 and a competitive GRE or MCAT score.

Cost of the Program

D.O./Ph.D. students pay the standard medical school tuition during each block that they are enrolled in medical school. They also pay the hourly tuition rate for all courses not required for the D.O. degree, i.e., the 45 or more SCH required for the Ph.D. Non-Texas residents selected for the D.O./Ph.D. by the Dual Program Admission Committee are awarded a small scholarship each year, allowing them to pay in-state tuition for both medical and graduate tuition for the duration of the program.

Financial Assistance

The health science center will provide financial assistance to those students selected into the M.S.T.P. by the Dual Program Admission Committee to seek the D.O./Ph.D. The minimal financial

assistance will consist of a fellowship in an amount sufficient to pay all graduate tuition costs during Block 2 and a graduate stipend during this time.

Doctor of Osteopathic Medicine/ Master of Science (D.O./M.S.)

Some students may elect to take a joint D.O./M.S. degree. Students in this program receive up to 18 hours of credit for their didactic medical basic science courses, six SCH of electives and take six semester credit hours of thesis. See Chapter Four for requirements of the M.S. degree program that must be met for the joint program. The graduate office will help students select a major department and mentor to assist in preparing a degree program. Additional graduate courses may be required by a particular subdiscipline. Please see individual subdiscipline course requirements for the M.S. degree.

Doctor of Osteopathic Medicine/ Master of Public Health (D.O./M.P.H.)

*Muriel Marshall, D.O., Dr.P.H., Track Director
UNT Health Science Center
Medical Education Building 1-432D
817-735-5479*

The primary objective of the dual D.O./M.P.H. is to provide clinical professionals specialized public health training to develop, integrate, and apply culturally competent social, psychological, and biomedical approaches to the promotion and preservation of health.

The D.O./M.P.H. is designed so that the requisite requirements could be completed during the four years of medical education, provided the student takes summer courses and is enrolled in the M.P.H. evening courses. Students are strongly encouraged to take 12 SCH of graduate courses the summer prior to matriculation in the medical curriculum. Students who begin both graduate and medical coursework in the fall must devote the entire summer of the first academic year to graduate studies in addition to evening classes. Students may also elect to complete the D.O./M.P.H. in five years, taking an additional year to complete the M.P.H. requirements. This year is typically between years 2 and 3 of the medical curriculum following the completion of the fifth semester.

Please see the track director for further information on the D.O./M.P.H. program.

D.O./M.P.H. Curriculum

Core Curriculum: 21 SCH

PHPM 5100	Principles of Epidemiology	3 SCH
PHPM 5110	Behavioral Epidemiology	3 SCH
PHPM 5200	Principles of Health Administration	3 SCH
PHPM 5210	Biostatistics for the Public Health Professional I	3 SCH
PHPM 5300	Environmental Health	3 SCH
PHPM 6363	Public Health and Preventive Medicine	3 SCH
BMSO 5200	Biostatistics for the Public Health Professional II	3 SCH

Track Curriculum: 18 SCH

Practicum / Seminar Requirement: 6 SCH

PHPM 5140	Field Studies in Public Health ¹	3 SCH
PHPM 5145	Seminar in Public Health Practice	3 SCH

Clerkship: 12 SCH ²

PHPM 805 ³	Clinic Clerkship in Public Health and Preventive Medicine	12 SCH
	or	
PHPM 806 ³	Clinic Clerkship in Occupational Medicine and Personal Health	12 SCH

Thesis/Non-Thesis Requirement: 6 SCH

BMSC 5950	Thesis	6 SCH
	or	
BMSC 5900	Special Problems	3 SCH
NTPH 5800	Capstone	3 SCH
	or	
BMSC 5920	Problem-in-Lieu of Thesis	6 SCH

¹ With approval of Track Director and Graduate Advisor, may substitute PHPM 5560

² With approval of Track Director and Graduate Advisor, may substitute 12 SCH of other MPH courses

³ Course descriptions from Texas College of Osteopathic Medicine are listed in Chapter 9



Doctor of Dental Surgery/Master of Public Health (D.D.S./M.P.H.)

Linda Niessen, D.M.D., M.P.H., M.P.A.

Track Director

Baylor College of Dentistry

214-828-8350

The D.D.S./M.P.H. is a collaborative effort between the Texas A & M Baylor College of Dentistry (Dallas) and the University of North Texas Health Science Center at Fort Worth. The program introduces the dental student to preventive medicine, epidemiology, and community- and population-based public health in a community oriented primary care setting. The wide variety of topics in public health reinforces dental students' basic understanding of primary care from a preventive and epidemiological perspective. The program normally takes four to five years depending on the completion of the M.P.H. core courses. Dental students interested in pursuing this Dual-degree opportunity should consult with Dr. Linda C. Niessen, Professor and Chair, Department of Public Sciences, Texas A & M Baylor College of Dentistry.

D.D.S./M.P.H. Degree Curriculum

Core Curriculum (21 semester credit hours)

PHPM 5100	Principles of Epidemiology	3 SCH
PHPM 5110	Behavioral Epidemiology	3 SCH
PHPM 5130	Principles of Public Health	3 SCH
PHPM 5200	Principles of Health Administration	3 SCH
PHPM 5210	Biostatistics for the Public Health Professional I	3 SCH
PHPM 5300	Environmental Health	3 SCH
BMSO 5200	Biostatistics for the Public Health Professional II	3 SCH

Track Curriculum: 18 SCH

Practicum / Seminar Requirement: 6 SCH

PHPM 5930	Seminar in Dental Public Health	3 SCH
S99 ⁴	Preceptorship in Public Health Sciences (40-45 Contact Hours)	3 SCH

Required Track Courses⁴ (190-145 Contact Hours): 12 SCH (equivalent)

6520	Oral Epidemiology
6690	Human Behavioral Dentistry
6880	Principles of Dental Public Health
7330	Applied Preventive Dentistry
8004	Clinical Preventive Dentistry
8020	Principles of Biostatistics
8100	Geriatric Dentistry
8120	Hospital Dentistry
8140	Human Behavioral Dentistry
8340	Pediatric Community Health Rotation
8370	Professional Ethics

Thesis/Non-Thesis Requirement: 6 SCH

BMSC 5950	Thesis	6 SCH
	or	
BMSC 5900	Special Problems	3 SCH
NTPH 5800	Capstone	3 SCH

⁴Course descriptions from Texas A & M Baylor College of Dentistry are listed in Chapter 9

Dual-Degree Programs in Public Health and Sociology

Susan Eve, Ph.D., Track Director
University of North Texas
Chilton Hall, Room 390
940-565-2296

The Public Health Program and the Department of Sociology at University of North Texas have developed a cooperative agreement that allows students to pursue the master of public health and a graduate degree in sociology. Students pursuing a graduate degree in sociology, at either the masters or doctoral level, may count their four approved track courses in health services research, their practicum in public health, and their seminar in public health, as a part of their major and minor areas in sociology. Students wishing to pursue this option should consult with the track director in health services research as early as possible in their degree program.

M.P.H./M.A.-M.S. in Sociology Curriculum

Core Curriculum: 21 SCH

PHPM 5100	Principles of Epidemiology	3 SCH
PHPM 5110	Behavioral Epidemiology	3 SCH
PHPM 5130	Principles of Public Health	3 SCH
PHPM 5200	Principles of Health Administration	3 SCH
PHPM 5210	Biostatistics for the Public Health Professional I ⁵	3 SCH
PHPM 5300	Environmental Health	3 SCH
BMSO 5200	Biostatistics for the Public Health Professional II ⁵	3 SCH

Track Curriculum: 18 SCH

Practicum / Seminar Requirement: 6 SCH⁶

*SOCI 5900	Special Problem: Field Study in Health Services Research	3 SCH
*SOCI 5260	Topics in Sociology: Seminar in Public Health Practice or 6500	3 SCH

Required Courses: 12 SCH⁷

*SOCI 5400	Seminar in the Sociology of Health	3 SCH
*ECON 5180	The Economics of Health Care	3 SCH
*GEOG 5960	Medical Geography	3 SCH
*AGER 5200	Seminar in Research Methods and Design	3 SCH

Thesis/Non-Thesis Requirement: 6 SCH

BMSC 5950	Thesis or	6 SCH
BMSC 5900	Special Problems	3 SCH
NTPH 5800	Capstone	3 SCH

⁵ With approval of Track Director and Graduate Advisor, may substitute SOCI 5200 and 5210 for PHPM 5210 and BMSO 5200

⁶ Credit toward MS-MA electives

⁷ Credit toward MS-MA minor

Additional MA-MS Course Requirements:

3 SCH - SOCI 5200; 3 SCH - Theory; 6 SCH - Electives

M.P.H./Ph.D. in Sociology Degree Curriculum

Core Curriculum: 21 SCH

PHPM 5100	Principles of Epidemiology	3 SCH
PHPM 5110	Behavioral Epidemiology	3 SCH
PHPM 5130	Principles of Public Health	3 SCH
PHPM 5200	Principles of Health Administration	3 SCH
PHPM 5210	Biostatistics for the Public Health Professional I ⁸	3 SCH
PHPM 5300	Environmental Health	3 SCH
BMSO 5200	Biostatistics for the Public Health Professional II ⁸	3 SCH

Track Curriculum: 18 SCH

Practicum / Seminar Requirement: 6 SCH⁹

*SOCI 5900	Special Problem: Field Study in Health Services Research	3 SCH
*SOCI 5260	Topics in Sociology: Seminar in Public Health Practice or 6500	3 SCH

Required Courses: 12 SCH¹⁰

*SOCI 5400	Seminar in the Sociology of Health	3 SCH
*ECON 5180	The Economics of Health Care	3 SCH
*GEOG 5960	Medical Geography	3 SCH
*AGER 5200	Seminar in Research Methods and Design	3 SCH

Thesis/Non-Thesis Requirement: 6 SCH

BMSC 5950	Thesis or	6 SCH
BMSC 5900	Special Problems	3 SCH
NTPH 5800	Capstone	3 SCH

⁸ With approval of Track Director and Graduate Advisor, may substitute SOCI 5200 and 5210 for PHPM 5210 and BMSO 5200

⁹ Credit toward Ph.D. major.

¹⁰ Credit toward Ph.D. minor.

Additional Ph.D. Course Requirements:

6 SCH - Major

6 SCH - Statistics/Research Methods

12 SCH - Theory

9 SCH - Tools

12 SCH - Dissertation

Dual-Degree Programs in Public Health and Health Psychology/Behavioral Medicine

Joseph Doster, Ph.D., Track Director

University of North Texas

Terrill Hall, room 351

940-565-2671

Students may pursue a course of study by which they concurrently earn the Ph.D. in the field of Health Psychology/Behavioral Medicine and the M.P.H. with a specialty in health behavior. The program is normally six years in duration including a one-year, full-time clinical internship at a hospital or medical center. Internship placements are available on an international level, are competitive, and are by the invitation of the host institution. This dual program prepares students for licensure as clinical health professionals, including organizational, investigative, consultative, and community applications. The combined degrees will be particularly helpful for individuals preferring dual roles in providing behavioral medicine services as well as administration and program development in the health care industry.

M.P.H./Ph.D. in Health Psychology/Behavioral Medicine Curriculum

Core Curriculum: 21 SCH

PHPM 5100	Principles of Epidemiology	3 SCH
PHPM 5110	Behavioral Epidemiology	3 SCH
PHPM 5130	Principles of Public Health	3 SCH
PHPM 5200	Principles of Health Administration	3 SCH
PHPM 5210	Biostatistics for the Public Health Professional I ¹¹	3 SCH
PHPM 5300	Environmental Health	3 SCH
BMSO 5200	Biostatistics for the Public Health Professional II ¹¹	3 SCH

Track Curriculum: 18 SCH

Practicum / Seminar Requirement: 6 SCH

*PSYC 5040	Psychological Aspects of Health	3 SCH
*PSYC 5050	Program Evaluation/Consultation in Special Settings	3 SCH

Required Courses: 10 SCH

*PSYC 5070	Medical and Behavioral Disorders	4 SCH
*PSYC 6110	Professional Issues in Behavioral Medicine	3 SCH
*BEHV 5250	Behavioral Intervention in Health and Medicine	3 SCH

Elective Courses: 3 SCH

*PSYC 5780	Advanced Psychopathology	3 SCH
*PSYC 6570	Psychological Diagnostics and Intervention for Psychosomatic Disorders	3 SCH

Thesis/Non-Thesis Requirement: 6 SCH

BMSC 5950	Thesis	6 SCH
	or	
BMSC 5900	Special Problems	3 SCH
NTPH 5800	Capstone	3 SCH

Additional Ph.D. Course Requirements

General Core Courses: 12 SCH

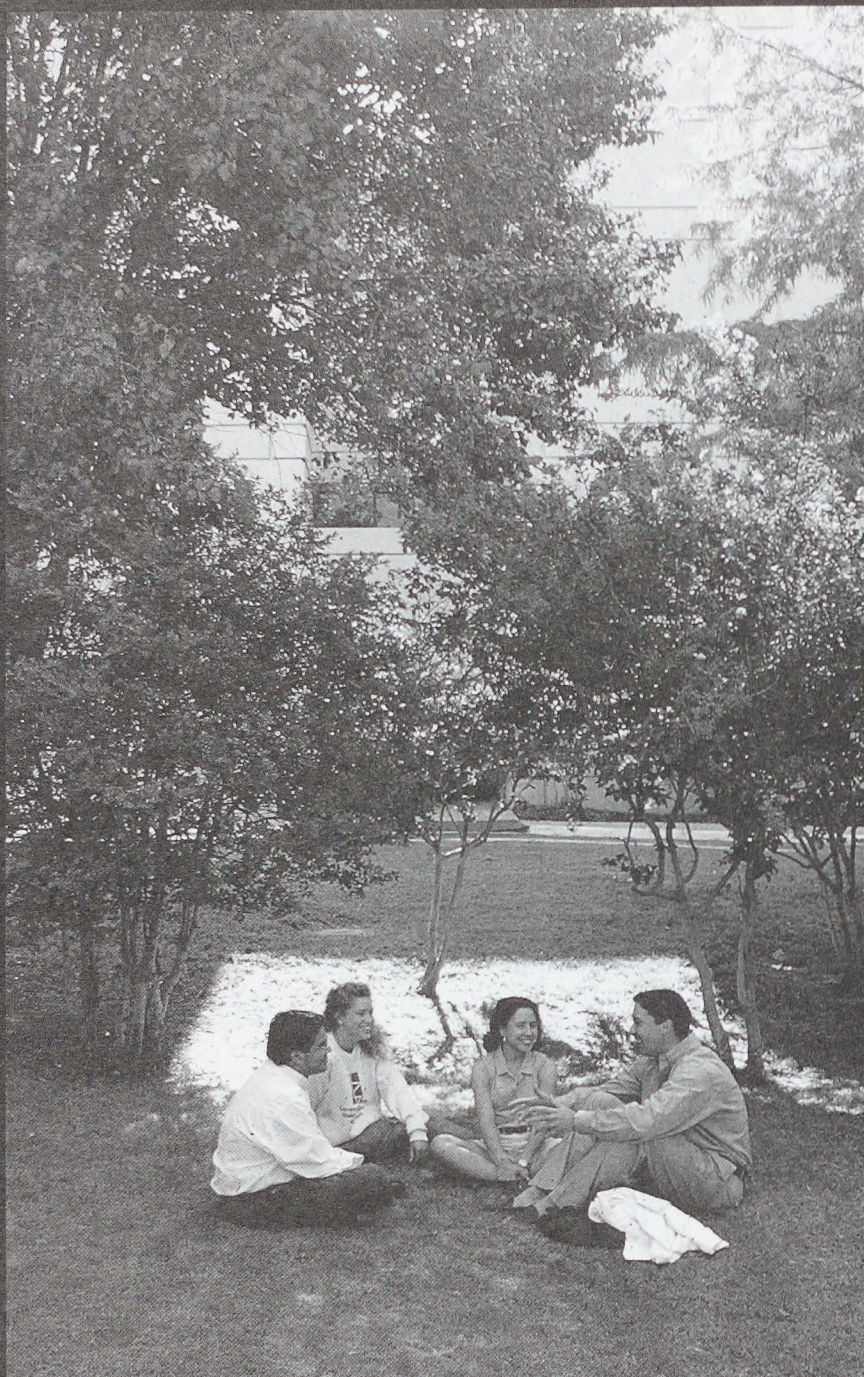
*PSYC 5060	History and Systems	3 SCH
*PSYC 5090	Social Psychology	3 SCH
*PSYC 5640	Theories of Learning	3 SCH
*PSYC 5790	Physiological Psychology	3 SCH

Core Courses: 49 SCH

*PSYC 5420	Psychological Assessment I	4 SCH
*PSYC 5620	Psychological Assessment II	4 SCH
*PSYC 6650	Psychoneuroimmunology	3 SCH
*PSYC 6610	Research Seminar and Practicum	4 SCH
*PSYC 6720	Psychophysiological Processes	4 SCH
*PSYC 6770	Biofeedback Methods and Behavioral Medicine	4 SCH
*PSYC 6810	Multivariate Procedures in Psychology	3 SCH
*PSYC 6820	Advanced Practicum	3 SCH
*PSYC 6830	Advanced Practicum	3 SCH
*PSYC 6840	Internship	3 SCH
*PSYC 6850	Internship	3 SCH
*PSYC 6950	Dissertation	12 SCH

¹¹With approval of Track Director and Graduate Advisor, may substitute PSYC 5700 and 5030 for PHPM 5210 and BMSO 5200

Fiscal and Financial Aid Policies



SEVEN

Tuition and Mandatory Fees

The amounts shown in this catalog are subject to change without notice by action of the Texas Legislature or the University of North Texas Board of Regents. For current information on tuition and fees, see the Graduate School of Biomedical Sciences' Tuition and Fee Register printed for the particular academic year in which enrollment is planned, or inquire in the graduate office.

The UNT Board of Regents has been granted the authority, within established guidelines, to set graduate tuition rates by program.

Graduate tuition is \$62 per credit hour for in-state residents and \$275 per credit hour for out-of-state students. To calculate costs for graduate courses, use the table below.

Students are responsible for payment of the charges listed in the table below.

Admission Application Fee

All applicants new to the University of North Texas Health Science Center must pay a \$25 (U.S. residents) or \$50 (non-U.S. citizens and permanent residents) non-refundable admission application fee.

Option to Pay Tuition by Installment

The Texas Legislature has the authority to modify or eliminate installment payment of tuition at each regular or called legislative session.

The health science center allows the payment of tuition and fees during the fall and spring semesters through the following alternatives:

- full payment of tuition and fees upon registration or by the payment deadline for early registration; or
- one-half payment of tuition and fees upon registration, or by the payment deadline for early registration, with separate one-fourth payments before the start of the sixth and 11th

class weeks. *Note:* All course-related or optional fees are paid with the initial installment payment.

Fees (Non-Refundable) for Payment of Tuition by Installment

Handling fee: \$15

Delinquent payment fee: \$15

See the Academic Calendar for installment payment deadlines.

Tuition and Fee Payments

Tuition and fee payments may be made by cash, cashier's check, money order or personal check. Credit cards are not accepted.

