TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER BULLETIN 1983-84

SCHOOL OF MEDICINE

AND BASIC SCIENCES GRADUATE PROGRAMS

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Kenneth L. Barker, Ph.D. Coorodinator of Biomedical Programs

PRESIDENT'S MESSAGE

I welcome this opportunity to introduce Texas Tech University Health Sciences Center to prospective and incoming medical students.

This medical school, strengthened by the cultural resources of a major university, provides high quality medical education with special attention to health care problems in rural areas and with emphasis on primary health care.

Faculty and administration are committed to providing each physician in training with a composite experience. A broad base in research, technology and in the basic and clinical sciences is requisite to a satisfying and productive professional life devoted to human health care.

Lauro F. Cavazos, Ph.D.
President
Texas Tech University
Texas Tech University
Health Sciences Center

VICE PRESIDENT'S MESSAGE

The health sciences center concept is the umbrella which fosters interaction between students in medicine, nursing and allied health. Coupled with our regional environment, including urban and rural educational settings, we are preparing health professionals to meet the health care needs of a varying and oftentimes underserved population. Future professional schools will broaden these learning opportunities with greater impact on health care delivery in the state.

Samuel D. Richards, Ph.D.
Vice President for the
Health Sciences Center

DEAN'S MESSAGE

The objective of the undergraduate curriculum at TTUHSC School of Medicine is to educate students to become physicians and acquire competence in all medical areas. TTUHSC School of Medicine places emphasis on family practice and other primary care disciplines. Rotations of students and house staff to teaching and patient care experience in rural areas supplement urban programs.

J. Ted Hartman, M.D.
Dean
School of Medicine

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OBJECTIVES

Texas Tech University Health Sciences Center School of Medicine has educational programs in undergraduate medical education, graduate medical education, graduate education in the basic sciences and continuing medical education. The purpose of these programs is to educate professionals for careers in medical science.

The undergraduate medical program is designed to prepare medical students for graduate medical programs. The graduate medical programs prepare physicians in the medical specialties for specific types of health care delivery. Almost all medical specialties are represented. These include the primary care areas of family medicine, general internal medicine, obstetrics and gynecology and general pediatrics.

The continuing medical education program provides an opportunity for the practicing physician to obtain supplemental training as needed or desired. The graduate school program trains professionals for research and teaching in the basic medical sciences.

HISTORY

Texas Tech University School of Medicine, created by the 61st Legislature in May 1969, was established as a regional school, headquartered on the campus of Texas Tech University at Lubbock.

Objectives of the School of Medicine are to provide quality medical education, to address problems of health care delivery in rural areas and to develop education programs throughout West Texas emphasizing primary health care.

Texas Tech University School of Medicine formally opened in August 1972 with a freshman class of 36 and a junior class of 25. Admission of students was accomplished in a record-setting 23 months from initiation of planning to implementation of programs. More common start-up periods range from four to eight years.

The medical school was the first operational phase of the Texas Tech University Health Sciences Center. The health sciences center concept is designed to facilitate coordination of the medical school's regional programs and development of schools of Nursing, Allied Health and Veterinary Medicine. The School of Nursing enrolled its first students in 1981 and the School of Allied Health initiated its first programs in 1982. The schools of Pharmacy and Veterinary Medicine have been approved by the Coordinating Board, Texas College and University System, and their establishment awaits funding by the Legislature.

The school's Ambulatory Teaching Clinic initiated delivery of patient care in 1973. Currently, the teaching clinic includes twelve specialties: anesthesiology, dermatology, family medicine, internal medicine, medical and surgical neurology, obstetrics/gynecology, ophthalmology, orthopaedics, pediatrics, preventive medicine and community health, surgery and psychiatry.

Ground was broken in 1973 for the Health Sciences Center Building, permanent home of the School of Medicine. The building contains nearly 18 acres of floor space. One-third of the building was finished and dedicated in June 1977. With recently completed construction, approximately three-fourths of the building's interior is complete. The building and adjacent county hospital are the first phase of a health sciences campus at Texas Tech.

The Texas Tech Regional Academic Health Center at Amarillo was dedicated in June 1976. The 75,000 square foot facility is within the Amarillo Medical Center on land provided by the Amarillo Area Foundation, Inc.

The first phase of approximately 25,000 square feet for the Regional Academic Health Center in El Paso was dedicated in 1977. With the completion of recent construction, this facility now contains approximately 67,000 square feet.

Planning and development efforts were funded in 1981 for a fourth center in the Permian Basin. Educational programs will be based in the city of Odessa and will involve health care resources in Andrews, Big Spring and Midland as well.

The School of Medicine graduated its ninth class in 1983. In addition to the doctor of medicine, the school offers master of science and doctor of philosophy degrees in five basic science fields and residency programs in twelve medical specialties.

TARBOX PARKINSON'S DISEASE INSTITUTE

The Tarbox Parkinson's Disease Institute was established by the Texas Legislature in 1972 for the purpose of furthering research, patient care, and education in Parkinson's Disease and related neurological disorders. The Tarbox Institute is named after Mr. Elmer L. Tarbox, a graduate of Texas Tech University and for many years state representative to the Texas Legislature from the Lubbock area.

Educational activities include the sponsorship of biennial symposia which bring together leading international scientists involved in both basic and clinical research related to the neurological disciplines. The first four Tarbox Symposia were held in Lubbock in 1976, 1978, 1980 and 1982.

The Tarbox Fellowship programs represent the research thrust of the Institute. The programs include the Tarbox Postdoctoral Fellowships, the Tarbox Predoctoral Research Fellowships and the Tarbox Medical Student Research Fellowships.

The Tarbox Lecture series brings distinguished neuroscientists to the campus to discuss their research findings related to the neurological sciences. The annual Tarbox Research Conference permits the Tarbox Fellows to present their recent research activities to the Texas Tech University Health Sciences Center academic community.

The Tarbox Clinic for Parkinson's Disease is conducted on a regular basis at the Texas Tech University School of Medicine. The clinic is conducted by the Department of Medical and Surgical Neurology and is concerned with the diagnosis and

treatment of persons with known or suspected Parkinson's disease. The clinic services benefit from the full support of the medical school's diagnostic, inpatient and rehabilitation services. Paul Meyer, M.D., associate professor and chairman of Medical and Surgical Neurology, is medical director of the Tarbox Clinic.

Alexander D. Kenny, Ph.D., D.Sc., professor and chairman, Department of Pharmacology, is director of the Tarbox Parkinson's Disease Institute.

TEXAS TECH MEDICAL FOUNDATION

The Texas Tech Medical Foundation was formed in August 1969, exclusively for charitable, educational and scientific purposes and to assist in the establishment of the School of Medicine. It was chartered by the Secretary of State, State of Texas, as a non-profit corporation with a perpetual duration, on February 18, 1970.

The Foundation is responsible for accepting donations, gifts and grants of money and property and administering these funds on a charitable, educational or non-profit basis on behalf of the Texas Tech University Health Sciences Center. In addition, the Foundation helps provide support for training facilities, research and financial assistance for students.

Officers currently serving the Texas Tech Medical Foundation are: Giles C. McCrary, chairman, Harry J. Jung, vice chairman, Max B. Caraway, secretary, and William R. Moss, immediate past chairman.

Individuals or corporations wishing more information on making charitable contributions for the benefit of the various components of the Health Sciences Center should call the Foundation office (806) 743-2727.

CONTINUING MEDICAL EDUCATION

The goal of Continuing Medical Education (CME) at Texas Tech University Health Sciences Center (TTUHSC) is to improve health care by providing quality educational programs for all members of the health-care delivery team. Programs are designed to update and inform the individual in various aspects of basic medical education as well as the developments within his particular field of interest.

A number of specialty societies and academies are requiring continuing education credits for recertification. Several states also require continuing education credits for relicensing.The Liaison Committee on Continuing Medical Education (LCCME) has accredited the TTUHSC Office of Continuing Medical Education, enabling the office to sponsor conference programs for Physician's Recognition Award (PRA) credit.

CME works with faculty sponsors in planning and implementing medical conferences. Any faculty member with an idea for a conference contacts the CME office and the process begins.