Administrative Withdrawal for Non-Payment

Tuition and fee charges are incurred upon registration. Failure to pay either the first installment of the tuition payment plan or tuition and fees in full according to the deadlines set forth in the Academic Calendar, will result in the students administrative withdrawal from the institution without additional notice. Account statements are mailed to both the student's home address and campus mail box. It is the student's responsibility to contact the Office of Accounting to determine account balance if a statement is not received.

Tuition and Fee Policies

Tuition covers graduate work. It and the various fees provide limited health services and admission to various center-sponsored events. Course-related fees and materials are additional. Students must purchase their own textbooks and supplies.

Fees charged for application, late registration, duplication of records, graduation and regalia, late filing for graduation, replacement diplomas and miscellaneous items are noted in the current

TUITION AND MANDATORY FEES

	TEXAS RESIDENTS	NON-RESIDENTS	
Tuition per semester hour	\$62	\$275	Minimum of \$100 in long semesters; \$50 in summer terms
General use fee per semester hour	\$6	\$6	Maximum \$60
Student service fee per semester hour	\$6	\$6	Maximum \$72
Activities Center fee	\$25	\$25	\$12.50 in summer terms
Computer fee	\$25	\$25	\$12.50 in summer terms
Medical fee	\$25	\$25	\$12.50 in summer terms
Identification card fee	\$5	\$5	One-time fee; replacement ID cards are \$5

Tuition rates for non-resident and foreign students must be determined no later than January 1 of each odd-numbered year by the Texas Higher Education Coordinating Board. The tuition rate is currently set at \$275 per semester credit hour.

Tuition and Fee Register available at the graduate office.

Residency Regulations for Tuition Purposes

Rules and regulations for determining residency status are specified under Title III of the Texas Education Code and are available in the health science center Office of Medical Student Admissions and the Graduate School of Biomedical Sciences. In general, students must physically reside in Texas for the 12-month period immediately preceding their initial registration in an educational institution in Texas. Other factors may be considered for residency determination for tuition.

Students who are not legal residents of Texas must pay non-resident tuition including the statutory tuition charges and standard health science center fees approved by the UNT Board of Regents. Admission requirements for non-residents are the same as for resident students.

Certain residency exceptions do not affect actual residency status but do allow for a non-resident tuition exemption. Refer to "Tuition and Fee Waivers" section of this chapter for further information.

Responsibility of the Student

The student is responsible for knowing residence status and for registering under the proper status. Any questions concerning residency must be discussed with the proper authority in the graduate office before registration.

Any student erroneously classified as a resident will be reclassified and will be required to pay all out-of-state tuition due. Attempts to evade non-resident fees may subject the student to the statute penalty and to possible disciplinary action.

Change of Status: Non-resident to Resident

A student who is at any time classified as a non-resident retains non-resident status until reclassification as a resident is applied for and is officially approved by the registrar.

Change of Status: Resident to Non-resident

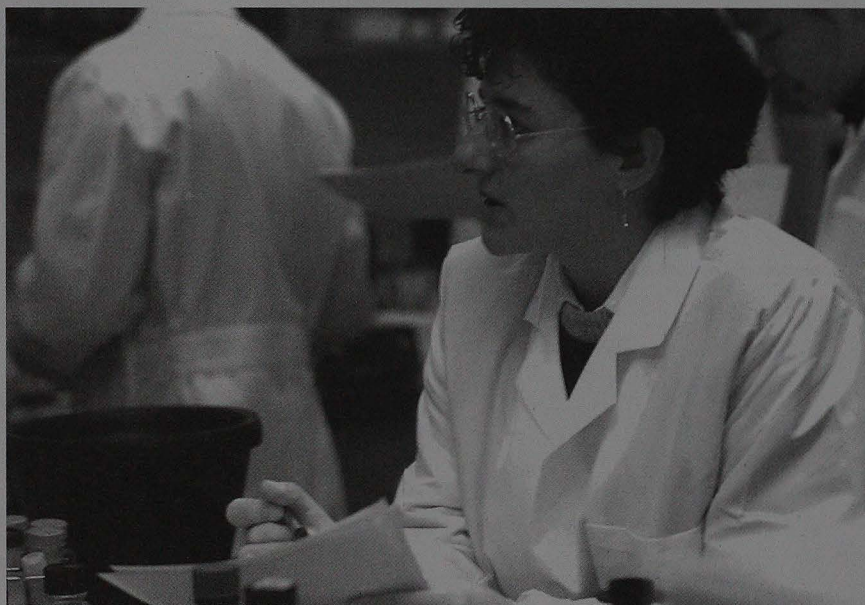
Students who are classified as residents but become non-residents by virtue of any change of domicile must notify the registrar of such change immediately. Students who believe they have been erroneously classified have the opportunity for appeal. The appeal is to be made to the authority by whom the original classification was assigned, either in the graduate office or in the Registrar's Office.

Tuition and Fee Waivers

Several exemptions and waivers are available to qualifying students. Brief descriptions of these are listed below. Waiver refunds must be requested during the semester application is made. Such requests must be made before the 12th class day in long semesters and the fourth class day in summer terms. Requests for retroactive refunds cannot be honored. Additional information and applications are available in the graduate office.

Exemptions and Waivers

1. Certain veterans, dependents, etc., of the U.S. armed forces who are Texas residents are exempted from payment of tuition.
2. Certain orphans of members of the U.S. armed forces, Texas National Guard and Texas Air National Guard are exempted from payment of tuition.
3. Deaf or blind students are exempted from payment of tuition.
4. Children of disabled firemen, peace officers, employees of the Texas Department of Corrections and game wardens are exempted from payment of tuition.
5. Children of U.S. prisoners of war or persons missing in action are exempted from payment of tuition.
6. Resident rather than non-resident tuition is applied to certain students from other nations of the American hemisphere.



7. Resident rather than non-resident tuition is applied to teachers and professors of Texas state institutions of higher education, their spouses and their children.
8. Resident rather than non-resident tuition is applied to a teaching or research assistant provided the student is employed at least one-half time by the health science center in a position that relates to the degree sought.
9. Resident rather than non-resident tuition is applied to a non-resident holding a health science center competitive academic scholarship of at least \$1000 for the academic year for which the student is enrolled.
10. Students who are concurrently enrolled in more than one program at UNT Health Science Center are not charged duplicate fees.
11. Certain health science center fees are waived for students enrolled only in off-campus courses.

Tuition and Fee Refunds

A student who drops a course or withdraws from the graduate school within certain time periods may be entitled to a partial refund of tuition and fees. These refunds are calculated according to the category and time schedule listed below. Application fees, late registration charges, fee for student identification card, delinquent payment fees, and installment handling fees are non-refundable. Any financial obligation to the health science center must be resolved before any refunds will be made.

Class Drops

Refunds are made for any course dropped through the 12th class day for the long semester and through the fourth class day in the summer (see Academic Calendar for dates). The semester's first class day is always the first official day of classes for the graduate school rather than the first day of an individual's class.

To calculate the refund for a class dropped, take the fee paid for the original hours and subtract the fee shown in the Tuition and Fee Register for the new number of hours. The difference between the two is the amount of the refund. *Note:* If all classes for the semester are dropped, see "Schedule of Withdrawal Refunds" in this catalog.

Withdrawal from the Graduate School of Biomedical Sciences

Withdrawal refunds are determined by the number of enrolled semester credit hours at the

time of withdrawal. Withdrawal percentages are applied to the total amount of tuition and fees as prescribed by state law, not the amount paid. The withdrawal schedule and percentages of refund shown below pertain to total withdrawal for the semester. The withdrawal schedule and the percentages of refund are mandated by the Texas Legislature. The semester's first class day is always the first official graduate school day of classes rather than the first day the individual attends class. A withdrawal refund is based on the day of withdrawal, regardless of the date the class first meets. See the Academic Calendar in this catalog for the dates classes begin.

Additional information may be found in the Tuition and Fee Register or by contacting the graduate office.

Schedule of Withdrawal Refunds

UNT Health Science Center shall refund a percentage of tuition and mandatory fees to students withdrawing from the institution during a fall or spring semester according to the following withdrawal schedule:

Before first day of class	100%
During the first five class days	80%
During the second five class days	70%
During the third five class days	50%
During the fourth five class days	25%
After the fourth five class days	None

General Financial Policies

The UNT Health Science Center is a state-supported institution subject to state laws. Extension of credit is prohibited and all financial obligations to the health science center must be paid when due. Any outstanding obligation must be cleared prior to registration in the next subsequent semester. Tuition and fees are subject to change by action of the Texas Legislature or the UNT Board of Regents.

Correction of Errors

Students are responsible for any additional amounts due the health science center resulting from auditing and correction of records after registration fees have been paid including all registration assessment errors, change from off-campus to on-campus classes, invalid employment waivers, etc.

Payments by Third Party

Checks issued by a third party in payment of a student's tuition, fees or other charges should be made payable to either the student or to both the student and the health science center. Arrangements may be made with the graduate office in cases where cash amounts should not be made available to the student.

Returned Checks

A returned check is defined as any check returned to the health science center unpaid due to no fault of the bank or the university.

Upon receipt of a returned check, notification is mailed to the issuing party or the individual in whose behalf the check was issued. The address on the check and/or the address in the official health science center records is used.

An additional \$5 fee is charged for each returned check.

Financial Aid

UNT Health Science Center offers programs to assist graduate students in meeting the costs of financing their education. Though financial aid is an alternative for eligible students, it should be considered a supplement to a student's own financial resources. Students must be accepted into an eligible program to be considered for financial aid. Non-degree seeking students are not eligible for financial aid.

A student may apply for financial aid by completing the Free Application for Federal Student Aid (FAFSA). This should be done immediately upon acceptance into the health science center and yearly thereafter.

Federal Programs

Students who complete the FAFSA, show financial need as determined by the needs analysis service and meet all general eligibility requirements as outlined for each program may apply for federal financial aid. In addition, most aid programs require that the recipient adhere to academic and/or financial criteria in order to maintain eligibility. Some programs have limited funds; therefore, student files that are completed first are considered first.

Federal and State Programs

Federal Work Study
Federal Perkins Loans
Federal Family Education Loan Program
Texas Public Education Grant

In addition, students may apply through the health science center's Office of Financial Aid for assistance to private programs. Students may also apply directly to private foundations for scholarships and loans. Most programs have individual selection criteria and various award limits.

Contact the Office of Financial Aid, Medical Education Building 1-116 at 817-735-2520 or 800-346-8266 for more information.

Graduate Assistantships

Graduate assistantships are awarded annually to qualified doctoral students by departments and by the Graduate Council. Funding may also be available from research grants held by individual faculty members. Assistantships are \$15,000 per year for doctoral students and \$13,000 per year for masters students. The assistantship entitles the recipient to applicable health insurance and allows out-of-state students to pay tuition at the in-state rate.

Student Life



EIGHT

Division of Student Affairs

The Division of Student Affairs assists the president of the health science center in interpreting student needs, creating an atmosphere that stimulates learning and integrating extracurricular experiences into the formal learning programs.

The goals of this office are to encourage student participation in and contribution to the health science center's programs, to establish and coordinate a system of student academic advisement, and to interpret institutional regulations on academic and non-academic matters to students.

Staff members are available for general counseling or information and assistance with any phase of campus life. In emergency situations (such as a death in the family) special assistance can be provided for notification of professors, medical withdrawal, etc. The office provides rights adjustment upon request, handles disciplinary and social adjustment problems, and offers self-development opportunities and enrichment activities.

The Division of Student Affairs encompasses student development, academic assistance, admissions, financial aid and the registrar.

Academic Assistance, Guidance and Counseling

The Academic Assistance Office conducts learning strategies workshops for incoming students during the week of orientation. Included are a learner-oriented library tour, an anatomy lab introductory activity, as well as specific study and test-taking skills pertinent to fall semester courses. Follow-up workshops occur in January to help first-year students prepare for the spring semester courses. Additional workshops and services are conducted on an as-needed basis.

Other academic assistance services are available by appointment or on a walk-in basis. These services include counseling in learning skills, time management, test-taking skills and a peer-tutoring program.

The Office of Student Affairs works closely with both preclinical and clinical sciences faculty to provide direction and support in periods of academic difficulty, to plan alternate programs and to assist in reassessment of priorities.

Counseling referrals for discussion of personal problems for students and their families are available through the Employee Assistance Program (EAP). For more information, contact the Student Affairs Administrative Office or the Student Development Office.

Student Development Services

The Office of Student Development supports the mission of the Division of Student Affairs and the health science center. Its role is to address issues that are relative to all medical and graduate students, from pre-enrollment through graduation. This office coordinates programs and activities that promote the intellectual, professional, moral, social, physical and emotional development of all students. These programs and activities include:

- Clubs and organizations
- New student orientation
- Ranchland
- Holiday Dinner Dance
- Spring Fling

The Student Development Office also provides students and prospective students information on housing, child care and employment opportunities in and around Fort Worth.

Food Services

Breakfast and lunch are available in the lounge on the first floor of the Gibson D. Lewis Health Science Library. Snack foods and beverages can be purchased from vending machines located throughout the health science center. A student/staff lounge is conveniently located on the first floor of Medical Education Building 1. There are also a variety of restaurants within walking distance of campus.

Founders' Activity Center

The Founders' Activity Center, located on the north end of campus, is open to students, faculty and staff seven days a week. The center features aerobics classes, regularly scheduled recreational sports, lecture series, multi-purpose outdoor court and recreational equipment. Cardiovascular exercise equipment is available, as well as free weights and weight machines. Exercise and nutrition programs can be tailored to the individual by the center's Health Promotions Manager.

Health Insurance Program

As noted in the Academic Policies section of this catalog, it is compulsory for all students to carry medical and hospitalization insurance, and proof of insurance must be provided at each registration.

Although health insurance may be purchased from any insurance carrier, a group student health insurance plan is offered by a non-university-affiliated carrier for students enrolled at the health

science center. Application forms are available in the Office of Student Affairs.

Health Services

Health care services are available to students and their immediate family members through the UNT Health Science Center's Central Family Practice Clinic, which is in the Patient Care Center on the northwest corner of campus. This clinic is a public family practice facility, however, and you must make an appointment for every visit. You also must provide insurance information, and a claim will be filed. Students and their dependents are not charged co-payments or general service fees. However, charges will be incurred for pathology, radiology and medications. Referrals to specialty areas are made as needed through the Central Family Practice Clinic.

Honors Day

Each year during Honors Day, the health science center recognizes students who have excelled academically, as well as those who have made outstanding contributions to the institution, the community and the medical and scientific professions.

Identification Card Regulations

The identification card is distributed after all fees have been paid. The card entitles the bearer to access to all health science center facilities and serves as an identification for clinic and health services.

Lost ID cards may be replaced for a \$5 charge.

The card is void upon termination or interruption of enrollment and when not properly encoded.

Fraudulent use of the ID card subjects the user to a fine of \$2,000 and up to one year in jail (Class A Misdemeanor). Anyone who uses the ID card to give false information to a police officer is subject to a fine of \$200 (Class C Misdemeanor).

Liability

The health science center is not responsible for and does not assume any liability for loss of or damage to personal property. A student may want to provide personal insurance coverage for possessions on campus.

Living Accommodations

There is no on-campus housing at UNT Health Science Center. The health science center does not assume any responsibility in housing arrangements but does support the federal housing policies that housing owners not discriminate because of race, color, sex, age, disability, veteran status or national origin. Information on local housing accommodations is available in the student lounge.

Motor Vehicle Regulations

People who operate motor vehicles and bicycles on the health science center campus must comply with the Texas Uniform Traffic Code and the published center regulations regarding vehicle and bicycle use, parking, display of decals and penalties for violation. See Student Handbook for details on parking policies.

Student Organizations

The University of North Texas Health Science Center recognizes the right of any group of students, faculty or staff to form a voluntary organization for purposes not forbidden by the laws of the United States or the state of Texas. All organizations that include enrolled students as



members must be registered with the Office of Student Affairs if they will use any university facilities, space or grounds for meetings.

Policies regulating the organization, functioning, sponsorship and privileges of registered or recognized organizations are available in the Office of Student Affairs.

Graduate Student Association

All members of the graduate student body, full or part-time, are full and equal members of the Graduate Student Association (GSA). GSA promotes the interests and opinions of the student body, sponsors projects and events beneficial to students and acts as the voice of students on matters of policy and student welfare. Monthly GSA meetings are held during the long semesters. Members elect officers at the end of each spring semester. The GSA president and vice president serve as student representatives to the Graduate Council.

Association of Student Healthcare Executives

The goals of the Association of Student Healthcare Executives, a student chapter of the American College of Healthcare Executives, include promoting educational development of skills necessary for the effective leadership in healthcare organizations, providing information regarding career alternatives and job opportunities in the field of healthcare management, and developing an association with local and regional healthcare executive groups to enhance academic and career opportunities.

Black Graduate Student Association

The Black Graduate Student Association (BGSAA) is open to all African-American graduate students. BGSAA was formed to promote fellowship among African-American graduate students. Further goals of the organization include assisting in recruitment and retention efforts, generating funds for scholarships, and serving as role models in the arena of science for elementary and secondary youth.

D.O./Ph.D. Student Association

The D.O./Ph.D. Student Association (DPSA) is open to all students involved in the dual D.O./Ph.D. program. DPSA takes an active roll in developing the policies governing the dual program. DPSA serves as a formal liaison between the Graduate Student Association and the Student Government Association of the Texas College of Osteopathic Medicine. A further goal of the

organization is to promote research among fellow osteopathic medical students.

Student Chapter of the Medicine/Public Health Initiative

The Student Chapter of the Medicine/Public Health Initiative, developed to join the professions of medicine and public health, is the first organization of its kind in the nation. The organization serves as a forum for discussion and interaction between students of both disciplines and welcomes students enrolled in D.O., M.P.H., Ph.D. and dual degree programs to become members. One of the primary goals of the organization is to promote health education and wellness by implementing student-directed preventive medicine programs throughout the community. The organization offers the perspective of tomorrow's medical and public health leaders on matters related to the health needs of the state and the nation and assists in the realization of the goals of the national Medicine/Public Health Initiative, which is jointly sponsored by the American Medical Association and the American Public Health Association. Authorities and leaders in public health and medicine share their experiences and perspectives on important and timely issues at meetings held twice each semester.

Scheduling Events

Student organizations are required to schedule events, seminars, programs and lectures through the Student Development Office. Facilities reservation forms may be picked up from this office and submitted to the Office of Student Affairs for official approval and scheduling.