The task objectives of the Office of Continuing Medical Education of TTUHSC are:

(a) to implement a method for determining realistic continuing medical education needs and then match appropriate educational program formats to these needs;
(b) to provide medical meetings and conferences that will augment and modify an adequate initial education and make possible the acquisition of such new skills and knowledge to maintain competence;
(c) to work with the faculty of TTUHSC and outside organizations to design, implement and evaluate continuing medical education conferences and workshops;
(d) to provide suggestions to faculty as to how the educational programs can be most effectively done according to the principles of educational psychology;
(e) to provide continuing medical education through visiting experts, conferences and utilization of the most up-to-date technology available for transporting programs to remote areas;
(f) to evaluate the effectiveness of the educational effort, thus ascertaining how and where modification could be made in the process; and
(g) to relate information on upcoming medical education conferences and meetings to the physician community in West Texas and Eastern New Mexico.

In summary, Continuing Medical Education develops programs for faculty and practicing physicians to increase, improve or maintain medical knowledge and skill.

If you have any questions about Continuing Medical Education, contact Jose R. Beceiro, M.D., associate dean for Continuing Medical Education.

LIBRARY OF THE HEALTH SCIENCES

The Library of the Health Sciences at Texas Tech University School of Medicine was developed in a record time span of 11 months, and presently contains more than 100,000 bound volumes. More than 1,600 periodicals published both domestically and in foreign countries are received and bound regularly.

Associated libraries in the Amarillo and El Paso Regional Academic Health Centers of the medical school also have been developed. Anticipated collections of about 40,000 volumes in each location are growing daily.

Besides offering its bound volumes and periodicals as a valuable reference collection, the library houses a Learning Resource Center comprised of audio-visual materials, films, tapes and other non-book media to aid in the learning experience. Teaching devices such as a medical injectable teaching arm and a heart-sound simulator are available for use.

Computerized searching services with access to more than 50 data bases on a variety of subjects ranging from medicine and engineering to education, agriculture, and many others are available. These data bases come from sources nationwide, especially the National Library of Medicine, Bethesda, Md. A few of the data bases available include MEDLINE, TOXLINE, AGRICOLA, Birth Defects, NTIS and others.

Study carrels and other study facilities are provided within the library for students, faculty, and residents.

Medical students also have access to the Texas Tech University Library, which contains more than 1.5 million items including U.S. Government documents and substantial holdings in the sciences.

FACULTY

The full-time faculty of the School of Medicine currently numbers 260. In addition, 725 West Texas area health care professionals and scientists have been appointed to the clinical faculty of the School of Medicine. As the school's educational programs grow and as the Regional Academic Health Centers continue to develop, both the full-time faculty and the clinical faculty will grow with them.

12 REGIONAL MEDICAL EDUCATION

Texas Tech University Health Sciences Center School of Medicine is a regional medical school and a vital part of its philosophy of education and service is its outreach program.

Unlike schools in large urban areas where the medical school-medical center complex may be located within a few square blocks of real estate, many of the Texas Tech Health Sciences Center facilities and faculty are distributed throughout West Texas—an area encompassing approximately 135,000 square miles and 107 counties. The regional medical school concept complements the program of primary care with an emphasis in family medicine training at TTUHSC. In a large urban medical center, primary and ambulant care may be only classroom concepts to medical students. At TTUHSC, students work and learn in actual primary health care delivery situations in ambulatory clinical environments.

In addition to affiliation agreements with selected health care institutions throughout the West Texas region, the School of Medicine has developed a Regional Academic Health Center (RAHC) system. The RAHCs are part of the region's health education system along with affiliated health care institutions. There currently are three RAHCs in operation: Amarillo, El Paso and at the main campus in Lubbock. Junior-senior medical students may receive part of their training in the clinical environment of an RAHC outside of Lubbock. The RAHCs also conduct continuing education programs for health professionals in their respective areas. A fourth center in the Permian Basin is being developed.

The RAHCs are staffed and operated by the faculty of the School of Medicine, with resident physicians as junior members of the medical staff.

PHYSICAL FACILITIES

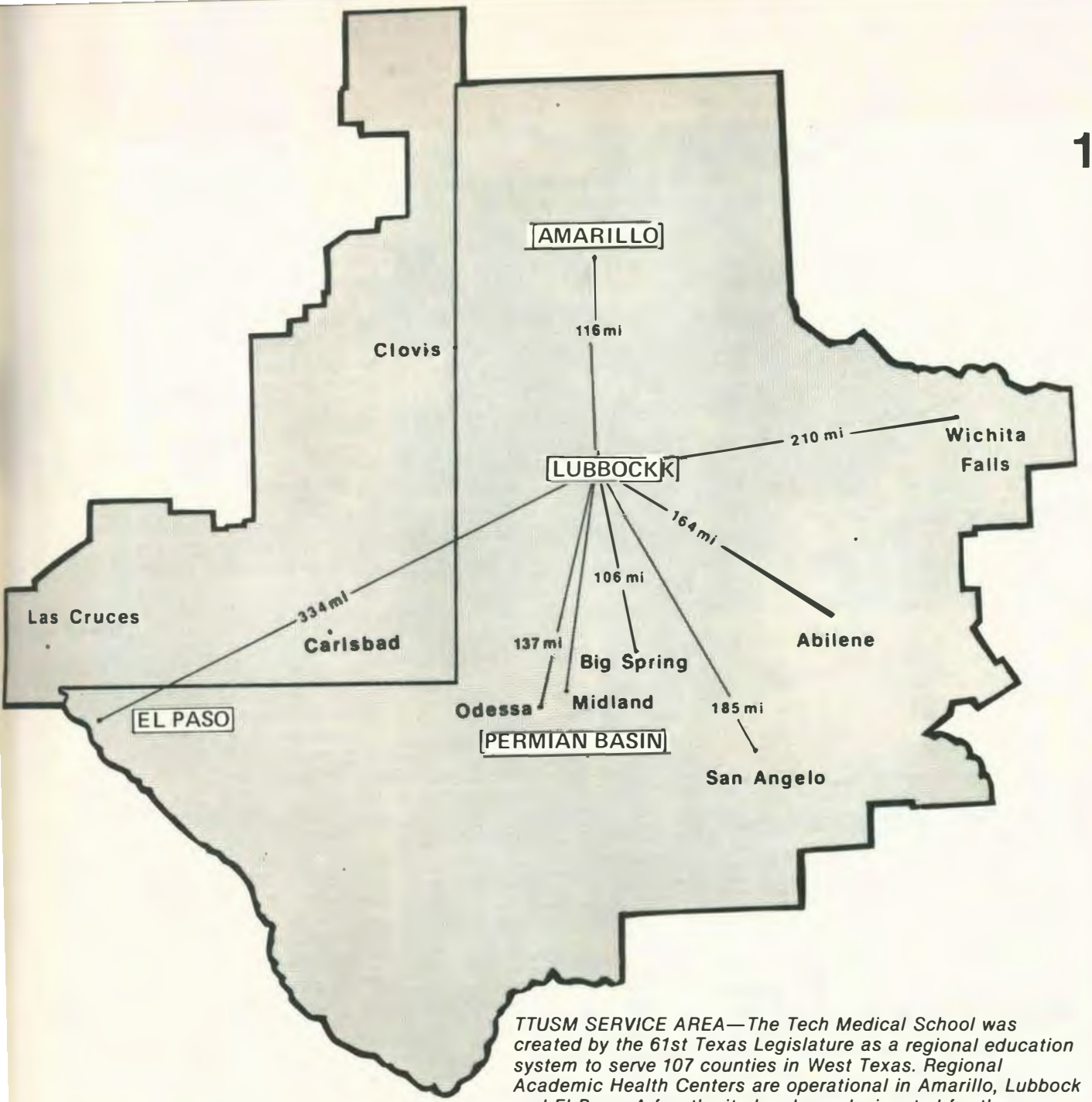
Texas Tech Regional Academic Health Centers (RAHCs) serve as academic bases for fulfillment of the Medical School's commitment to both medical education and health care service for West Texas.

RAHCs in Lubbock, Amarillo and El Paso work in conjunction with affiliated institutions in the regions they serve to provide programs for medical students and resident physicians and continuing medical education opportunities for practicing physicians.

Individual clinical strengths and opportunities at each location are emphasized. Medical students rotate through the three centers at various stages of their medical education to benefit from a full spectrum of experiences.