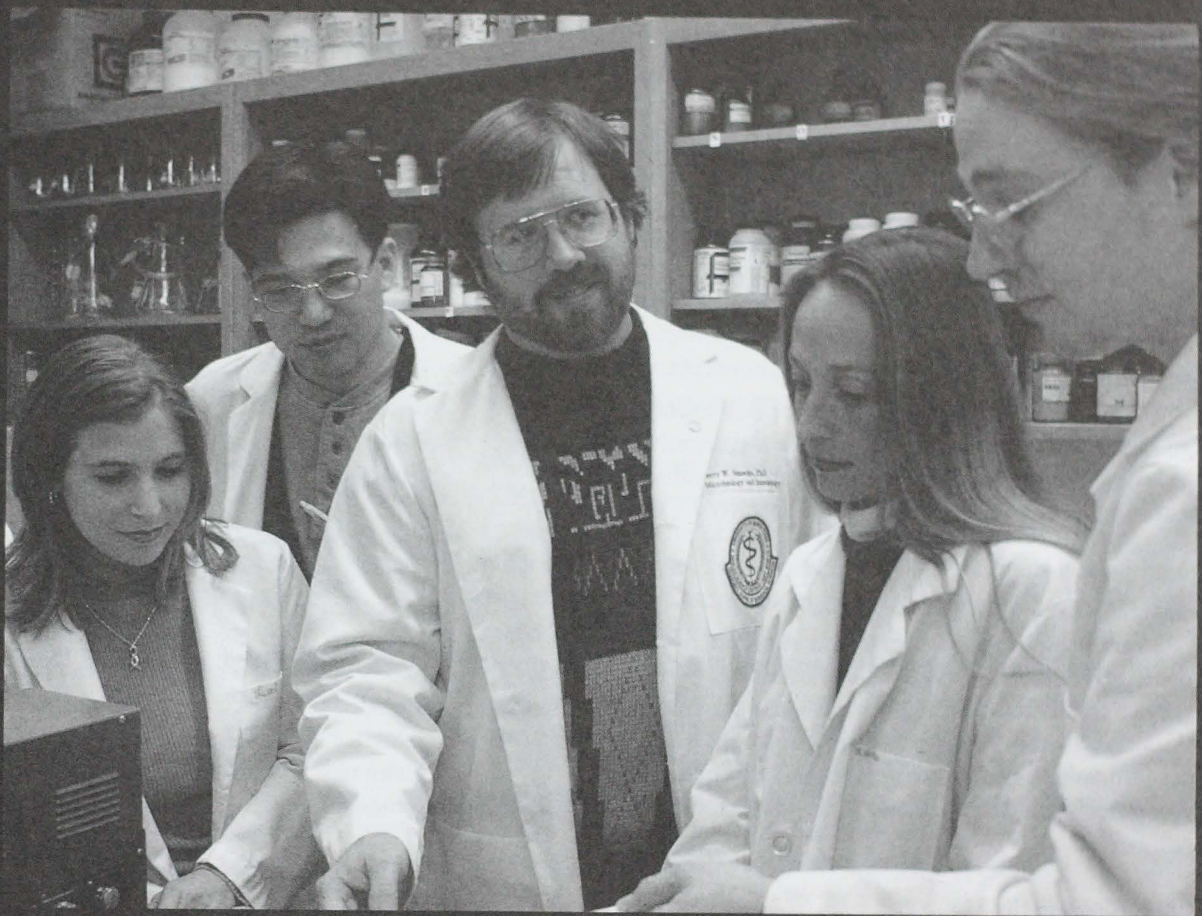
Student Lounge

The Student Lounge is located on the first floor of Medical Education Building 1, directly across from the Main Auditorium. The lounge provides a relaxed atmosphere for students with various recreational game tables available. The Student Development Coordinator and *Speculum* offices are housed within the lounge.

Student Publications

UNT Health Science Center publishes a student yearbook, *The Speculum*, on an annual basis. The yearbook is a cooperative effort between medical and graduate students. All students are encouraged to participate in the production of the yearbook.

Course Descriptions



NINE

Prerequisite requirements may be waived on an individual basis as determined by department. All courses require permission of the course director for enrollment.

Biomedical Sciences (BMSC)

5000. Introduction to Concepts in Biomedical Science.

2 hours. Course designed for undergraduate participants in the summer research programs with emphasis on data collection, analysis and presentation in the areas of physiology, pharmacology, microbiology, molecular biology, anatomy and cell biology. Offered each Summer.

5080. Radiation Safety.

1 hour. Radiation sources, interaction of radiation with matter and human tissues, radiation measurement and dosage, instrumentation, regulations, and practical and safety procedures. Prerequisite(s): consent of department. Offered on demand.

5200. Biostatistics I.

3 hours. Statistical methods and experimental design; descriptive statistics; data presentation; parametric and non-parametric methods of hypothesis testing including two-sample tests, analysis of variance, regression and correlation analyses; introduction to multivariate statistics. Competency with computer statistical packages is developed. Offered each summer.

5210. Biostatistics II.

3 hours. Course content includes multivariate analysis, experimental design and statistical software. Prerequisite: BMSC 5200. Offered each Summer II.

5600. Integrative Biomedical Sciences I.

7 hours. Course designed to provide foundation for studies in biomedical sciences through an integrated curriculum that includes instruction in biochemistry, micro/molecular biology and cell biology. Concurrent enrollment in BMSC 5610 required. Offered each Fall.

5610. Integrative Biomedical Sciences Workshop I.

2 hours. Seminar/journal club format for investigating and discussing current research corresponding to lecture topics in BMSC 5600. Concurrent enrollment in BMSC 5600 required. Offered each Fall.

5680. Learning and Performance Skills for Biomedical Sciences Graduate Students.

1 hour. Course is designed to improve skills in reading, writing and presenting technical information. Offered on demand.

5700. Integrative Biomedical Sciences II.

6 hours. Course designed to provide foundation for studies in biomedical sciences through an integrated curriculum that includes immunology/cancer/pharmacology and physiology. Prerequisite: BMSC 5600 and 5610. Concurrent enrollment in BMSC 5710 required. Offered each Spring.

5710. Integrative Biomedical Sciences Workshop II.

2 hours. Seminar/journal club format for investigating and discussing current research corresponding to lecture topics in BMSC 5700. Prerequisite: BMSC 5600 and 5610. Concurrent enrollment in BMSC 5700 required. Offered each Spring.

5900-5910. Special Problems.

1-3 hours each. For students capable of developing a problem independently through conferences and activities directed by the instructor. Problem chosen by the student with the consent of the instructor and department chair. May be repeated for credit. Offered each semester.

5920. Problem-in-Lieu of Thesis.

3 hours. In lieu of a thesis, the candidate must complete one or both of the problems courses. As part of the requirements for each course, the student must present in writing a formal report based upon the work done in the course, which must be approved by the advisory committee and filed in the graduate school. This report must be prepared according to instructions given in the manual for preparing the thesis. Offered each semester.

5940. Seminar in Current Topics.

1 hour. Specialized weekly lectures on topics of current interest by students, faculty and/or invited speakers. May be repeated for credit. Offered Fall and Spring.

5950. Thesis.

3-6 hours. To be scheduled only with consent of department. 6 SCH required. No credit assigned until thesis has been completed and filed with the graduate dean. Continuous enrollment required once work on thesis has begun. May be repeated for credit. Offered each semester.

5960. Biomedical Ethics.

1 hour. Covers major ethical issues in biomedical sciences, including: authorship and intellectual property; conflict of interest; data selection/research design; privacy and confidentiality; discrimination and sexual harassment; misconduct and whistle-blowing; animals in research; human subjects in research; implication of funding sources for research. Offered each Spring.

5965. Introduction to Industry Practices I.

1 hour. Introduction to the practice of industry science with an emphasis on good laboratory practice, new drug applications, FDA regulations, clinical trials and biotechnology transfer. Offered each Spring.

5970. Techniques in BMSC.

1 - 2 hours (varies by technique chosen). A practical course in techniques. Students will participate in laboratories demonstrating up-to-date techniques in biomedical sciences. A listing of the techniques of participating laboratories is available in the schedule of classes. Offered each semester.

6010. Qualifying Examination for Doctoral Students.

3 hours. Demonstration of competence in a specific area of biomedical science as evidenced by criteria established by the faculty of each discipline. Offered each semester.

6500. Computer Applications in Science and Medicine.

1 hour. Use of computers in the scientific and medical fields. Special attention is given to hardware configurations; using word processing, spreadsheets and databases; charting and graphing statistical data; and discussion of cross-platform issues. Practical integration of different software tools is addressed. Enrollment is limited. Offered each Fall and Summer I.

6510. Automated Information Resources in Science and Medicine.

1 hour. Extensive training on the Internet, Library Information System (LIS), and MEDLINE is provided. Instruction is provided on creating correctly formatted bibliographies for journal article publication. Other search engines and databases such as Grateful Med and Current Contents are discussed. Prerequisite: BMSC 6500 or equivalent. Enrollment is limited. Offered each Spring and Summer II.

6900-6910. Special Problems.

1-3 hours each. For students capable of developing a problem independently through conferences and activities directed by the instructor. Problem chosen by the student with the consent of the instructor and department chair. May be repeated for credit. Offered each semester.

6940. Individual Research.

1-12 hours. Doctoral research of independent nature. A maximum of 24 SCH allowed toward degree. Offered each semester.

6950. Doctoral Dissertation.

3, 6 or 9 hours. To be scheduled with consent of department. A maximum of 12 SCH allowed toward degree. No credit assigned until dissertation has been completed and filed with the graduate office. Doctoral students must maintain continu-

ous enrollment in this course subsequent to passing qualifying examination for admission to candidacy. May be repeated for credit. Offered each semester.

Anatomy and Cell Biology (ANAT)**5005. Introduction to Anatomical Sciences.**

6 hours. An introduction to the developmental, microscopic, and macroscopic organization of the human body. The unity of the human body will be examined beginning at the cellular level and progressing to the macroscopic level with functional correlations. In addition, both lecture and laboratory sessions will emphasize clinical significance. Participation in the dissection of a specific region of the human body is required by each student. Offered each summer.

5010. Developmental and Gross Anatomy.

12 hours. A complete study of the gross morphological features of the human body including the anatomical development of the human from fertilization to full term. Lecture material and dissection are organized regionally. Lectures are presented by departmental faculty supplemented by clinical faculty correlations for each region. There is a radiologic component in the laboratory consisting of representative X-rays, CAT scans and MRIs; clinical faculty in radiology present correlations. Each student is required to participate fully in dissection of human cadaver for successful completion of the course. Exams will be taken with medical students, but will include an additional written component. Enrollment is limited. Offered each Fall.

5110. Medical Histology and Cell Biology.

7 hours. A thorough study of the cells, tissues and organs of the human body is presented. Laboratory sessions stress the interpretation of tissue morphology based on principles derived from modern molecular and cellular biology. Tissue sections are examined by means of light microscopy in the laboratory. Pertinent electron microscopic data are included when deemed necessary. Offered each Spring.

5120. Medical Neuroscience.

5 hours. Principles of neuroanatomy and neurophysiology fundamental to an understanding of basic clinical neurology. In addition to clinical case studies and presentations in neuropharmacology and neuroradiology, laboratory dissection of human brain material is an important component of the course. Offered each Spring.

5210. Embryology.

3 hours. Anatomical development of the human from fertilization to full term. Emphasis is on the early development and subsequent formation of organs and organ systems. Clinical

presentations are integrated into the lectures to introduce the student to the more common congenital malformations. A library research paper and seminar are required. Offered each Fall.

5900-5910. Special Problems.

1-3 hours each. For students capable of developing a problem independently through conferences and activities directed by the instructor. Problem chosen by the student with the consent of the instructor and department. May be repeated for credit. Offered each semester.

6020. Cell Biology .

4 hours. Discussion of historical and current experimental information relating to the structure and function of eukaryotic animal cells. The cell membrane, nucleus, genetic translation, cytoskeleton, cellular organelles and extracellular matrix are presented in relation to cell growth and energetics as well as to cell motility and regulation of cell metabolism. Emphasis is on the critical evaluation of research papers and the integration of molecular biology, biochemistry and cell biology. Prerequisite: undergraduate- or graduate-level biochemistry. Offered every other Spring (odd years).

6030. Methods in Molecular Biology.

4 hours. An intensive laboratory course designed to give students the expertise to perform basic techniques currently utilized in cell and molecular biology. Techniques will include plasmid preparation; isolation of cDNA inserts from various plasmids; extraction of nucleic acids; agarose gel electrophoresis; Northern and Southern blot analyses; cDNA cloning; sequencing and analysis; PCR amplification; protein gel electrophoresis; and immunoblot analysis. Prerequisite: graduate-level biochemistry. Offered each Fall.

6040. Advances in Ocular Biology.

3 hours. Emphasis is on the current literature and contemporary approaches dealing with current topics in ocular biology. Each year will focus on one or several research and/or clinical areas. Offered every other Fall (odd years).

6050. Visual Sciences Seminar.

1 hour. A monthly presentation by a visiting distinguished visual scientist. The seminar will be preceded by a journal check where articles relating to the seminar will be discussed. Offered each Fall and Spring.

6080. Diseases of the Eye.

3 hours. Structure and function of the various ocular tissues, as well as the diseases which affect them. Lectures presented by basic scientists and clinical ophthalmologists. Offered on demand.

6599. Current Topics in Anatomy and Cell Biology.

1 hour. Contemporary topic chosen each semester from the broad areas of anatomy, cell biology, visual science. Format consists of presentations of current research articles by both faculty and students. May be repeated for credit as topics vary. Offered each Fall and Spring.

6690. Special Problems in Anatomy and Cell Biology.

1-3 hours. For students capable of developing a problem independently through conferences and activities directed by the faculty. Problem chosen by the student with the consent of the instructor and the department chair. Offered each semester.

6699. Special Problems in Ocular Research.

1-3 hours. For students capable of developing a problem independently through conferences and activities directed by the faculty in areas of visual sciences. Problem chosen by the student with the consent of the instructor and the department chair. Offered each semester.

Biochemistry and Molecular Biology (BIOC)

5010. Principles of Biochemistry.

7 hours. An introduction to the chemical structure and processes related to living systems. A survey of intermediary metabolism. Offered each Fall.

5425. Advanced Biochemistry.

4 hours. Topics include structure and function of nucleic acids and proteins, lipids, carbohydrates and regulation of metabolism. Tools for structural studies will be considered and current research reports in this area will be discussed. Prerequisites: BMSC 5600, 5610, 5700 and 5710. Offered each Spring.

5435. Molecular Aspects of Cell Signaling.

4 hours. Advanced study of signal transduction events from the plasma membrane to the nucleus. Topics include receptor activation, the generation of second messengers and eukaryotic transcriptional activation and repression. Prerequisites: BMSC 5600, 5610, 5700 and 5710. Offered each Fall and Spring.

5510. Signal Transduction.

2 hours. Current publications in the general area of receptor-signal transduction will be discussed in the journal club format. Students are required to participate in presentation and discussion of current articles. Offered each Fall and Spring.

5520. Enzyme Regulation and Mechanism.

2 hours. Current topics in the areas of Enzyme Mechanism and Regulation will be discussed, based on student and faculty presentations of literature articles. Offered each Fall and Spring.

5530. Structure and Function of Proteins.

2 hours. Topics will include the isolation of proteins from tissue, their structural and functional characterization, effects of natural and synthetic mutants on the structure, stability and function of proteins. Prerequisite: BIOC 5010 or BIOC 5011; may be taken concurrently. Offered each Fall and Spring.

5540. Advanced Lipoprotein Metabolism.

2 hours. Presentation and discussion of recent research findings and literature reports in lipoprotein metabolism and related areas. Prerequisite: BIOC 5010 or BIOC 5011; may be taken concurrently. Offered each Fall and Spring.

5550. Advanced Clinical Biochemistry.

3 hours. This course has an emphasis on performance, evaluation and diagnostic interpretation of clinical laboratory tests. Topics include endocrine biochemistry, cancer biochemistry tumor markers, biochemistry of nutrition, etc. Offered each Fall and Spring.

5680. Selected Topics in Biochemistry.

1-3 hours. Current research interests in the field of biochemistry. May be repeated as topics vary. Offered on demand.

5900-5910. Special Problems.

1-3 hours each. For students capable of developing a problem independently through conferences and activities directed by the instructor. Problem chosen by the student with consent of the instructor and department. May be repeated for credit. Offered each semester.

5940. Seminar in Molecular Biology and Immunology.

1 hour. A study of current literature; current research emphasized. Required of all graduate biochemistry students in each semester of graduate residence. Offered each Fall and Spring.

6680. Advanced Techniques in Biochemistry.

1 hour. Methods and instrumentation currently used in biochemical analyses. Presented in four-week mini-courses consisting of 8 hours of lecture and 24 hours of laboratory. Topics vary from year to year but will include among others, protein sequencing and amino acid analysis, nucleic acid sequencing, tissue culture, monoclonal antibody production, column chromatography, radioisotopes, peptide synthesis and gel electrophoresis and electrofocusing. Offered on demand.

6690. Current Topics in Biochemistry and Molecular Biology.

1-3 hours. Emphasis on the current literature and contemporary approaches dealing with current topics in Biochemistry and Molecular Biology. Each semester will focus on one of several research areas. Prerequisite: BIOC 5425. Offered on demand.

Integrative Physiology (PSIO)**5020. Medical Physiology.**

8 hours. The study of organ system physiology with special emphasis on control mechanisms and the maintenance of homeostasis. Primary emphasis is placed on cardiovascular, muscular, gastrointestinal, renal and neuroendocrine function. Discussion sections, laboratory exercises and guest lectures utilized. Offered each Spring.

5100. Cardiovascular Physiology I.

3 hours. Designed to familiarize the student with current concepts and progress in human cardiovascular function. Topics include molecular basis of myocardial contraction, electrochemical coupling, regulation of myocardial mechanics and ventricular performance, the peripheral circulation and the vessel wall, local regulation of tissue blood flows, and neural control of the circulation. Prerequisite: PSIO 5020. Offered every other Fall (even years).

5110. Cardiovascular Physiology II.

3 hours. Continuation of PSIO 5100. Topics include capillary and lymphatic dynamics, control of blood pressure, splanchnic blood flow, regulation of cardiac output and specific cardiovascular perturbations. Prerequisites: BMSC 5600, 5610, 5700 and 5710. Course format includes student presentations, term paper and examinations. Offered every other Spring (odd years).

5200. Respiratory Physiology.

3 hours. Designed as an in-depth study of the functional anatomy and physiology of the respiratory system with emphasis on the human. Topics presented by students, followed by class discussions including pulmonary mechanics and blood flow. Respiratory blood gases and neurohumoral control of ventilation. Prerequisite: PSIO 5020. Offered every other Fall (odd years).

5300. Renal Physiology.

3 hours. This course familiarizes the student with current concepts and progress in human renal function. Topics include the body fluids, the renal vascular bed, glomerular filtration, tubular function, acid-based physiology, renal pathophysiology and the history of renal physiology. Prerequisite: PSIO 5020. Offered every other Spring (even years).

5900-5910. Special Problems.

1-3 hours each. For students capable of developing a problem independently through conferences and activities directed by the instructor. Problem chosen by the student with the consent of the instructor and department. May be repeated for credit. Offered each semester.

6020. Advances in Cardiovascular Physiology I.

3 hours. Directed, in-depth study of current research literature with emphasis on the heart. Oral reports and written reviews are required. Prerequisite: PSIO 5100. Offered each semester.

6030. Advances in Cardiovascular Physiology II.

3 hours. Directed, in-depth study of current research literature with emphasis on the peripheral circulation. Oral reports and written reviews are required. Prerequisite: PSIO 5110. Offered each semester.

6040. Advanced Techniques in Cardiovascular Physiology.

3 hours. Methods and instrumentation currently used in cardiovascular research. Presented in modular units of approximately 3-4 weeks duration. Credit: 1 hour per module. May be repeated for credit as topics vary. Prerequisite: PSIO 5020. Offered each semester.

6050. Physiology of Skeletal and Smooth Muscle.

3 hours. Designed as an in-depth study of the functional anatomy and physiology of skeletal and smooth muscle. Topics include functional anatomy, molecular basis of contraction, electro- and pharmaco-coupling and regulation of muscle mechanics. Special topics are presented by students. Prerequisites: ANAT 5120, PSIO 5020. Offered every other Fall (odd years).

6060. Cardiovascular Regulation During Exercise.

3 hours. The course will provide an integrative physiological basis of blood pressure regulation during exercise. The mechanisms to be discussed include "Central Command" and the "exercising muscle pressor reflex" and their integration with basic hemodynamic responses to exercise. Offered every other Summer I (even years).

6070. Advanced Endocrine Physiology.

3 hours. An interactive survey of modern endocrinology presented largely from the current primary literature. The scope will focus on mechanisms and will extend from molecular biology (hormone interactions with genes, receptors, ion channels, second messengers, etc.) to systematic control (feedback, secretion, distribution, metabolic clearance rate, etc.) Broad topic areas discussed will be determined in part by class interests. Offered every other Fall (odd years).

6080. Advanced Autonomic Physiology.

3 hours. This course will cover anatomy, neurotransmitters, and cellular mechanisms of the autonomic nervous system with special emphasis on the peripheral systems. Parasympathetic and sympathetic control of physiological function will be discussed with system emphasis determined in part by student interests. Current research literature combined with up to date reviews will be used to spur discussions which will focus on

mechanisms extending from molecular biology to systemic control. Individual student interests will be used to determine special topic areas for the last half of the course. Prerequisites: ANAT 5120, PSIO 5020. Offered every other Fall (even years).

6090. Myocardial Metabolism: Concepts and Controversies.

3 hours. Comprehensive survey of current scientific issues related to heart muscle metabolism and function. Specific topics include: control of myocardial substrate metabolism; ATP synthesis and utilization; myocardial ischemia, "stunning," and "hibernation;" advanced techniques for studying myocardial metabolism. Prerequisites: BIOC 5010 or 5011, PSIO 5020. Offered every other Spring (odd years).

6699. Current Topics in Physiology.

1-3 hours. Survey of literature, oral presentations and written reports. Offered each semester.

Microbiology and Immunology (MICR)

5020. Medical Microbiology and Immunology.

6 hours. Medical microbiology, basic and clinical immunology and infectious diseases are studied in eight modules consisting of lectures, laboratories and problem-solving medical cases. The course covers bacteria, viruses, fungi and parasites and related diseases. Offered each Fall.

5050. Host-Parasite Relationships in Infectious Diseases.

3 hours. Emphasis on pathogenicity, pathogenesis, and the host's innate and acquired resistance to infection. Lectures, conferences, literature review are utilized for student instruction. Demonstration of independent student initiative is an essential part of this course, and a special project is required. Offered once every 2-3 years.

5120. Current Topics in Immunology.

1 hour. Format consists of presentations of current research articles in the various areas of immunology by faculty, research staff and students. May be repeated for credit. Offered each semester.

5130. Structure and Function of the Eukaryotic Chromosome.

2 hours. Current publications in the general area of chromosomal structure and function in mammalian cells will be discussed in the journal club format. Students are required to participate in the presentation and discussion of current articles related to chromatin structure, nucleosomes, histone proteins, metaphase chromosomes, telomeres, centromeres, nuclear matrix, nuclear pores, nucleolus, nuclear envelope, nuclear lamins, DNA replication, transcription, DNA damage and repair, ribonucleoprotein particles, splicesomes, and macromolecular interactions in heterochromatin and euchromatin (interphase chromatin). Offered each Spring.

5300. Current Topics in Molecular Microbiology.

2 hours. Presentation and discussion of current research, emphasizing microbial physiology, genetics and molecular biology. Offered each semester.

5900-5910. Special Problems.

1-3 hours each. For students capable of developing a problem independently through conferences and activities directed by the instructor. Problem chosen by the student with the consent of the instructor and department. May be repeated for credit. Offered each semester.

6080. Advances in Virology.

3 hours. Course is designed to cover modern culture techniques, molecular biology, host-virus interaction, interferon and antivirals among other topics. Prerequisite: MICR 5020. Offered on demand.

6300. Advanced Molecular Biology.

3 hours. Course designed for students familiar with basic molecular biology. Lectures emphasize modern paradigms in molecular biology. Offered once every 2-3 years.

6650. Current Topics in Microbiology and Immunology.

3 hours. A consideration of findings in the most recent literature—microbiology, immunology, parasitology and virology. Course will follow a small group interactive format, student's presentations and panel discussions. Prerequisite: MICR 5020. Offered on demand.

Pathology (PATH)**5900-5910. Special Problems.**

1-3 hours each. For students capable of developing a problem independently through conferences and activities directed by the instructor. Problem chosen by the student with the consent of the instructor and department. May be repeated for credit. Offered each semester.

6330. Pathology I.

5 hours. Incorporates the general fields of study known classically as basic and systematic pathology. Approach is primarily at organ levels after an introductory phase emphasizing fundamental pathophysiology. The latter encompasses processes associated with inflammation/repair, cell injury and death, infection, fluid/hemodynamic derangement and neoplasia. Subsequent systems approach illustrates major diseases and disorders encountered in the practice of medicine. Throughout, the language of medicine is emphasized as well as clinical features and differential diagnoses, where appropriate. Ultimately the student should be able to recognize, understand and predict the general effects of those pathologic processes encoun-

tered in clinical medicine. PATH 6331 must be taken consecutively. A grade is not assigned until PATH 6331 has been completed. Offered each Fall.

6331. Pathology II.

9 hours. This course encompasses all environmental, nutritional, toxicologic and forensic topics. These lifestyle-related diseases are core pathologic elements in modern society and merit separate and specific consideration in our curriculum. The impact of diet, substance abuse, industrial disorders and trauma of disparate types is extraordinary and will be considered comprehensively in this course. Autopsies are an integral part of Pathology II and all students will be expected to attend necropsy sessions at the Tarrant County Medical Examiner's Office. An autopsy report on a participatory case is required as well. The goal of these latter activities is to correlate clinical data and the course of disease with necropsy findings. Prerequisite: PATH 6330. PATH 6331 must be taken the semester immediately following completion of PATH 6330. A grade is not assigned for PATH 6330 until PATH 6331 has been completed. Offered each Spring.

Pharmacology (PHRM)**5010. Introduction to Pharmacology.**

8 hours. Introduction to the pharmacological basis of drug action. Both lectures and laboratory experiences are included, with emphasis on drug mechanisms and fundamental principles including physiochemical properties of drugs, drug receptor interactions, pharmacokinetics, pharmacodynamics, pharmacogenetics and drug interactions. Offered each Fall.

5020. Advanced Pharmacology

3 hours. A continuation of PHRM 5010, covering specific drug classes and emphasizing molecular basis for drug action and basic principles of pharmacology and toxicology. Prerequisite(s): PHRM 5010. Offered on demand.

5030. Principles of Pharmacology.

3 hours. Topics include drug disposition, pharmacokinetics, drug metabolism, drug tolerance, drug interactions and receptor mechanisms. Offered each Spring.

5050. Introduction to Toxicology.

3 hours. The interrelationships of natural and synthetic agents to biologic systems are compared with the resulting toxicological response of the organism. Identification of causative agents and determination of limits of detection and safety are discussed. The principles of instrumentation methods and their use in a toxicological laboratory are described. Offered on demand.

5060. Experimental Toxicology.

3 hours. Lecture and laboratory experience emphasizes adverse reactions to chemicals and drugs, environmental hazards and analytical techniques for detection of foreign substances in biological fluids and tissues. Includes qualitative and quantitative laboratories, identification of causative agents and metabolic studies of toxic agents. Visits to professional laboratories specializing in toxicology are included. Offered on demand.

5070. Behavioral Pharmacology.

3 hours. Drugs that modify behavior are studied from the standpoint of the behavioral and neurochemical events in the brain that mediate the effects of psychoactive drugs. A daily laboratory on an arranged basis provides experience in the techniques of objectively quantifying drug effects on behavior in rats. Offered every other Spring (even years).

5900-5910. Special Problems.

1-3 hours each. For students capable of developing a problem independently through conferences and activities directed by the instructor. Problem chosen by the student with the consent of the instructor and department. May be repeated for credit. Offered each semester.

6020. Advances in Molecular Pharmacology.

3 hours. An in-depth review of the current literature on modern pharmacology and signal transduction of drug receptors. Oral reports and written reviews required. Prerequisite: ANAT 6020. Offered on demand.

6030. Advances in Behavioral Pharmacology.

3 hours. Directed, in-depth study of current research literature with an emphasis on behavioral pharmacology. Oral reports and written reviews required. Prerequisite: PHRM 5070. Offered every other Spring (odd years).

6050. Ocular Pharmacology.

3 hours. Review of pharmacological principles and therapeutic approaches regarding ocular diseases and eye organ systems. Offered on demand.

6080. Receptors and Drug Action.

4 hours. In-depth course of drug receptor pharmacology and receptor classes. Emphasis on techniques for studying receptor function, second messenger signaling and molecular pharmacology. Offered every other Spring (even years).

6699. Current Topics in Pharmacology.

1-3 hours. Review of current topics in pharmacology including pharmacology of aging, ocular pharmacology, behavioral pharmacology and new drugs on the horizon. Offered each Fall.

Public Health Program**PHPM****5100. Principles of Epidemiology.**

3 hours. An introduction to epidemiology for students majoring in any aspect of public health. Principles and methods of epidemiological investigation, both for infectious and non-infectious diseases, as well as for assurance of health, are included. Offered each Fall and Spring.

5110. Behavioral Epidemiology.

3 hours. The derivation of ecological models based on natural history of behavior in humans and non-humans as basis for investigation, analysis and design of dysfunctional behavior intervention strategy. The course includes a laboratory component. Offered each Spring and Summer I.

5130. Principles of Public Health.

3 hours. Practices, concepts and theories of assuring the learning of healthful behavior in human populations. Dynamics of healthy personality, character and role development in individuals and groups are analyzed. Cultural comparisons are studied both in context and over time. Offered each Fall, Spring and Summer I.

5135. Methods in Public Health.

This course covers, in depth, the design of epidemiological studies applied to assurance of healthful behavior, including practical and theoretical considerations, biases, confounding and misclassification, concept of cause and causal models. The course includes a laboratory for study of examples from the literature and analysis of methods presented. Offered each Fall.

5140. Field Studies in Public Health.

3 hours. Topics of special nature or of interest to students with specific topic area of problem focus: i.e., health educational, maternal and child care, dental health, environmental health, health administration, nutrition preventive medicine and epidemiology. Course includes field experience to observe public health role models and project presentation. Prerequisites: PHPM 5210, and additional 6 SCH. Offered each semester.

5145. Seminar in Public Health.

3 hours. Problems of public health practice examined. Topics include women's health, special populations, mental health, violence, adolescent health and economic aspects related to topics. May be repeated for credit. Offered each Fall, Spring and Summer I.

5200. Health Administration.

3 hours. Basic concepts and theories of health care organizational environment, context structure, processes, performance and administrative functions of systems analysis and planning,

programming, budgeting and personnel management as they apply to definition and assurance of community health goals. Offered each Spring and Summer II.

5210. Biostatistics for the Public Health Professional I.

3 hours. Logic and language of scientific methods in life science research; use of basic statistics in testing hypotheses and setting confidence limits. Simple and multiple regression and elementary experimental designs. Offered each Fall and Summer I.

5220. Family Health: Ethnic and Cultural Aspects in the Clinical Setting.

3 hours. This course is designed to explore the ethnic and cultural influences related to chronic, degenerative and communicable diseases found in the clinical setting. Offered each Summer I.

5225. Medical Anthropology.

3 hours. Comparative study of the biocultural and socioeconomic bases of health, cultural and social variations in illness and healing. Health in ecological context is related to social change and cultural responses to disease. Social and ethical issues are analyzed using applied anthropology and participatory research. Offered on demand.

5230. Health Education in the Clinical Setting.

3 hours. Identification of methods used to develop and administer educational components of health care regimens. Emphasis on specification of behaviors and selection of motivation strategies associated with improved behavioral and health outcome. Methods to improve patient compliance with therapeutic regimens. Offered each Summer II.

5300. Environmental Health.

3 hours. An introduction to the environmental determinants of health. Consideration is given to urban water supply and waste water disposal, open and closed air quality control, solid and hazardous wastes, sanitation, and the regulatory framework for environmental health risks. Offered each Fall and Summer I.

5400. Community Health. 3 hours.

Introduction to general principles of health planning and program development of community-based public health programs oriented toward a perspective that links together strategies to address public health problems, with practical techniques and tools for community needs assessment and program evaluation. Offered each Fall and Summer II.

5450. Public Health Program Planning and Evaluation.

3 hours. Introduction to methods and applications for community program planning and evaluation, including measurement applications of evaluation research, i.e. program planning, implementation, process and outcome evaluations. Offered each Spring.

5500. Introduction to International Health.

3 hours. The introductory course provides the student with an overview of the conditions, practices and obstacles encountered in delivering primary health care in the international arena. The differences and commonality of the challenges facing the health care provider are explored. The history of international health and the roles of government and non-governmental agencies are presented along with specific models of intervention and evaluation of major international health problems. Offered on demand.

5560. Field Studies in International Health I.

3 hours. Topics of special nature or of interest to students with specific topic area of problem focus in the field of international health. Course includes field experience and project presentation. Prerequisite: Advance permission of the instructor with site and program approval also. International sites may require several months of advance planning. Offered on demand (conducted during Spring Break).

5570. Field Studies in International Health II.

3 hours. An extension of Field Studies I allowing the student defined experiences in research and/or Practice. Prerequisite: Advance permission of the instructor with site and program approval also. International sites may require several months of advance planning. Offered on demand.

5600. Advanced Epidemiology.

3 hours. This course extends the principles and fundamental concepts covered in PHPM 5100. Emphasis is on methodologic issues, potential sources of bias, and the use of multivariate modeling techniques. Course content includes the planning, implementation, and conduct of epidemiologic studies, as well as the analysis and presentation of collected data. Prerequisites: PHPM 5210 and BMSO 5200. Offered each Spring and Summer II.

5610. Chronic Disease Epidemiology.

3 hours. This course provides a survey of common chronic diseases in the United States and epidemiologic methods used in the prevention and control of such diseases. Course content includes study of the multifactorial etiology of many chronic diseases and the methodologic problems posed in studying chronic diseases. Prerequisite: PHPM 5100. Offered on demand.

5620. Health Care Epidemiology.

3 hours. This course focuses on the application of epidemiologic methods in hospitals, clinics, and managed care organizations. Course content includes the review of newly-developed instruments and methodologies for health care epidemiology, as well as the advantages and limitations of using traditional epidemiologic methods in a novel setting. Prerequisites: PHPM 5210 and BMSO 5200. Offered each Spring.

5630. Acute Disease Epidemiology.

3 hours. This course focuses on the practical methods used in responding to acute disease outbreaks. Course content includes methods for disease identification, control, surveillance, and prevention of secondary outbreaks. Prerequisite: PHPM 5100. Offered each on demand.

5930. Seminar in Dental Public Health.

3 hours. Seminars focus on principles of dental public health, patterns of dental health care financing, need, demand and use of dental services in community-based public health programs. Offered each Spring.

6100. Medicine and Public Health.

2 hours. A study of the Medicine and Public Health Initiative, its theoretical framework and practical implications for delivering primary care and public health services. Offered each Spring.

6150. Health, Illness and Human Behavior.

3 hours. Discussion of major theories of health, illness and human behavior relevant to public health and primary care. Prerequisite: PHPM 6100. Offered each Summer I.

6170. Qualitative Research Methods.

3 hours. Design of qualitative research studies including ethnography, grounded theory, case study and focus group methods. Prerequisites: PHPM 6100, 6150. Offered each Fall.

6190. Research Synthesis Methods.

3 hours. Scientific methods for synthesizing research emphasizing meta-analyses of comparative data. Prerequisites: PHPM 6220, 6240. Offered each Spring.

6200. Statistical Methods I.

3 hours. Fundamental principles of biostatistics using univariate and bivariate models. Application of statistical methods to public health research. Offered each Fall.

6220. Statistical Methods II.

3 hours. Advanced principles of biostatistics using multivariate models and their application to public health research. Prerequisites: PHPM 6100, BMSC 6500. Offered each Spring.

6240. Epidemiological Research Methods.

3 hours. Design of epidemiological research studies, data analysis and interpretation of results. Prerequisites: PHPM 6200, BMSC 6500. Offered each Fall.

6300. Public Health Ethics.

1 hour. Ethical issues related to public health research including: authorship and intellectual property, conflict of interest, data collection privacy and confidentiality, exclusion of subjects, human subjects, and implications of funding sources. Offered each Spring.

6400. Managed Care and Health Care Delivery.

3 hours. Predominant health care delivery systems and the emergence of managed care. Public health goals and objectives embedded in managed care principles. Offered each Fall.

6600. Current Topics in Medicine and Public Health.

3 hours. A round table discussion of current topics in primary care and public health. Weekly presentations on related topics by MPH and PhD students. Prerequisites: PHPM 6100, 6300. Offered each Summer I.

6800. Independent Study in Health and Illness.

3 hrs. The purpose of this independent study is to provide an opportunity for the doctoral student to begin narrowing a research agenda on a particular health and illness topic. Prerequisite: PHPM 6150. Offered on demand.

6810. Research Methods Lab.

3 hrs. The purpose of this independent study is to provide an opportunity for the doctoral student to obtain practical experience in an additional research methodology emphasizing a hands-on approach. Offered each Spring.

BMSO**5200. Biostatistics for the Public Health Professional II.**

3 hours. Logic and language of scientific methods in life science research; use of basic statistics in testing hypotheses and setting confidence limits. Simple and multiple regression and elementary experimental designs. Offered each Spring and Summer II.

NTPH**5310. Introduction to Occupational Epidemiology.**

3 hours. This course reviews the epidemiology of occupational diseases and discusses those aspects of epidemiology peculiar to occupational health studies. Both factual and methodological issues are discussed and include such topics as occupational risk factors, surveillance of occupational disease and injury patterns in selected occupational groups. Prerequisite: PHPM 5100. Offered on demand.

5800. Capstone.

3 hours. The capstone course is designed to allow students the opportunity to apply methods and techniques learned in the MPH program to a practical public health problem. All students, regardless of their specialty track, will participate as a member of an interdisciplinary team to define a public health problem, develop a study design, implement an assessment, conduct a risk assessment and communicate results. The course is designed to be the capstone activity for students in the MPH program who do not elect the thesis option. Offered each Fall and Spring.

The following courses are offered at the University of North Texas for specific MPH tracks. Consult the appropriate department at UNT for frequency of course offerings. The main telephone number for UNT is 940-565-2000.

Biological Sciences (BIOL)

5005. Contemporary Topics in Biology: Field Studies in Environmental Health. 3 hours.

Contemporary topics in the biological sciences. Topics may vary from semester to semester and may include topics such as human development, epidemiology or plant physiology. May be repeated for credit as topics vary.

5005. Contemporary Topics in Biology: Seminar in Environmental Science and Public Health. 3 hours.

Contemporary topics in the biological sciences. Topics may vary from semester to semester and may include topics such as human development, epidemiology or plant physiology. May be repeated for credit as topics vary.