PERMIAN BASIN AT ODESSA

Presently, planning and development efforts are being established for a center in the Permian Basin. Programmatic efforts will focus initially on postgraduate education, continuing medical education and senior electives. Expanded undergraduate offerings may be developed as appropriate at a later date.



TTUSM SERVICE AREA—The Tech Medical School was created by the 61st Texas Legislature as a regional education system to serve 107 counties in West Texas. Regional Academic Health Centers are operational in Amarillo, Lubbock and El Paso. A fourth site has been designated for the Permian Basin at Odessa. The map of Texas illustrates the service area. Enlargement of service area indicates mileage from Lubbock to other cities.

AMARILLO

The Texas Tech Regional Academic Health Center at Amarillo serves as a base for clinical education for junior and senior medical students and resident physicians.

A 37,800 square foot facility for the RAHC was dedicated in April 1976. The building, located within the Amarillo Medical Center, includes space for teaching, a library, an auditorium and research and support services.

A second phase of this facility has been completed, adding an additional 37,800 square feet. The addition of the second floor for this facility accommodates increased numbers of faculty and staff needed to educate and train junior and senior medical students.

Clinical experiences are provided through affiliations with Northwest Texas Hospital (the primary teaching hospital), and the Psychiatric Pavilion, High Plains Baptist Hospital, St. Anthony's Hospital, Veterans Administration Medical Center, Killgore Children's Psychiatric Center and Hospital, the Don and Sybil Harrington Cancer Center and the Bi-County Health Department.

The center also is a base for coordination of rural and urban preceptorships in clinics and private practices throughout the Panhandle region.

Emphasis at the Amarillo center is on primary care, particularly family medicine, and includes programs in pediatrics, obstetrics/gynecology, internal medicine, psychiatry and general surgery.

EL PASO

The Regional Academic Health Center in El Paso was dedicated in 1977. The Center includes academic space for clinical departments, research laboratories, library, classroom and support space, and a conference auditorium.

Junior and Senior students based in El Paso participate in the required clinical clerkships in Family Medicine, Internal Medicine, Obstetrics and Gynecology, Pediatrics, Psychiatry, and Surgery. Resident physicians in El Paso train in the specialties of Family Practice, Internal Medicine, Obstetrics and Gynecology, Pediatrics, Psychiatry, Surgery, Orthopaedic Surgery, Anesthesiology and Emergency Medicine. The location of resident physician programs in El Paso is essential to the training of junior medical students in that center. The Family Medicine program, while not a primary thrust in El Paso, supports other clinical programs.

The center provides clinical experiences through affiliations with R.E. Thomason General Hospital, the primary teaching hospital, augmented through affiliation with William Beaumont Army Medical Center and other community hospitals and clinical facilities.

Urban and rural preceptorship programs for students in the El Paso region are coordinated through this RAHC.

LUBBOCK

The Regional Academic Health Center at Lubbock is incorporated in the home base facilities of the School of Medicine. All freshman and sophomore students are based there. Junior clerkships include surgery, obstetrics/gynecology, psychiatry, internal medicine and pediatrics. Senior electives are available in most departments. Residency programs currently located in Lubbock are obstetrics/gynecology, pediatrics, family practice, orthopaedic surgery, psychiatry, ophthalmology, surgery, dermatology, preventive medicine, anesthesiology and internal medicine.

The primary teaching hospital for the Lubbock RAHC is Lubbock General Hospital, operated by the Lubbock County Hospital District. Preceptorship programs, model clinic programs and outreach efforts in the Lubbock region are coordinated through the center.

Affiliated institutions in Lubbock include the City-County Maternity Clinic, St. Mary of the Plains Hospital, Methodist Hospital, West Texas Hospital and Veterans Administration Outpatient Clinic.

Additional affiliations include Central Plains Comprehensive Mental Health/Mental Retardation Center and Central Plains Regional Hospital (Plainview), Permian General Hospital (Andrews) and the Veterans Administration Medical Center (Big Spring).