5040. Contemporary Topics in Environmental Science and Ecology.

1-3 hours. Contemporary topics and issues in environmental science and ecology. Topical themes include global climate change, biodiversity, wetlands, population and aquatic, terrestrial or plant ecology. May be repeated for credit as topics vary.

5360. Chemistry of Water and Water Pollution.

4 hours. Chemical and engineering approaches to water and waste water treatment. Laboratory studies for assessing chemicals in water and waste water. Application of standardized analytical methods for evaluating water quality. Prerequisite: 6 SCH of chemistry.

5380. Fundamentals of Aquatic Toxicology.

3 hours. Theory and methodologies used by scientists, regulatory agencies and industry to measure the impact of man's activities on freshwater aquatic ecosystems. The course has its foundations in history, but concentrates on current methodologies and theories.

5880. Environmental Sciences Seminar Series.

1 hour. A weekly seminar series covering a broad range of environmental research topics. Invited speakers are prominent local, regional or national researchers. May be repeated for credit. Pass/no pass only.

6300. Hazardous Waste Management.

3 hours. An introduction to the dynamic and rapidly changing field of hazardous waste management. Management issues such as legal, technical and sociological aspects are presented. Types of hazardous waste and numerous treatment/disposal options are reviewed.

6360. Environmental Engineering.

4 hours. Water, land and air pollution control technologies are presented. Engineering approaches to pollution problems are demonstrated by considering technical feasibility and economic constraints. Laboratory exercises provide instruction for quantitative analysis of water and waste water; field trips to various pollution-control facilities. Prerequisites: CHEM 1410-1420 and 1430-1440.

Behavioral Analysis (BEHV)

5250. Topics in Behavior Analysis. 3 hours.

In-depth analysis and discussion of significant topics in behavior analysis. Topics include but are not limited to the following: philosophy of measurement of behavioral phenomena; rule-governed vs. contingency-governed behavior; the creation of settings and interpersonal dynamics; legal, ethical and professional issues in behavior analysis.

Economics (ECON)

5030. Microeconomic Analysis.

3 hours. Theory of the firm relating to production and employment; consumer behavior and related concepts of microeconomic efficiency. Prerequisites: ECON 1100-1110 or 5000.

5150. Public Finance.

3 hours. Analysis of theoretical foundations, structure and performance of public sector. Includes issues of public choice theory, market failures, taxing, spending, borrowing and subsidies. Individual readings and research required. Prerequisite(s): ECON 1100 and 1110 or consent of department. Students may not receive credit for both ECON 4150 and 5150.

5180. The Economics of Health Care.

3 hours. Application of economic theory and analysis to the financing and delivery of medical care. Emphasis on the use of economic concepts to understand public policy issues in medical care. Students may not receive credit for both ECON 4180 and 5180.

5460. Industrial Organization and Public Policy.

3 hours. Emphasizes relationships between structure, conduct and performance of industries. Topics include concentration, barriers to entry, pricing, mergers, product differentiation, technical change, antitrust and regulation. Case studies of selected American industries illustrate the theory and public policy implications. Individual readings and research required. Prerequisite(s): ECON 3550 or consent of department. Students may not receive credit for both ECON 4460 and 5460.

5640. Multivariate Regression Analysis.

3 hours. Application of multivariate regression analysis to issues in business and the social sciences. Topics include estimation and analysis of linear models under ideal and non-ideal conditions, instrumental variables estimation and estimation of models with limited dependent variables. Emphasis is placed upon the application of computer technology to practical problems in forecasting and policy analysis. Prerequisite(s): 3 hours of college statistics or consent of instructor. (Same as AECO 5880.)

5660. Economic Forecasting. 3 hours.

Time series analysis and forecasting methodologies applied to problems in business and the social sciences. Topics include smoothing techniques, classical decomposition methods, Box-Jenkins estimation and simulation techniques. Emphasis is placed upon the application of forecasting and simulation methodologies to economic and business data through the use of microcomputer technology. Prerequisite(s): 6 hours of college statistics or consent of instructor. Usually offered spring semester.

5880. Seminar on Current Health Care Economics.

3 hours. Topics include health care reform; problems associated with health insurance markets; alternative health care financing systems in the United States and other countries; health care regulation by the states; universal health care coverage; and the "public goods" nature of health care. Topics are subject to change depending on the current trends in the field and the relevancy to students' interest. Course includes presentations and discussions of students' research papers. Prerequisite: ECON 4180 or 5180.

Geography (GEOG)**5400. Environmental Modeling.**

3 hrs. Modeling of environmental processes and human impacts on the environment to include topics on sensitivity, calibration and evaluation, watersheds, non-point source pollution, hydrological models, GIS, water and air quality models, pollutant transport and fate, and ecotoxicology. Prerequisite(s): graduate standing or consent of department.

5500. Introduction to Geographic Information Systems.

3 hours. Introduction to the concepts of computer-based spatial data handling, known as Geographic Information Systems (GIS) technology. Presents the concepts of GIS in a general way utilizing several GIS packages and hypothetical GIS problems. Prerequisite: consent of the department

5600. Seminar in Environmental Policy.

3 hours. Analysis and evaluation of environmental policy, including spatial, historical, economic, ecological and institu-

tional dimensions of contemporary resource management issues.

5960. Medical Geography.

3 hours. Locational aspects of disease and health care, spatial patterns of diseases, health facilities, health care policies and problems. Prerequisite: GEOG 2400 or consent of department.

Philosophy (PHIL)**5700. Seminar in Environmental Ethics.**

3 hours. An intensive analysis of new positions in environmental ethics with special emphasis on their theoretical value as a contribution to contemporary philosophy and their practical value with regard to environmental policy and decision making.

Psychology (PSYC)**4000. Abuse in Adult Relationships.**

3 hours. A general survey of current research on psychological, interpersonal and situational factors involved in physical and emotional abuse in dating, cohabiting and marital relationships. The interdisciplinary body of research is covered from a psychological perspective. Prerequisite: PSYC 3650 or equivalent.

5030. Advanced Research Design. 4 hours.

Principles and techniques of analysis of variance and covariance, experimental designs with applications to randomized groups, factorial, Latin-square, trend analysis and other standard schemes. Experience in laboratory techniques, data collection, data analysis and interpretation. Prerequisite(s): PSYC 5700 or equivalent.

5050. Seminar in Psychology: Program Evaluation/Consultation in Special Settings. 3 hours.

Issues and topics of current interest to students in the various graduate programs but not covered by course offerings. May be repeated for credit. Topic: Program Evaluation/Consultation in Special Settings.

5040. Psychological and Applied Aspects of Health: A Behavioral Medicine Approach.

3 hours. Conceptual frameworks for understanding factors that influence patterns of health behavior in persons from different cultures. Presents a behavioral medicine perspective of health and disease and illustrates their unique and common elements in sociopolitical and environmental contexts.

5070. Medical and Behavioral Disorders.

4 hours. Focuses on those physical disorders for which behavioral variables are most relevant in terms of etiology,

treatment and prevention; i.e. arthritis, hypertension, diabetes, migraine headaches, back pain, etc. Laboratory work includes an introduction to the assessment and primary and secondary treatment of these disorders through such behavioral, non-medical procedures as diet, medical history, physical examination, exercise, health education, and religious affiliation; includes such stress management procedures as therapy, hypnosis, relaxation, biofeedback and meditation.

5200. Psychology of Women: An Analysis of Dynamics, Stresses.

3 hours. Designed to give the future educator, counselor and mental health professional a better understanding of the specific psychological, environmental and biological problems facing women. Specific and current methods of advising are covered. Prerequisite: minimum of 6 SCH of undergraduate psychology.

5310. Crisis and Adjustment Demands.

3 hours. Concerned with crisis topics relevant to today's culture: i.e., rape, problem pregnancy, divorce, suicide and commitment to mental institutions. For practicing lawyers, psychologists and master's or doctoral students in education, psychology, nursing and other disciplines involved in treatment intervention.

5340. Life-Span Developmental Psychology.

3 hours. An examination of developmental behavioral change across the human life span. Special concern is given to the conceptual and empirical bases for such change, with an emphasis on measurement and antecedents. More specific treatments of content areas (e.g., learning, memory, intelligence, personality, stress and coping, mental illness, and death and dying) constitute an integral part of the course.

5350. Counseling for Sexual Dysfunction and Other Psychosexual Disorders.

3 hours. A study of the origins and treatment of sexual dysfunctions and other psychosexual disorders. The study includes physical and psychological considerations in etiology, diagnosis and treatment.

5600. Human Learning and Motivation. 3 hours.

Social, psychological and biological dimensions of learning and motivation (e.g., culture, self-concept, perception, cognition, emotion, genotype and maturation) as related to children and youth.

5700. Advanced Quantitative Methods in Psychology.

4 hours. Includes a review of probability theory and elementary sampling statistics, a discussion of correlational theory and the application of several correlational techniques, a study of several methods appropriate for testing hypotheses about differences among several means, factorial designs in analysis of variance and some consideration of non-parametric procedures. Prerequisite: an introductory course in statistics.

5780. Advanced Psychopathology.

3 hours. A critical analysis of the classificatory systems, etiology and treatment of psychopathological behavior, with a view toward a sophisticated appreciation of the contemporary status and prospectus of this subject domain. Prerequisites: PSYC 4610 and PSYC 5010 or equivalents, or consent of department.

5790. Advanced Physiological Psychology. 3 hours.

Fundamentals of physiological psychology, including basic neurophysiological laboratory techniques and a survey of current research with an in-depth study in one research area by each student. Prerequisite(s): PSYC 4640 or its equivalent, or consent of department.

5840. Psychometric Theory.

3 hours. Systematic treatment of the logic of measurement, including such topics as scaling models, validity, variance and covariance, reliability, theories of measurement error and test construction. Prerequisite: PSYC 5700.

5860. Seminar on the Psychology of Aging.

3 hours. Theoretical and research literature concerned with the psychological aspects of aging. Age-related changes in sensation, perception, learning, cognition and personality are considered from both a conceptual and methodological perspective as they bear on adjustment to late adulthood. Prerequisite: PSYC 5010 or advanced study in developmental psychology. May be repeated for credit as topics vary.

5870. Advanced Psychology of Personality. 3 hours.

Theory, research, applications, and current issues involving major systems for understanding personality, including the studies of human nature, individual differences, and integration of part-systems to form a model of the whole person. Prerequisite(s): consent of the department.

5890. Psychological Counseling for Late Maturity and Old Age.

3 hours. Study of the predictable and normal dependencies of aging; techniques of individual, family and group counseling applied to later life, with emphasis on problems of retirement, health and bereavement.

6110. Professional Issues in Behavioral Medicine Consultation.

3 hours. Issues facing health psychologists practicing in behavioral medicine settings. Themes focus on malpractice risks related to health services, including managed health care; privacy, consent and access to hospital records; quality assurance, quality control and mechanisms of review; interdisciplinary relationships, hospital privileges, multiple codes of ethics/legal constraints and hierarchical levels of professional responsibility for medical regimes; medical liaison consultation with

underserved populations; and anticipating issues for the health/psychology/behavioral medicine practitioner.

6130. Assessment and Treatment of Substance Abuse.

3 hours. History of alcohol and drug use across cultures and the emergence of distinctions, sanctions and prohibitions. The major categories of psychotropic substances are reviewed, along with their chemical and behavioral effects. Characteristics of users and abusers are discussed. Various treatment approaches and their effectiveness are evaluated. Prerequisite: consent of instructor.

6400. Research Methodology Applications.

3 hours. Introduction to research methodology in psychology. Includes measurement theory, latent construct theory, experimental and quasi-experimental design, overview of data analytic strategies and power analysis. Focus on individual student projects. Prerequisite: consent of department.

6570. Psychological Diagnostics and Intervention for Psychosomatic Disorders. 3 hours.

This course offers an examination of the physiological and psychological aspects of disorders such as HIV infection, cancer and depression. The medical and behavioral interventions available are discussed, along with the relative merits and effectiveness of these treatments.

6710. Psychological Responses to Ecological and Nutrient Influences. 3 hours.

An examination of a range of environmental stimuli that may be toxic to the human condition and an interpretation of the relationship between psycho-nutritional deficits and behavior. Prerequisite(s): a graduate course in assessment or consent of the department.

6760. Psychotherapy Methods and Behavioral Medicine. 4 hours.

Systematically reviews theoretical and research literature on the mind/body relationship and implications for psychotherapy strategies with individuals confronting disease. The role of biopsychosocial factors will be examined in planning practical treatment interventions to help improve the physical, emotional and spiritual well-being of the patient. Laboratory work includes supervised practice in the design and implementation of behavior change paradigms. Prerequisite(s): consent of the department.

Public Administration (PADM)

5200. Public Personnel Management.

3 hours. Managing human resources in national, state and local governments. Offered every Fall.

5430. Financial Accountability in Government.

3 hours. An introduction to financial control in government including fund accounting, financial reporting, internal controls and auditing. Particular emphasis is given to the public manager's use of accounting information in such contexts as budget decision making, pricing government services, cash planning and municipal bond ratings.

Sociology (SOCI)

5200. Seminar on Research Methods and Design.

3 hours. Research designs; techniques of sampling and scaling; problems of reliability and validity; consideration of appropriate tests of association and significance. Prerequisites: SOCI 4870 or equivalent, or consent of program chair or instructor.

5210. Introduction to Social Statistics.

hours. Probability theory, descriptive statistics, non-parametric statistics and the general linear model, including multiple regression analysis, and their application in sociological research. Prerequisite: SOCI 4880 or equivalent.

5260. Topics in Sociology. 3 hours.

Graduate seminar devoted to investigation, analysis and discussion of significant problems in contemporary sociology. May be repeated for credit.

5260. Seminar on Sociology of Mental Health and Mental Illness.

3 hours. This course will examine the social epidemiology of mental health and mental illness, including the effects of social stresses and social integration on the mental health of various sex, age, ethnic and other groups within society; mental health care system and problems of access to care within that system.

5400. Seminar on the Sociology of Health.

3 hours. Analysis of sociological factors in health and illness; organization of health care and the health professions.

5900. Special Problems: Field Study in Health Services Research. 3 hours.

Open to advanced students capable of doing independent research under the direction of the instructor. To be registered for only on recommendation of the instructor and with the consent of the program chair.

6200. Seminar on Research Methods. 3 hours.

Theory and application of quantitative and non-quantitative methods to sociological data. Prerequisite(s): a minimum of 18 semester hours in sociology, including 4880 or equivalent. May be repeated for credit.

6500. Seminar on Social Organization and Disorganization.

3 hours. An intensive analysis of selected topics in such areas as social institutions and deviant behavior. Prerequisites: minimum of 18 SCH in sociology, or equivalent. May be repeated for credit.

Texas College of Osteopathic Medicine

The following courses are offered by UNT Health Science Center's Texas College of Osteopathic Medicine specifically for dual degree programs. Consult the Office of Medical Education for frequency of course offerings.

805. Clinical Clerkship in Public Health and Preventive Medicine.

4 hrs. An elective four-week rotation in public health/preventive medicine.

806. Clinical Clerkship in Occupational Medicine and Personal Health.

4 hrs. An elective four-week rotation in occupational and personal health.

6363. Public Health and Preventive Medicine.

3 hrs. A lecture series in preventive medicine and community health. Major content areas include epidemiology and biostatistics, communicable disease control, environmental health, occupational medicine and managed care. Students also participate in a series of health care selectives designed to provide additional insight and practical experience in areas of personal interest.

Baylor College of Dentistry

The following courses are offered by Texas A & M University System's Baylor College of Dentistry specifically for dual degree programs. Consult Baylor College of Dentistry for frequency of course offerings.

6520. Principles of Epidemiology and Preventative Dentistry.

Biostatistical concepts in research and population studies; principles of epidemiology applied to oral diseases.

6690. Human Behavior in Dentistry.

Application of principles of communication and motivation relevant to doctor-patient relations, patient compliance, and stress management.

6880. Principles of Dental Public Health.

Introduction to the principles of dental public health.

7330. Applied Preventive Dentistry.

Scientific basis for preventive dentistry interventions.

8004. Clinical Preventive Dentistry.

8020. Principles of Biostatistics.

Introduction to biostatistical concepts in research and population studies.

8100. Geriatric Dentistry.

Psychosocial, biological, preventive, pharmacological, and therapeutic considerations in providing oral health care for aging population.

8120. Hospital Dentistry.

Administrative aspects of outpatient and inpatient care for oral and maxillofacial surgery and dental treatment when provided in the hospital management setting by general dentists (course includes a 1 week hospital rotation in succeeding quarters).

8140. Human Behavior in Dentistry.

Behavioral principles applied to patient and staff management and satisfaction including behavioral approaches to pain and anxiety control.

8340. Pediatric Dentistry.

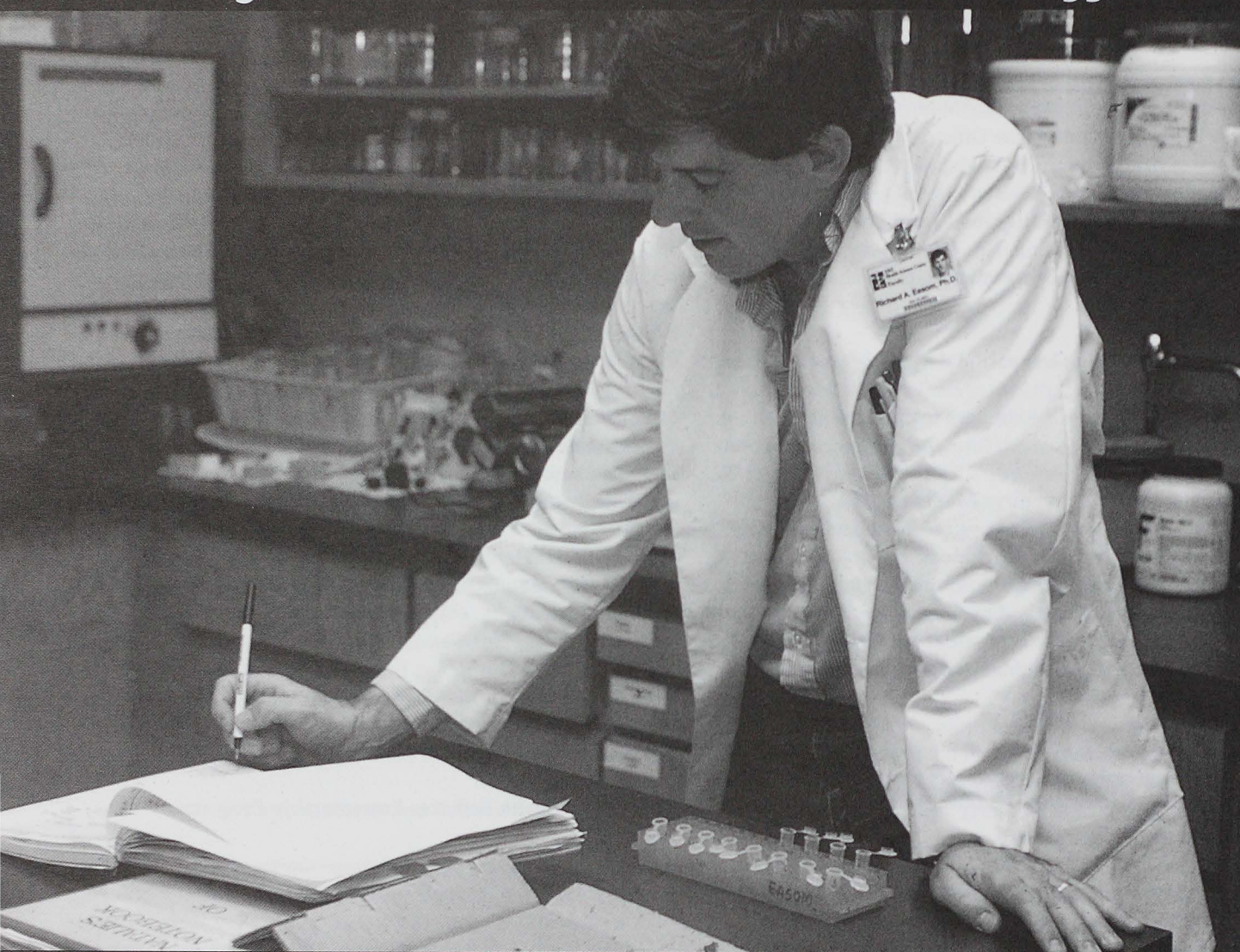
Treatment planning and child management; special problems in pediatric dentistry; emphasis on complete dental rehabilitation of patients.

8370. Professional Ethics.

Principles and theory; case analysis and decision making; humanizing health care; virtue ethics.

S99. Public Health Sciences Preceptorship Program.

Faculty and Health Science Center Officers



TEN

Neeraj Agarwal, Ph.D.

The Post-graduate Institute of Medical Education and Research
Assistant Professor
Department of Anatomy and Cell Biology

Research focuses on the question of apoptosis of photoreceptor and ganglion cell death in retinal dystrophies and glaucoma respectively. Cultured photoreceptor cells are used to test the hypothesis that oxidative damage is responsible for the photoreceptor cell death. To understand the mechanisms, the role of nuclear factor-kappa B, NF-kB and other apoptotic related genes such as Bcl-2 Bax, and ICE-proteases and their protein in apoptotic photoreceptor cell death are being studied. Research indicates that RelA subunit of NF-kB is down-modulated under oxidative stress and may play a critical role in photoreceptor cell death. Also under investigation is whether over-expression of Bcl-2 by gene transfer to cultured photoreceptor cells will protect cells from oxidative stress induced in photoreceptor cells. These studies are extended to investigate a light damaged rat retina *in vivo* model. Similar to these studies, the mechanisms of ganglion cell death in glaucoma is under investigation. Towards these studies, a culture of ganglion cells to test the hypothesis that "ischemia results in oxidative stress to cause ganglion cell apoptosis in glaucoma" is being established, using the same parameters as described above for photoreceptor cells. Various techniques involved with these projects are: electrophoretic mobility gel shift assays, gene transfections, RT-PCR analysis, RNase protection assays, immunoblot analysis, immunocytochemistry, and various other cell and molecular biological techniques. e-mail: nagarwal@hsc.unt.edu

Rafael Alvarez-Gonzalez, Ph.D.

University of North Texas
Associate Professor
Department of Molecular Biology and Immunology

This laboratory studies signal transduction pathways, chromatin structure and function, and gene expression in eucaryotes. Emphasis is placed in the molecular biology and biochemical

regulation of DNA-replication, transcription, carcinogenesis (DNA damage and repair), and calcium signaling by ADP-ribose transfer enzymes. Projects currently in progress include: the characterization of ADP-ribosylated DNA-binding proteins, e.g., DNA-metabolizing enzymes, transcription factors, and histone proteins; the physiological function of oncogenes (c-fos, c-jun), p53 (a tumor suppressor gene) and chromatin-(ADP-ribosylation) in apoptosis and cell necrosis; the enzymology (molecular, chemical, kinetic, and regulatory mechanisms) of poly(ADP-ribose) polymerase, poly(ADP-ribose) glycohydrolase, and ADP-ribose cyclase; and the biological function of cyclic(ADP-ribose), a potent intracellular calcium mobilizing cyclic nucleotide. Methods and laboratory techniques utilized include: tissue culture of human cells (normal and transformed); cell fractionation, chromatin isolation, and protein purification; DNA-replication, transcription and enzyme assays; immunoprecipitation, immunofluorescence, and immunoblotting; electrophoresis, autoradiography and radiochemical assays; affinity chromatography and HPLC; and peptide mapping, mobility shift and DNA-"footprinting" assays.

John Aschenbrenner, Ph.D.

Baylor University
Associate Professor
Department of Anatomy and Cell Biology

Current research endeavors involve the use of both light and electron microscopy methods to study retinal photoreceptor regeneration.

David Barker, Ph.D.

University of Illinois at Urbana-Champaign
Associate Professor
Department of Integrative Physiology

Current interests are in instructional technology and internet-based education.

Barbara Barron, Ph.D.

University of Nebraska Medical Center
Assistant Professor
Department of Integrative Physiology

Both *in vivo* and *in vitro* experiments are conducted to study hormonal and

neurotransmitter interactions in the autonomic and cardiovascular systems and their relations to each other and cardiovascular diseases such as hypertension, shock and cardiomegaly. Research centers on the interaction of endogenous opioid peptides and catecholamines in the peripheral autonomic nervous system and the cardiovascular system. Specific projects currently supported involve the analysis of enkephalins in heart tissue and plasma after various manipulations to either decrease or increase autonomic stimulation to the heart (i.e. changes due to physiological stress of the cardiovascular system: exercise, hypertension, shock, etc.). In addition, the ability of heart tissue to release enkephalins *in vitro* is being evaluated by superfusion studies. Future work will involve the analysis of opioid peptides and their receptors in the heart, adrenal gland and peripheral nerves in association with hypertension, exercise, shock, aging and drug abuse. Both anesthetized and conscious animal models will be used to better determine the physiological mechanisms served by opioid peptides in the cardiovascular and peripheral autonomic systems.

Michelle Bidaut-Russell, Ph.D., M.P.H.

St. Louis University
M.P.E., Washington University
Assistant Professor
Department of Public Health and Preventive Medicine

Research interests include three main areas: (1) Development of new cartoon-like mental health diagnostic questionnaires which use both auditory and visual formats, take into account the cognitive abilities of young children, and address cultural differences. A screener for emotional and behavioral disorders in minority children, and its parent version are currently being tested; (2) Health beliefs and practices of Hispanic patients living in the community and diagnosed with diabetes and/or hypertension. Of particular interest is the usefulness of self-imposed therapies (conducted through use of medications bought in Mexico, and use of folk medicines) in the Hispanic community;

and (3) Secondary data analyses of a large community sample of adult twins from Australia are being performed. This data base provides the opportunity to study hypotheses about associations between perceived parental alcoholism and mental health outcomes among adult offspring of alcoholics.

Julian Borejdo, Ph.D.

Macquarie University
Associate Professor
Department of Molecular Biology and Immunology

The long term goal of this laboratory is to find out how muscle works. The key to understanding the mechanism of contraction is the knowledge of the interactions between actin and myosin — the two chief protein components of skeletal muscle. We have been studying this interaction by three independent approaches: (i) biochemical approach to determine the proximity of actin to myosin (ii) physico-chemical approach to measure the orientation of myosin *in vivo* and (iii) molecular biology approach (cloning mutants of myosin) to establish the role of various amino acid residues in muscle function.

James L. Caffrey, Ph.D.

University of Virginia
Professor
Department of Integrative Physiology

Endocrine and neuroendocrine responses which enable the organism to cope with circulatory stress. This program concentrates on interactions between the sympathetic nervous system and endogenous opioids in the regulation of the heart and peripheral vasculature. Stress results in profound activation of the pituitary-adrenal and sympatho-adrenal axes and the rapid release of steroids, catecholamines and opioids (dynorphins, enkephalins and endorphins). Significant opioid concentrations identified in the myocardium have been found to respond to changes in the functional autonomic circulatory environment. Studies suggest that cardiac opioids may be important to our understanding the cardiovascular adaptations to exercise, heart failure, silent myocardial ischemia, ventricular

fibrillation, circulatory shock and drug abuse.

Patrick Cammarata, Ph.D.

Hunter College
City University of New York
Professor
Department of Anatomy and Cell Biology

Mechanism(s) of ocular diabetic complications, including sugar cataract development. Inositol lipid metabolism, myo-inositol uptake and efflux, molecular cloning, fine structure analysis of the sodium/myo-inositol cotransporter gene, promotes characterization and transcriptional regulation of the sodium/myo-inositol cotransporter gene.

Michael Chaitin, Ph.D.

Florida State University
Associate Professor
Department of Anatomy and Cell Biology

Research interests include photoreceptor differentiation and renewal mechanisms and retinal degenerative diseases. Determination of the distribution and function of Cytoskeletal components within the retina is a primary goal of this laboratory. Previously, this laboratory identified an actin filament network within the photoreceptor cilium and outer segment. Studies on developing and mature photoreceptors indicate that these actin filaments mediate outer segment disc morphogenesis. In the retinal pigment epithelium, actin filaments mediate phagocytosis of shed outer segments discs during the photoreceptor renewal process. Other interests include cell adhesion molecules within the retina. In particular, CD44 has been studied in developing and mature normal retinas, and in retinas from eyes with retinal degenerative diseases. CD44 is localized to glial cells in the retina and may mediate cell-matrix interactions during differentiation and degeneration, as well as attachment of the neural retina to the back of the eye. These studies utilize light and electron microscope immunocytochemistry, biochemical techniques and, more recently, molecular biology techniques.

Claudia S. Coggin, M.S., C.H.E.S.

Texas Woman's University
Instructor
Department of Public Health and Preventive Medicine

Research interests include strategies for delivery of health education associated with improved behavioral and health outcomes, population based research on community health concerns, and effects of cultural and ethnic diversity in health and illness.

Samuel T. Coleridge, D.O.

University of Health Sciences
Professor and Chair
Department of Family Medicine

Emergency medical systems operating in urban, suburban and rural areas. Studies of violence from a multidisciplinary perspective.

Hriday K. Das, Ph.D.

University of Nebraska-Lincoln
Associate Professor
Department of Pharmacology

Plasma levels of LDL cholesterol and apolipoprotein B (apoB) correlate directly with atherosclerosis susceptibility in humans. Therefore, apoB gene plays a central role in the development of coronary artery disease. Interaction of cis-acting elements in the promoter of the apoB gene with transacting protein factors mediates liver specific expression of the apoB gene. Purification and characterization of these trans-acting proteins and their co-activators will enable us to clone genes encoding these factors. Availability of these genes will help understand the roles of these trans-acting genes and their co-activator genes in the development of atherosclerosis and in the design of drugs to cure heart disease. Transcriptional regulations of presenilin genes are also being studied to understand the mechanism of early onset Alzheimer's disease.

Christopher M. de Fiebre, Ph.D.

University of Colorado
Assistant Professor
Department of Pharmacology

Characterization of interactions between ethanol and nicotine with particular emphasis on the actions of ethanol at neuronal nicotinic cholinergic

receptors. Studies are conducted in both *in vivo* and *in vitro* systems utilizing techniques of molecular biology, electrophysiology, neurochemistry, cell culture, cellular imaging, pharmacogenetics and behavioral analyses. Current areas of inquiry include studies of genetic factors regulating interactions between ethanol and nicotine and studies of the interactive effects of these agents in regulating neuronal viability. Related to the latter, another area of interest is in the development of nicotine-like drugs for the treatment of neurodegenerative pathologies.

Glenn H. Dillon, Ph.D.

University of Illinois at Urbana-Champaign
Assistant Professor
Department of Pharmacology

Neurotransmitter Receptor/Ion Channel Function. Research interests are directed toward understanding how neurotoxins and other agents (both endogenous and exogenous) affect ion channel function. Specifically, this laboratory uses the patch-clamp technique to assess how these ligands alter the activity of both recombinant and native GABA_A receptors, and how receptor structure may influence the actions of these ligands.

S. Dan Dimitrijevic, Ph.D.

University of Bath
Research Associate Professor
Director, Wound Healing Research Institute
Department of Molecular Biology and Immunology

Studies directed towards understanding the role of cell-cell and cell-matrix interactions in human tissues under normal and wound healing conditions. Human tissue equivalents, *in vitro* living models of human skin and ocular tissue, have been developed and are being used in studies of human epithelial and endothelial injury and repair. The effects of hyperbaric oxygen and growth factors (FGF) on wound healing, initiation and amplification of inflammatory process in the anterior segment of the eye (e.g. cornea, conjunctiva), and control of tissue contraction/scar formation are studied at cellular and molecular level (specific gene activation and expression).

A major recent interest concerns the effect of near zero gravity on tissue development (skin), and the role of rotating wall vessels in tissue engineering. These interests are directed towards developing strategies for tissue and cell replacement therapies.

Ladislav Dory, Ph.D.

McGill University
Associate Professor
Department of Molecular Biology and Immunology

Regulation of expression of apolipoproteins in cultured cells. Emphasis placed on the post-transcriptional regulation of apoE expression in macrophages, hepatocytes and adrenal cells. Role of second messengers (cAMP and inositol phosphates) in these processes is emphasized. The role of coordinate regulation of apoE expression and cholesterol efflux in peripheral tissues, in the prevention of atherosclerosis is actively pursued. Other studies examine the relationship of apoE to the etiology of Alzheimer's disease. Recombinant isoforms of human apoE are used to investigate their effect on the rate amyloid fibril formation and assess their role in neuronal cell maintenance.

H. Fred Downey, Ph.D.

University of Illinois at Urbana-Champaign
Professor
Department of Integrative Physiology

Mechanisms controlling coronary blood flow and myocardial oxygen demand in the normal and diseased heart. Differential effects of lack of oxygen (hypoxia) and lack of blood flow (ischemia) on the coronary circulation and on heart function and metabolism are investigated. Of particular interest are endogenous cardioprotective mechanisms that enable myocardium to survive moderate ischemic and hypoxic insults. These mechanisms include collateral blood flow, modulation of ventricular contractile function and wall stiffness, and substrate selection. Cardiovascular responses to nicotine and tobacco products are also investigated.

Richard A. Easom, Ph.D.

University of Glasgow
Associate Professor
Department of Molecular Biology and Immunology

Regulation of insulin secretion. The understanding of the cellular mechanisms regulating insulin secretion from islets of Langerhans is fundamental to the comprehension and future treatment or cure of Type II diabetes mellitus. D-glucose is the predominant physiological regulator of insulin secretion but this response is modulated by other hormones including the neurotransmitter, acetylcholine and enteric peptides. Current research focus on the role of the Ca²⁺/calmodulin-dependent enzymes, myosin light chain kinase, Cam Kinase II and calcineurin in the distal steps of insulin exocytosis. Experimental models include isolated pancreatic islets and clonal β -cell cultures.

Arthur Eisenberg, Ph.D.

State University of New York at Albany
Director of DNA Repository
Associate Professor
Department of Pathology

Application of DNA probe methodologies for human identification in both paternity and forensic cases. PCR methodologies for human infectious disease diagnostics and inheritable genetic disorders including Attention Deficit Hyperactivity Disorder (ADHD). In association with local medical centers, the development of rapid and sensitive DNA-based cancer tests.

Michael J. Forster, Ph.D.

Bowling Green State University
Professor
Department of Pharmacology

Mechanisms of brain aging and the associated declines of cognitive, sensory and motor functions. Longitudinal and cross-sectional studies of aging mice are focused on identification of biological factors responsible for brain aging using behavioral testing techniques applied across the life span. A focal hypothesis is that oxidative molecular damage is an important factor in age-related functional losses. This hypothesis is being tested by examining molecular damage as a

correlate of behavioral dysfunction, and by examination of functional aging in mice following experimental interventions that impact concurrently upon lifespan and the degree of age-related oxidative molecular damage. These interventions include lifelong dietary restriction, antioxidant treatment, and genetic manipulations.

Margaret Garner, Ph.D.

Indiana University
Associate Professor
Department of Anatomy and Cell Biology

Cell nuclei accumulate, release or exclude large macromolecules (RNA and proteins), small molecules (sugars and amino acids), cations (Na⁺, K⁺, Ca²⁺) and anions (Cl⁻). While the nuclear membrane is believed to be restrictive to proteins, it is probably not restrictive to smaller organic molecules or ions because of the large internal diameter of the nuclear pore complex. To effectively exclude or release the small organics and ions, transport systems are present in the nuclear envelope to counteract the sizable leak. The nuclear envelope has its own Ca²⁺ stores, Ca²⁺ channels, a Ca²⁺ - ATPases, enzymes to generate cAMP and IP3 chloride channels, and K⁺ channels. Na,K-ATPases in the nucleus, primarily along the inner nuclear membrane and perhaps associated with euchromatin have been discovered in this laboratory. The longer-term goal is to define the role of the perinuclear cisternae (nuclear envelope lumen) as ion reservoirs that are available for regulation of cell cycle, programmed cell death, and cellular differentiation. The second goal is to define the role of the Na,K-ATPases of the cell nucleus and their endogenous inhibitors in prevention and treatment of cancer. email: mgarner@hsc.unt.edu

Ronald H. Goldfarb, Ph.D.

State University of New York
Professor and Chair
Department of Molecular Biology and Immunology

Current research interests are globally directed towards: tumor cell biology, and biochemistry, tumor invasion

angiogenesis and metastasis, proteolytic enzymes including plasminogen activators, matrix metalloproteinases and the proteasome; apoptosis; extracellular matrix degradation, tumor microvasculature, experimental therapeutics, and tumor immunology with emphasis on NK cell biology, biochemistry and the use of NK cells for locoregional therapy of metastases in combination with chemotherapy.

Adela N. Gonzalez, M.P.A.

Southwest Texas State University
Instructor
Department of Public Health and Preventive Medicine
Interim Vice President for Administrative Affairs

Research interests include population-based research on community health concerns, substance abuse, violence, primary care and health policy.

Robert W. Gracy, Ph.D.

University of California at Riverside
Professor
Department of Molecular Biology and Immunology
Dean for Research and Biotechnology

Aging: Biochemical and molecular basis and physiological consequences. Abnormal proteins accumulate in aging cells and tissues and account for many of the medical problems of aging. For example, oxidized proteins accumulate in the brain and are believed to be a primary cause of Alzheimer's disease. Similarly, oxidization and deamidation of proteins in the lens of the eye cause the senile cataract. The molecular basis for the accumulation of these modified proteins with age is being examined with the goal of designing drugs or therapies to prevent their accumulation or to aid in their degradation and removal. In addition to these studies, aging is being studied *in vitro* using human tissue equivalents developed in our laboratories. For example, human skin equivalents derived from young and old persons allow the study of the molecular events involved in wound healing and tissue repair. These studies are aimed at elucidation of molecular basis for age-impaired ability to heal wounds. These

systems are also ideally suited for the development of transdermal delivery of new drugs.

Stephen R. Grant, Ph.D.