Texas Tech University
School of Medicine

GENERAL REQUIREMENTS

Admission to the Texas Tech University Health Sciences Center School of Medicine is not a right acquired by exceeding the minimum entrance requirements, but is a privilege granted to those especially qualified applicants for the purpose of providing the public with highly trained physicians dedicated to first class health care delivery. The Admissions Council has the responsibility of evaluating a large number of applicants for the qualities which will best ensure the attainment of this goal. The academic record and the Medical College Admission Test (MCAT) provide an estimate of intellectual ability and attainment. The less tangible personal qualities are judged from the written comments, letters of recommendation, biographical data, and personal interviews.

The requirements for admission to Texas Tech University Health Sciences Center School of Medicine include the MCAT and at least 90 credit hours of college level study in an accredited institution. Ordinarily the completion of four years of college, earning a B.S. or B.A. degree, is desirable before entrance into medical school. Students applying with 90 or more semester hours, but without a baccalaureate degree, are likely to be accepted only if they have academic records at least equal to or superior to those of students accepted with the baccalaureate degree. They must also exhibit definite evidence of maturity.

The undergraduate student planning a career in medicine is advised to complete the minimum required courses prior to the senior year in order that the college transcript reflects a more accurate ability in the sciences when evaluated by the Admissions Committee. Because of the curriculum flexibility, there are no preferred undergraduate majors. Equal consideration is given to non-science majors provided they demonstrate an aptitude for handling scientific material. Specific course requirements have been kept at a minimum to permit maximum flexibility in selection of well-rounded students.

Required pre-medical courses are:

Courses	Semesters
Inorganic Chemistry (with lab)	2
Organic Chemistry (with lab)	2
Biology (with lab)	4
Physics (with lab)	2

It is recommended that the student have a basic course in calculus and as broad a base as possible in the social sciences and humanities. Refined communication skills - the use and understanding of written and spoken language - are essential, both for the study of medical disciplines and for communication with patients. Effective communication is the foundation of a physician's successful relationship with the public and with other professionals. Facility with verbal and written expression is essential. In addition, a reasonable working knowledge of conversational Spanish is recommended. Students lacking Spanish language training will be offered a course in conversational Spanish given in the second year. All required pre-medical courses must be completed prior to matriculation.

The MCAT is required for all applicants to the entering class. It is strongly recommended that the MCAT be taken in the spring of the year in which the application to medical school is submitted; however, the fall test will still allow time for the applicant to be considered.

Application to take the MCAT should be made to:

MCAT Registration
The American College Testing Program
Box 414
Iowa City, Iowa 52240

Application blanks may be obtained through the counseling and testing service at the student's college or university.

RESIDENCE STATUS

Texas Tech University Health Sciences Center School of Medicine follows the rules and regulations for determining resident status as published by the Coordinating Board, Texas College and University System. Attendance at a college or university in Texas by itself does not satisfy the bona fide residence requirements. A copy of the *Rules and Regulations for Determining Residence Status* may be obtained by writing to:

Texas Coordinating Board
Texas College and University System
Box 12709
Austin, Texas 78711.

22 APPLICATION PROCEDURES

Application forms may be obtained by request. Please write:

Office of Admissions
Texas Tech University
Health Sciences Center
School of Medicine
Lubbock, TX 79430

All applications must be postmarked on or before **November 1.** Supporting documents must be received not later than **December 21** in order for the completed application to be considered by the Admissions Committee. Early submission of supporting documents is encouraged.

TTUHSC School of Medicine participates in the Early Decision Plan. Participation in the Early Decision Plan necessitates a commitment to apply only to this medical school and a commitment to attend TTUHSCSM if accepted.

Application for Early Decision must be completed by **August 1**. Applicants will be notified whether they have been accepted by **October 1.** If not accepted, the applicant will be placed in the regular applicant pool **without** having to reapply. The applicant may then also apply to additional schools.

Applicants are carefully evaluated by the Admissions Committee with regard to their potential for pursuing a curriculum leading to the Doctor of Medicine degree. Academic achievement, MCAT scores, pre-medical advisior committee appraisal and personal interviews constitute the major factors for applicant evaluation.

There is no discrimination because of race, creed, sex or national origin.

APPLICATION AND ACCEPTANCE TIMETABLE

Filing of formal application
Earliest date: April 1
Latest date: November 1
Early Decision deadline date:
August 1
Application fee: $30 due with application forms to TTUHSC

Notification of acceptance by School
Earliest date: October 1 (Early Decision)
Latest date: When class is filled
Time from receipt of application to acceptance notice: Varies

Applicant response to acceptance offer
Maximum time: 2 weeks
Deposit fee to hold place in class (applies to tuition): $100 due upon acceptance; refundable until June 15, if student does not matriculate. Deposit is not refundable after this date.

FINANCIAL INFORMATION

TUITION AND FEES

All fees are subject to change without prior publication.

The full amount of tuition and fees for the nine-month school year is due at registration.

Approximate Cost for 9-Month School Year*

	Resident	Non-resident
Tuition	$300.00	$900.00
Laboratory Fee	32.00	32.00
Building Use	110.00	110.00
Student Services	120.00	120.00
Student ID System	2.00	2.00
University Center	20.00	20.00
Microscope Use	75.00	75.00
Property Deposit	10.00	10.00
Liability Insurance	25.00	25.00
	$694.00	$1,294.00

For further information contact:

The Registrar
Texas Tech University
Health Sciences Center
School of Medicine
Lubbock, TX 79430

Tuition and Fees*

Tuition and fees for each academic year are due and payable in full at the time of registration and a student is not enrolled until his fees are paid in full.

Texas Resident - $300.00
Non-Resident - $900.00

Laboratory Fee*

Laboratory Fee - $32.00

Building Use Fee*

A Building Use Fee of $110.00 a year is required by state law to be paid by all students at the time of registration.

Student Services*

Each student is required to pay a Student Services Fee of $120.00 at the time of registration.

Student Health Service*

The Texas Tech University School of Medicine operates the Student Health Service and provides treatment for all students in Texas Tech University including the School of Medicine.

University Center*

A University Center Fee of $20.00 a year is required of all students.

Microscope Fee

The Texas Tech University School of Medicine makes available microscopes on a rental basis. A single $75.00 rental fee payable at the time of registration for first-year students covers the use of the microscope during the first two academic years.

Liability Insurance

$25.00 per year.

Property Deposit

Each student enrolled must make a general property deposit of $10.00. This deposit is subject to charges for property loss, damages, breakages, or violations of rules in the library or laboratories.

Student Hospitalization Coverage

Cost of the plan to a single medical student is $95.00 per year. Other plans and policies are available through the Office of Student Affairs.

Housing

Texas Tech University School of Medicine does not furnish living quarters for its students. Housing is an individual matter and each student must make his own arrangements.

Texas Tech University maintains 20 residence halls which accommodate approximately 7,300 students for board and room. Medical students are eligible for university housing if they desire it, and assignments will be made according to student preference if space is available. For further information, students interested in university housing should contact the

Texas Tech Housing Office
P.O. Box 4629
Texas Tech University
Lubbock, Texas 79409

In addition, there are numerous off-campus apartments and housing facilities available near the campus. Estimated living costs for room and board range upward from approximately $226.00 per month.

Campus Parking

Limited parking facilities are available on the medical school grounds. Any student wishing to park on the campus will be required to obtain a permit and pay a Parking and Registration Fee of $21.00 per year.

*Based on fee structure for 1982-1983. Fees for 1983-1984 are subject to change based on actions of the Legislature and Board of Regents.

24 REFUND OF TUITION AND FEES

The medical student who officially withdraws from the Texas Tech University Health Sciences Center School of Medicine during the course of an academic year will be entitled to a refund of tuition and fees in proportion to the length of time between the first class day of each semester and the date of official withdrawal in accordance with the schedule below, subject to this policy.

Forms for withdrawal will be available from the Office of the Registrar, Texas Tech University Health Sciences Center School of Medicine.

Withdrawal	
Prior to the first class day	100 percent
During the first five class days	80 percent
During the second five class days	70 percent
During the third five class days	50 percent
During the fourth five class days	25 percent
After the fourth five class days	None

FINANCIAL AID

The objective of the financial aid staff at Texas Tech University Health Sciences Center School of Medicine is to provide financial assistance to students who, without such assistance, would not be able to pursue a medical education.

There are several types of financial aid, including loans, scholarships, and grants, which are offered to students on the basis of financial need and other qualifications as specified by state and federal agencies as well as private donors.