University of Tennessee
Assistant Professor
Department of Integrative Physiology

Research focuses on molecular mechanisms controlling contractile protein gene expression during cardiovascular hypertrophy. Recent research efforts have identified a new calcium sensitive nuclear signaling pathway. This activated signaling pathway can transcriptionally activate and/or silence contractile protein expression in the cardiovascular system. Transcriptional up-regulation involves the activation of a calcium dependent phosphatase. Transcriptional silencing involves a calcium dependent kinase. Maintenance of this signaling pathway controls hypertrophy events in the mammalian cardiovascular system. Murine transgenic models for human cardiac hypertrophy and early heart failure using truncated mutated genes of these two enzymes are currently being generated. The research plan includes: 1) generating *in vivo* murine models of early heart failure by over-expressing the constitutively active forms of each of the two cardiac calcium-sensitive enzymes; 2) characterizing a newly identified cardiac transcriptional repression model; 3) modeling transcriptional control of vascular hypertrophy in arteries during chronic exercise; and 4) characterizing YY1 induced cardiac repression as a mechanism for a stress-responsive cardiomyocyte phenotype.

Patricia A. Gwartz, Ph.D.

Thomas Jefferson University
Professor
Department of Integrative Physiology

Research emphasizes neural control of cardiac contractile function and coronary blood flow. Chronically instrumented conscious dog model is used to examine neural control mechanisms at rest, during exercise, transient myocardial ischemia, peripheral vascular insufficiency and hypertension. Studies are

examining the interaction between neural, endothelial and humoral control mechanisms. Additional studies examine the cardiac and coronary vascular adaptations that occur as a result of exercise training.

Ben G. Harris, Ph.D.

Oklahoma State University
Professor
Department of Molecular Biology and Immunology

Biochemistry of parasitic helminths. Research interests are in the area of regulation of carbohydrate metabolism in parasitic helminths. The parasite primarily studied is the roundworm, *Ascaris suum*. Projects involve physico-chemical, kinetic and structural characterization of regulatory enzymes governing the utilization of carbohydrates in the essentially anaerobic parasites. Some of the enzymes being studied are phosphofructokinase and malic enzyme. Current projects involve x-ray crystallographic studies of malic enzyme, sequence studies on both malic enzyme and phosphofructokinase, and structural studies on both enzymes.

Mark E. Hart, Ph.D.

Mississippi State University
Assistant Professor
Department of Molecular Biology and Immunology

Characterization and regulation of *in vivo*-expressed genes of *Staphylococcus aureus*. Despite numerous antimicrobial regimens and improved public health, *Staphylococcus aureus* remains an important bacterial pathogen responsible for a number of disease syndromes in both humans and animals. *In vitro*, this organism is known to make greater than thirty extracellular and cell-wall associated proteins, many of which have been implicated in the disease process. Definition of the role of most of these proteins as virulence factors has been dependent upon our rather limited ability to mimic the host environment in the laboratory. Research conducted is concerned with the identification, characterization, and regulation of *S. aureus* genes expressed specifically in the host environment. Ultimately, these

studies will lead to the identification of factors critical to the disease process which will serve as potential candidates for vaccine and antimicrobial drug development.

Robert Kaman, Ph.D.

Virginia Polytechnic Institute
Associate Professor
Department of Public Health and Preventive Medicine

Exercise physiology. Athletic performance may be enhanced by food supplements that enable exercise training to be conducted at a higher intensity, thereby leading to an enhanced training effect. The focus of these studies is the effect of Chinese herbal products on glycogen and fatty acid metabolism. Worksite health promotion may be the best way to attack the problem of rising employee health care costs. As this expense rises, companies find themselves struggling to maintain employee health benefits without losing profitability. Health promotion which provides programs to encourage healthy behaviors has been shown to be effective in lowering risk for illness among participants, improving productivity, and reducing illness-related absenteeism. Research is designed to quantify those outcomes by studying company records for health care expenditures, absenteeism and productivity.

Janice A. Knebl, D.O.

Philadelphia College of Osteopathic Medicine
Associate Professor
Department of Internal Medicine
Chief, Division of Geriatrics

Research efforts have been in the area of geriatric assessment, Alzheimer's Disease and maintenance of functionality of older persons. Other arenas for research have included long term care institutionalized elderly.

Richard P. Kitson, Ph.D.

University of Michigan
Research Associate Professor
Department of Molecular Biology and Immunology

Immunotherapy with interleukin-2 activated natural killer (A-NK) cells and the role of proteases in A-NK cell function. A-NK cells are derived from

natural killer (NK) cells (a class of lymphocytes which can kill a broad range of tumor cells and virally infected cells) by incubation *in vitro* with the cytokine interleukin-2. A-NK cells have an enhanced capacity to kill both NK-sensitive and NK resistant targets. Current studies are focused in two broad areas involving A-NK cells: first, an examination of the role of proteases in A-NK cell function including cell-mediated cytotoxicity and migration, and second, an investigation of novel methods to improve adoptive immunotherapy with A-NK cells. An examination of the proteases of A-NK cells has shown that they produce a number of cell-associated and extracellular proteases. Two of the cell-associated proteases may play a role in A-NK cell-mediated cytotoxicity. The induction of these enzymes during IL-2 activation of NK cells and their role in the lytic mechanism are subjects of current investigation. Also several extracellular proteases produced by these cells, including matrix metalloproteinases, are being studied for their role in the migration of A-NK cells both *in vitro* through artificial basement membranes and *in vivo*.

Besides studies of the role of proteases in A-NK cell function, the broader question of improving A-NK cell adoptive immunotherapy of metastatic cancer is also being investigated. A NK cells by virtue of their ability to localize within metastatic tumors are being examined as potential vehicles for the delivery of chemotherapeutic agents. Although A-NK cells may not have the capacity to eliminate metastatic tumors, they are capable of infiltrating >95% of B16 pulmonary metastases. Ongoing studies are examining the ability of A-NK cells to transport chemotherapeutic agents into tumors using a novel cell linking agent.

Bhalchandra J. Kudchodkar, Ph.D.

University of Saskatchewan
Research Associate Professor
Department of Molecular Biology and Immunology

Increased plasma levels of high density lipoproteins (HDL) are believed

to protect from the development of atherosclerosis. Although mechanism of this protection is not clear, increasing attention is being focused on the potential antioxidant activity of serum enzymes associated with HDL. One of these enzymes, paraoxonase has been postulated to play an important role in preventing oxidation of plasma LDL and thus prevent atherosclerosis. Regulation of serum paraoxonase expression is the focus of our investigation. Hyperbaric oxygen (HBO; treatment with 100% oxygen at greater than atmospheric pressure) was recently found to markedly suppresses atherosclerosis in cholesterol fed rabbits without affecting their elevated plasma cholesterol levels. The mechanism by which oxygen exerts an inhibitory effect on atherosclerosis is presently under investigation.

Gopal Kulkarni, Ph.D.
Indian Institute of Science
Research Assistant Professor
Department of Molecular Biology and Immunology

Molecular biology of parasitic helminths. Current research focuses on the molecular cloning functional expression and genetic analysis of key regulatory enzymes involved in the carbohydrate metabolism in the parasitic nematode *Ascaris suum*. As a basis for the study of molecular architecture of these enzymes to aid in rational drug design, site-directed mutagenesis and biochemical characterization of mutant enzyme forms are proposed.

Andras G. Lacko, Ph.D.
University of Washington
Professor
Department of Molecular Biology and Immunology

Research interests include the regulation of plasma lipid transport and antioxidant defenses in mammals. Studies are focused on the lecithin:cholesterol acyltransferase reaction and associated components of the reverse cholesterol transport pathway. Research is currently conducted in the following areas: 1) Structure / function of recombinant LCAT; 2) Effects of lipid lowering drugs on HDL levels

and reverse cholesterol transport; and 3) Enzymatic antioxidant defense mechanisms in the blood circulation and in ocular tissues.

Harbans Lal, Ph.D.
University of Chicago
Professor and Chair
Department of Pharmacology

Age associated brain dysfunctions are being investigated in rodents (including transgenic animals) with a view to identify underlying mechanisms of aging and discovery of drugs to prolong health span as well as prevent cognitive loss. Modulation of oxidative stress and role of nutrition or caloric intake are the target.

Substance (alcohol, benzodiazepine, and cocaine) abuse is being investigated with a view to determine behavioral and neurochemical mechanisms underlying addiction. Additional studies are directed at identifying drugs that are efficacious in the treatment of acute withdrawal and protracted recovery phases. Rodent models (including transgenic animals) of anxiety and the acquisition and retention of learned behaviors are used in these studies. Gender differences in alcohol withdrawal and responses to useful treatment modalities are especially emphasized.

John C. Licciardone, D.O., M.S., M.B.A.
Kirkville College of Osteopathic Medicine
M.S., Ohio State University College of Medicine
M.B.A., Texas Christian University
Associate Professor
Department of Public Health and Preventive Medicine

Epidemiologic and clinical research in such areas as health services, clinical outcomes, patient satisfaction, quality of health care and preventive medical services. Current efforts are being focused on developing practice-based research in primary care medicine. Other fields of research include collegiate drug and alcohol programs, occupational health and safety, and the health of international travelers.

Robert R. Luedtke, Ph.D.
University of Pennsylvania
Associate Professor
Department of Pharmacology

Antipsychotic drugs that are used to treat neuropsychiatric illness, including schizophrenia, have been found to be high affinity antagonists for dopamine receptors. Recent studies have established that there are multiple subtypes of dopamine receptors. Pharmacologic, Immunologic and Molecular Genetic approaches are being used to study the extent of genetic polymorphism of dopamine receptor genes, to develop a panel of anti-receptor antibodies that are specific for each of the dopamine receptor subtypes, to genetically engineer cell lines for the expression of a homogeneous population receptors using the baculovirus expression system, to study the molecular mechanisms responsible for dopamine receptor expression and regulation, and to understand the molecular basis for the interaction between antipsychotic drugs and dopamine receptors.

Sue Gena Lurie, Ph.D.
University of Oklahoma
Assistant Professor
Departments of Medical Humanities and Public Health/Preventive Medicine

Social research on health of youth and elderly; health and mental health policy; bioethics and sociocultural values; comparative health systems and professions (East Asia and United States). Current research is on the community health movement, urban health and social justice and public health program evaluation.

Douglas A. Mains, Dr. P.H.
University of Texas Health Science Center-Houston
Assistant Professor
Department of Public Health and Preventive Medicine

Research interests include managed care, evaluation of public health programs, community assessment of health status and health needs, health policy analysis, meta-analysis, and the alignment of information with organizational needs.

Robert T. Mallet, Ph.D.

George Washington University
Associate Professor
Department of Integrative Physiology

Metabolic basis of cardiac performance. Recent investigations in this laboratory have demonstrated that cardiac function, energetics, membrane ion transport, and cellular injury can be modulated by metabolic substrates. The primary goals of this laboratory are to delineate cellular mechanisms for enhancement of cardiac performance by energy-yielding fuels, characterize metabolic adaptations of heart muscle in response to aerobic exercise training, and develop therapeutic interventions for improving cardiac performance and preventing cellular injury following ischemia. Methodologies include both *in vivo* and isolated perfused heart models as well as state-of-the-art analytic techniques.

Muriel A. Marshall, D.O., M.P.H. & T.M., Dr. P.H.

Michigan State University College of Osteopathic Medicine
Tulane University School of Public Health and Tropical Medicine
Associate Professor
Departments of Family Medicine and Public Health and Preventive Medicine

Areas of research interest include travel medicine, tropical medicine, clinical preventive medicine and international health. Effect of Ramadan fasting on pregnancy outcomes in the United Arab Emirates. Prenatal care use, patterns and correlates of anemia during pregnancy, and associations between low birth weight and maternal socio-demographic and reproductive characteristics in the United Arab Emirates.

Michael W. Martin, Ph.D.

University of Texas at Houston
Assistant Professor
Department of Pharmacology

Molecular mechanisms of neurotransmitter, hormone and growth factor transduction. The research applies biochemical and molecular approaches to investigate adaptative changes that occur in membrane receptors and their coupling to signal transduction apparatus using animal models and cultured

cell systems. The aim of these studies is to understand how cells, especially neurons, modulate their sensitivity to extracellular chemical signals. These fundamental regulatory processes are important not only for normal cellular activity, but also may be the underlying mechanisms responsible for the development of tolerance/dependence to benzodiazepines, alcohol, cocaine and other drugs of abuse in humans.

Porunelloor Mathew, Ph.D.

University of Poona
Assistant Professor
Department of Molecular Biology and Immunology

Cancer Immunology: Molecular basis of tumor cell killing by Natural Killer (NK) cells. Characterization of receptors expressed on NK cells and how they interact with the ligands on tumor cells. Major area of research also includes the transcriptional regulation of NK receptors and the signaling mechanism. The long term objective is to eliminate tumor cells by selective expression of ligands for NK receptors in tumor cells.

Walter J. McConathy, Ph.D.

University of Oklahoma School of Medicine
Associate Professor
Department of Internal Medicine

Structure and function of human apolipoproteins/lipoproteins in health and disease. Currently, the focus is on the role of lipoproteins/apolipoproteins at the endothelial barrier in promoting flux of cholesterol using biochemical, molecular and cell biology techniques. Other areas of interest include role of androgens in cardiovascular disease; development and application of analytical microprocedures to monitor events at the molecular level; Alzheimer's disease and the blood brain barrier; phylogeny and ontogeny of the plasma lipid transport system; and the relationships between plasma lipids, nutrition, and various pathological states such as breast cancer and respiratory distress.

John G. Mills, D.O., M.P.H., M.S.

Michigan State University
Associate Professor
Department of Surgery

Effect of increased oxygen tension on human fibroblasts and keratinocytes. Wound product toxicity using a human fibroblast model. Physiology of non-healing wounds in humans.

Stephen J. Moorman, Ph.D.

Colorado State University
Assistant Professor
Department of Anatomy and Cell Biology

Areas of interest include developmental neurobiology and spinal cord regeneration. The current major thrust in the lab is to determine whether the appropriate development of the equilibrium receptor system is dependent on gravity. In the vertebrates, including humans, the equilibrium receptor system is the sensory system that transduces gravity into meaningful neurological signals for proper equilibrium orientation. Zebrafish (*Danio rerio*) are used in experiments to determine some of the fundamental mechanisms that control development of the equilibrium receptor system. (see <http://molly.hsc.unt.edu/~smoorman/>)

M. Susan Motheral, Ph.D.

Southern Methodist University
Assistant Professor
Department of Medical Education

Scientific recordkeeping. The impact of health care reform on health care delivery systems, and on work force needs for health care professionals and biomedical scientists. Biomedical and medical ethics.

Michael W. Oglesby, Ph.D.

State University of New York at Buffalo
Professor
Department of Pharmacology

Drug tolerance and withdrawal. An animal model has been developed that is useful for investigation of subjective events that occur during drug withdrawal. Additional studies focus on the mechanisms of development of tolerance after chronic use. The research involves training animals to detect the stimulus properties of drugs (i.e., the presence or absence of a perceived drug effect). This laboratory also investigates the funda-

mental variables that control the detection of drug stimuli.

Edward Orr, Ph.D.

University of California at Berkeley
Associate Professor
Department of Anatomy and Cell Biology

Research in this laboratory encompasses the areas of neuroimmunology, neurochemistry and neuropathology. Current research is focused on defining the significance and roles of meningeal mast cells and their products in regulating the blood-brain and blood-cerebrospinal fluid barriers under normal and pathological conditions including migraine headaches, nervous system trauma and experimental autoimmune diseases of nervous tissues. Elucidating the neurobiology of histamine, a neurotransmitter in the CNS, continues to be another focus of research in this lab.

Stephen L. Putthoff, D.O.

University of Health Sciences
Associate Professor and Chair
Department of Pathology

DNA probes, concepts and conclusions; forensic evidence; Human Genomes.

Eugene Quist, Ph.D.

University of British Columbia
Associate Professor
Department of Pharmacology

Roles of neurologic and endocrine hormones in myocardial adaptation. The heart is capable of adapting or remodeling in response to aging and exercise training. Goals are to define how hormones influence intracellular messages transmitted by phospholipase C, protein kinases and adenylate cyclase to modulate protein synthesis in myocardial tissue or in primary cultures of cardiomyocytes from adult heart. Emphasis is on regulation of remodeling with aging and exercise training.

Gilbert Ramirez, Dr.P.H.

University of Texas Health Science Center - Houston
Associate Professor and Vice Chair
Department of Public Health and Preventive Medicine

Research interests include quantitative statistical techniques for integrating

independent study results, also called meta-analysis. Of particular interest is the application of meta-analysis to studies of alternative/traditional medical therapies. Current efforts are focused on developing an on-going, systematic search and synthesis of the international medical literature for evidence of the efficacy of traditional medical therapies in Latin America. The results of these syntheses will be used to develop clinical trials of traditional medicine among the Mexican-American and other U.S. populations.

G.S. Jagannatha Rao, Ph.D.

Indian Institute of Science;
Research Assistant Professor,
Department of Molecular Biology and Immunology

Biochemistry of parasitic helminths. Research interests are in the area of enzymology and protein chemistry, with particular emphasis on enzyme mechanisms, allosteric regulation, x-ray crystallography, protein phosphorylation and dephosphorylation. Studies include Aspartate transcarbamylase, a key regulatory enzyme of the pyrimidine biosynthetic pathway, phosphofructokinase, a key allosteric enzyme of carbohydrate metabolism, and NAD-malic enzyme, involved in energy production in *Ascaris suum*, Calcineurin, a calmodulin-dependent protein phosphatase and O-acetylserinesulphydrase from *Salmonella typhimurium*. These enzymes have been purified and characterized by kinetics, chemical modification, physiochemical studies including fluorescence, circular dichroism and x-ray crystallography.

Peter B. Raven, Ph.D.

University of Oregon
Professor and Chair
Department of Integrative Physiology

Cardiovascular regulation of the human during exercise and orthostasis. Aerobic fitness, weight training and aging have all been shown to affect regulation of blood pressure during exercise and orthostasis. Indeed orthostatic hypotension is a clinical syndrome which affects 25% of the population over the age of 65 years. By using invasive

and non-invasive procedures integrative physiological mechanisms of cardiovascular regulation of the human are investigated during dynamic exercise and gravitational stress in both young and elderly individuals with varying levels of aerobic fitness.

Antonio A. René, Ph.D.

University of Texas Health Science Center - Houston
Assistant Professor
Department of Public Health and Preventive Medicine

Research interests include identifying the adverse acute and chronic health effects in human populations due to exposures from environmental pollutants. The use of epidemiologic methods and the identification of sources of health outcome data in the investigation of the health effects associated with hazardous waste is of primary concern. Community-based research on hazardous environmental chemical exposures has been the focus of the most recent research efforts.

Tony Romeo, Ph.D.

University of Florida
Associate Professor
Department of Molecular Biology and Immunology

Molecular biology and regulation of stationary phase metabolism. As bacteria enter the stationary phase, alterations in the global pattern of gene expression profoundly alter cell physiology and metabolism. The glycogen biosynthesis pathway in *Escherichia coli* is being studied by genetic and molecular biological approaches to identify general regulators of stationary phase metabolism. The mechanisms by which these regulatory factors control glycogen biosynthesis and other stationary phase processes are also being studied.

Rouel Roque, M.D.

University of the Philippines
Assistant Professor
Department of Anatomy and Cell Biology

The main focus of research is on glial cell biology—understanding the structure and function of glial cells in the central nervous system, especially in the retina. Specific interest lies in investigat-

ing the role of glial cells (specifically microglial cells and retinal Muller cells) in various diseases of the central nervous system involving neuronal or vascular degeneration, breakdown of the blood-brain barrier, retinal neovascularization, or carcinogenesis. The role of glial cells in programmed cell death or retinal angiogenesis during development is also of prime interest. Ongoing studies are now directed towards characterization and purification of several novel growth factors and cytokines which have been shown to induce neuronal or endothelial cell death, proliferation of endothelial cells, or inhibition of tumor cell growth.

Bernard Rubin, D.O.

Chicago College of Osteopathic Medicine
Professor
Department of Medicine

Clinical research involving innovative techniques for the treatment of osteoporosis, rheumatoid arthritis, osteoarthritis and fibromyalgia syndrome. Therapeutic protocols involve combinations of pharmaceutical products and nontraditional medical therapies with outcomes measured by biological markers and quality of life assessments.

Victoria Rudick, Ph.D.

Ohio State University
Associate Professor
Department of Anatomy and Cell Biology

Mechanism(s) of targeting secretory proteins in canine kidney epithelial (MDCK) cells and regulation of organelle biosynthesis: Endomembranous organelles respond to change in measurable ways that contribute to the expression of cell phenotype. For example, the Golgi complex plays a key role in the cell, functioning to direct vesicles and proteins to a variety of cell destinations and therefore affecting numerous other organelles in the process. Thus, its own morphology and functions must be flexible to maintain cellular homeostasis. By introducing genes that code for exogenous secretory proteins into MDCK cells we are able to study what happens to the particular protein as it is routed through the secretory pathway and, also, to examine the effects that the protein

has on the cell. For example, expression of the human growth hormone gene is being used to examine the nature and consequences of hypertrophy of Golgi elements, while expression of the apolipoprotein A-I gene allows investigation of apoA-I processing and trafficking. Study of the latter protein has direct medical relevance since plasma concentration of HDL, of which apoA-I is the main protein component, has been correlated with reduced risk of cardiovascular disease.

Harold J. Sheedlo, Ph.D.

Memphis State University
Research Assistant Professor
Department of Anatomy and Cell Biology

Study of the temporal response, such as the survival, proliferation and differentiation, of progenitor cells from embryonic and postnatal rat retinas to endogenous growth factors, secreted by the retinal pigment epithelium (RPE) and progenitor cell survival/differentiation upon transplantation into rat eyes. RPE cells exist as a monolayer, immediately adjacent to the neural retina, thus in a unique position to influence retinal development, particularly progenitor cells, by trophic interactions. Retinal explant cultures exposed to conditioned media (CM) from RPE cultures showed neurites and the production, survival, proliferation and differentiation of retinal progenitor cells, which expressed the message for various growth factors and receptors and nestin, a neuroepithelial cell marker. Pure populations of progenitor cells from embryonic and postnatal rat retinas will be cultured in growth factors known to be secreted by the RPE and tested by reverse transcriptase-polymerase chain reaction (RT-PCR) for their respective biological response, such as upregulation or downregulation of other growth factors and retinal cell-specific proteins. These cells will also be grown on extracellular substrates and monitored for morphological and genetic differentiation. Progenitor cells have been produced from human fetal retinas by exposure to RPE-CM. Thus, progenitor cells isolated from rat retinal explants will be trans-

planted into diseased rodent eyes to document the feasibility of such a procedure in human ocular diseases such as age-related macular degeneration (ARMD) and retinitis pigmentosa (RP).
E-mail: hsheedlo@hsc.unt.edu

J. Mark Sherman, Ph.D.

University of North Texas
Assistant Professor
Associate Director of DNA Lab/DNA Repository
Department of Pathology

Application of DNA probe methodologies for human identification in both paternity and forensic cases. PCR methodologies for human infectious disease diagnostics and inheritable genetic disorders including Attention Deficit Hyperactivity Disorder (ADHD). In association with local medical centers, the development of rapid and sensitive DNA-based cancer tests.

Xiangrong Shi, Ph.D.

Yale University
Assistant Professor
Department of Integrative Physiology

Arterial and cardiopulmonary baroreflexes and their interaction in the regulation of blood pressure; Body fluid and volume-regulating hormonal responses to physical exercise and various environmental challenges; Aging-related adaptations of body fluid and cardiovascular regulation; Impact of acute exercise and chronic training on blood volume and cardiovascular function.

Jerry W. Simecka, Ph.D.

University of Alabama at Birmingham
Assistant Professor
Department of Molecular Biology and Immunology

Respiratory disease is a major health problem, particularly in the young and elderly. There is a need to understand the role of host responses to infectious agents in the pathogenesis and resistance to disease. This information will contribute to the development of new vaccines and approaches to therapy. This laboratory is characterizing the development of immune and inflammatory responses during the development and recovery from bacterial and viral respiratory

diseases. In addition, new approaches to vaccination against respiratory infection are being studied.

Michael L. Smith, Ph.D.,

North Texas State University
Associate Professor
Department of Integrative Physiology

Research efforts focus on the neural control of cardiovascular function. Two lines of research relate to factors which precipitate sudden cardiac death: 1) autonomic neural responses during ventricular dysrhythmias, and 2) neural responses during recovery from exercise and the effects of training on these responses. Two other lines of research relate to abnormal control mechanisms provoked in sleep disorders: 1) mechanisms of the association between obstructive sleep apnea and hypertension, and 2) effects of sleep deprivation on normal cardiovascular control.

Fernando Treviño, Ph.D.

University of Texas Medical Branch
Professor and Chair
Department of Public Health and Preventive Medicine

Executive Director, Public Health Program

Health services research to include health status assessments, access to care, insurance coverage, utilization behaviors, and compliance. Particular focus on cross-cultural comparisons and Hispanic health. Other research interests includes cross-cultural epidemiologic methods and psychiatric epidemiology as well as the redesign of public health services and international health.

James E. Turner, Ph.D.

University of Tennessee
Professor and Chair
Department of Anatomy and Cell Biology

Research interests include the actions of retinal pigment epithelial cells (RPE) in retina health and disease. Specific interest is in the use of RPE transplantation techniques in helping to cure eye disease conditions. Through RPE transplantation techniques developed in the laboratory, the loss of photoreceptor cells was halted, and the eye disease in an animal model of inherited retinal dystrophy cured. Research also involves

the study of retina directed trophic factors produced by RPE cells which influence the development and survival of retinal tissue and may have therapeutic value in the treatment of eye diseases. Current studies focus on the characterization of these factors and their use in *in vitro* and *in vivo* models. Techniques used in these investigations include: light and electron microscopy, tissue culture, immunocytochemistry, neurochemistry, biochemistry and molecular biology.

Ximena Urrutia-Rojas, R.N., Dr.P.H.

University of Texas Health Science Center - Houston
Assistant Professor
Department of Public Health and Preventive Medicine

Research broadly concerns to the relationship between diverse populations' cultural background and their specific health care issues. Interests include: health issues among immigrants; financial, non-financial, institutional and personal barriers to care. Specifically, community-based research that emphasizes community social structure, needs, and collective and personal resources as the basis to developing innovative approaches to improve the well being of the group. Research conducted involves understanding the interaction of culture, health needs, and access to care, and testing the applicability of the conceptual framework of immigrant differentiated social incorporation and access to care.

Cleatus J. Wallis, Ph.D.,

University of Florida, J. Hillis Miller Medical Center
Research Assistant Professor
Department of Pharmacology

Behavioral and biochemical mechanisms of nervous system function. Current work focuses on development and behavioral testing of medications to treat anxiety and other symptoms produced by ethanol and/or nicotine withdrawal. Other work includes studies of gender differences in neural mechanisms underlying anxiety and reward properties of stimuli and *in situ* electrochemical detection of dopamine. Previous work has included development of

assay techniques (HPLC, radioimmunoassay, radio-ligand binding, and radioenzymatic assays) for neurally active substances, investigations of teratological actions of drugs of abuse and naturally occurring hormones, calcium binding properties of cytoskeletal proteins (including flow dialysis and equilibrium dialysis), and steroidal hormone involvement in neural function.

Robert Wordinger, Ph.D.

Clemson University
Associate Professor
Department of Anatomy and Cell Biology

Role of growth factors in the development of glaucoma. Glaucoma is a leading cause of blindness and is characterized by a defect in the ability of aqueous humor to drain efficiently through the human trabecular meshwork. This leads to an intraocular pressure higher than the eye can tolerate and blindness through death of retinal ganglion cells. The primary hypothesis of this laboratory is that gene expression and mRNA levels of specific growth factors or their high affinity receptor is altered in glaucomatous trabecular meshwork cells. Recent studies have utilized *in vitro* culture of normal and glaucomatous trabecular meshwork cells and molecular biology techniques including reverse transcriptase-polymerase chain reaction and Northern and Southern blotting techniques. The members of this laboratory are also interested in steroid induced glaucoma and study this by exposing trabecular meshwork cells to the glucocorticoid dexamethasone. This approach should further our knowledge of the biologic characteristics of healthy and glaucomatous human trabecular meshwork cells and will be critical to discover new and innovative avenues for the diagnosis, management and treatment of glaucoma.

Ming-chi Wu, Ph.D.

University of Wisconsin
Professor

Department of Molecular Biology and
Immunology

Research interests are in the general area of colony-stimulating factors and their roles in the regulation of myelopoiesis and other biological functions. Current research projects are: (1) Regulation of human M-CSF gene expression. (2) Cloning, expression and mechanism of action of a novel leukemia differentiation factor. (3) Expression of cytokines including M-CSF, GM-CSF, IL-6 and G-CSF by a insect cell-baculovirus expression system. (4) Characterization of a Glycosaminoglycan conjugated M-CSF from cultured neuron cells and its role in neuronal development. (5) In vitro model for dopaminergic cells in culture and their metabolic regulation by growth factors M-CSF and GDNF.

Thomas Yorio, Ph.D.

Mt. Sinai School of Medicine

Professor, Department of Pharmacology
Chair, Department of Biomedical Sciences
Dean, Graduate School of Biomedical
Sciences

Characterization of mechanisms whereby epithelial cells regulate their membrane permeability to electrolytes and water, particularly, the processes involved in the cycling of water channels in the actions of antidiuretic hormone (vasopressin) and aldosterone in renal epithelia. Another major area is understanding the cellular and molecular mechanisms that may be coupled to the regulation of intraocular pressure and factors defining and contributing to the development of glaucoma with the intent on designing better drugs for the clinical management of glaucoma.

Graduate faculty of the Robert B. Toulouse School of Graduate Studies at the University of North Texas campus in Denton are also members of the graduate faculty at UNT Health Science Center at Fort Worth and thus can serve as mentors or committee members of health science center graduate students, appropriate to their graduate appointments. See the UNT graduate catalog for UNT graduate faculty listings.

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Ph.D. University of Tennessee

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Ph.D. University of California at Berkeley

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B.A. and M.A. University of Pennsylvania,
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Respect for Diversity

The Nondiscrimination/Equal Employment Opportunity and Affirmative Action policy affirms the requirement for every member of the UNT Health Science Center community to comply with existing federal and state equal opportunity laws and regulations.

The UNT Health Science Center is committed to the philosophy of a multicultural environment. The institution prohibits harassment based on race, gender, disability, age, national origin, religion, veteran status or lifestyle.

The health science center has long been an open, tolerant and democratic institution, proud of its commitment to personal and academic excellence but unpretentious in the atmosphere of its campus in its willingness to accept all members of the health science center community on their value as human beings.

The increasing diversity of the UNT Health Science Center community is one of the institution's greatest strengths. Differences of race, religion, age, gender, culture, physical ability, language, nationality and lifestyle make it a microcosm of the nation as a whole, reflecting the values of our pluralistic society.

As an educational institution, the UNT Health Science Center is committed to advancing the ideas of human worth and dignity by teaching respect for human beliefs and values and encouraging open discussions. Hatred or prejudice and harassment of any kind are inconsistent with the center's educational purpose.

The UNT Health Science Center is strongly committed to the ethical principle that every member of the community enjoys certain human and constitutional rights, including the right to free speech. As a community of scholars, the health science center also is dedicated to maintaining a learning environment that is nurturing, fosters respect, and encourages growth among cultures and individuals represented

here. Individuals who work, study, live and teach within this community are expected to refrain from behaviors that threaten the freedom and respect every individual deserves.

Sexual Harassment

A primary objective of the UNT Health Science Center is to provide an environment in which faculty, staff and students may pursue their careers and studies with a maximum of productivity and enjoyment.

Harassment of students on the basis of gender is a violation of Section 106.31 of Title IX of the Education Amendments of 1972. Harassment of health science center employees on the basis of gender is a violation of Section 703 of Title VII of the Civil Rights Act of 1964 and the Texas Commission on Human Rights Act. Sexual advances, requests for sexual favors and other verbal or physical conduct of a sexual nature constitutes sexual harassment.

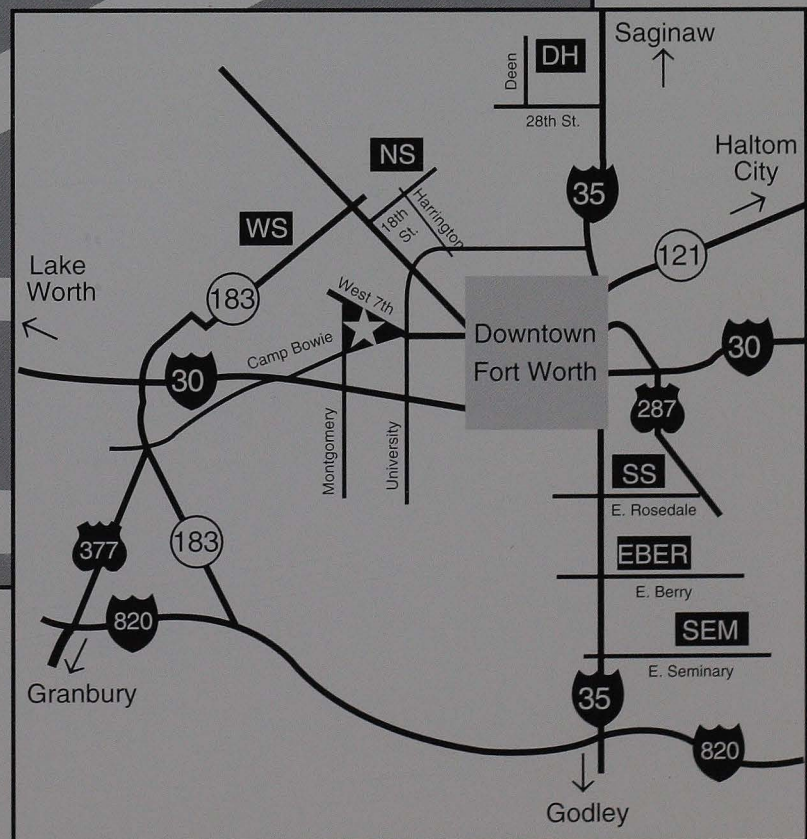
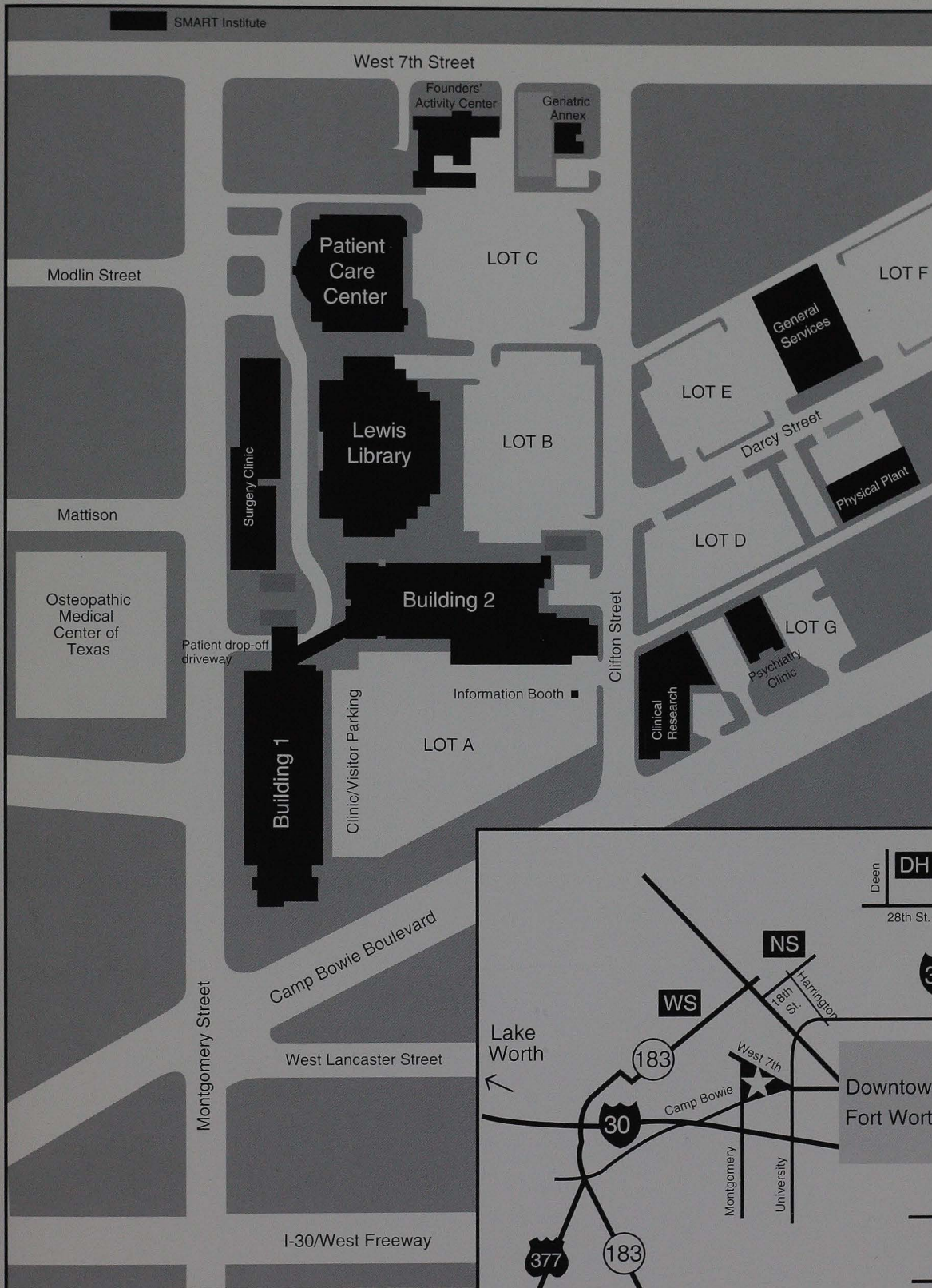
It is the policy of the health science center to maintain a workplace and a learning environment free of sexual harassment and intimidation. Behavior or conduct that interferes with this goal is not condoned or tolerated.

Americans with Disabilities Act

The UNT Health Science Center does not discriminate on the basis of an individual's disability and complies with Section 504 and Public Law 101-336 (Americans with Disabilities Act) in its admissions, accessibility, treatment and employment of individuals in its programs and activities.

The UNT Health Science Center provides academic adjustments and auxiliary aids to individuals with disabilities, as defined under the law, who are otherwise qualified to meet the institution's academic and employment requirements. For assistance contact the Equal Employment Opportunity Office at the health science

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