Financial need is defined as the difference between the anticipated costs of attending TTUHSC and the amount of money available to the student from all sources. A need analysis is required of applicants for most financial aid programs. TTUHSC uses the need analysis system published by the Graduate and Professional Student Financial Aid Service (GAPSFAS).

Although qualifications for each financial aid fund might differ, and aid at TTUHSC comes from many sources, no student or prospective student shall be excluded from participation in or be denied the benefits of any financial aid program on the basis of race, color, national origin, religion, or sex.

A Student Financial Aid Handbook, which describes the various financial aid programs in detail, is available upon request.

Students seeking financial aid or information about financial aid should contact:

M. J. Crozier
Director of Student Financial Aid
Texas Tech University
Health Sciences Center
School of Medicine
Lubbock, TX 79430

RECREATION AND ENTERTAINMENT

In Lubbock, TTUHSC is on the campus of Texas Tech University, affording students easy access to campus recreational and entertainment facilities at student rates. The music and drama departments maintain a calendar of events in addition to Lubbock's cultural arts programming.

The Department of Recreational Sports offers various facilities and programs to suit almost every individual need: indoor/outdoor swimming, outdoor equipment rental, lighted tennis courts, lighted playfields and numerous opportunities within the Student Recreation Center such as gymnasium areas, handball/racquetball, weight training, indoor jogging, audio-visual entertainment and projects, and free clinics and classes. Programs include intramurals, aquatics, sports clubs and outdoor adventure.

Municipal facilities for sports and civic cultural arts programming are available in Amarillo, El Paso and Odessa.

ORGANIZATIONS

The students at the Texas Tech University School of Medicine currently hold memberships in the following organizations: American Medical Student Association, the Student National Medical Association, the Family Practice Student Association, the Organization of Student Representatives, the American Medical Women's Association, the Texas Association of Mexican American Medical Students, the Physicians Student Association, the

Christian Medical Society, and Alpha Omega Alpha Honor Medical Society. Medical students serve on state committees in conjunction with the Texas Medical Association - Medical Student Section.

STUDENT HEALTH SERVICE

The Texas Tech University School of Medicine operates the Student Health Service and provides treatment for students in the Texas Tech University complex, including the School of Medicine.

The Student Health Service, 2nd Floor, South Wing of Thompson Hall, provides ambulatory medical care 8 a.m.-7 p.m., Monday through Friday. Treatment is confined to the clinic; Student Health Service physicians do not make routine dormitory or house calls. Transportation for the transfer of on-campus students who are ill is available through the University Police Service.

From 7 p.m.-8 a.m. Monday through Friday and on weekends, medical care is available through the Emergency Room of Lubbock General Hospital, or a Lubbock emergency room of the student's choice. The student will be responsible for paying all emergency room charges; however, upon receipt of proof of payment for emergency room services during the above stated periods, the Health Service will refund $25 to the student.

Between the hours of 8 a.m. to 5 p.m., Monday through Friday, the services of a laboratory are available for a variety of tests. Also, between 8:30 a.m. and 5:30 p.m., Monday through Friday, pharmacy service is available.

Students requiring inpatient care or who have serious injuries or chronic illnesses requiring hospitalization will be given necessary emergency care by the Student Health Clinic and then transferred to Lubbock General Hospital or hospital of their choice

The Health Service staff will notify the parents, guardians or nearest relative of a patient believed to be threatened with a serious illness or thought to be in need of an emergency surgical operation.

The Student Health Service cannot be responsible for continuing treatment of students suffering from chronic diseases. The student health primary care physicians will provide referrals to specialists who will give special care for students who need it and are unacquainted with Lubbock physicians.

Three components are represented in the Student Health Service program. They are:

Personal health services, including preventive, diagnostic, therapeutic and rehabilitative care for both physical and emotional problems.

Environmental surveillance and control, including occupational medicine.

Education for health that includes educational programs for individuals through which they may be motivated to healthful individual and community behavior.

STUDENT HOSPITALIZATION COVERAGE

At the time of registration each student will complete a health insurance enrollment form indicating the extent of his/her coverage and the name of the carrier and policy number. All medical students enrolled in Texas Tech University School of Medicine are expected to carry health insurance, either the plan offered through the Texas Tech University Health Sciences Center, or a similar policy providing equivalent coverage.

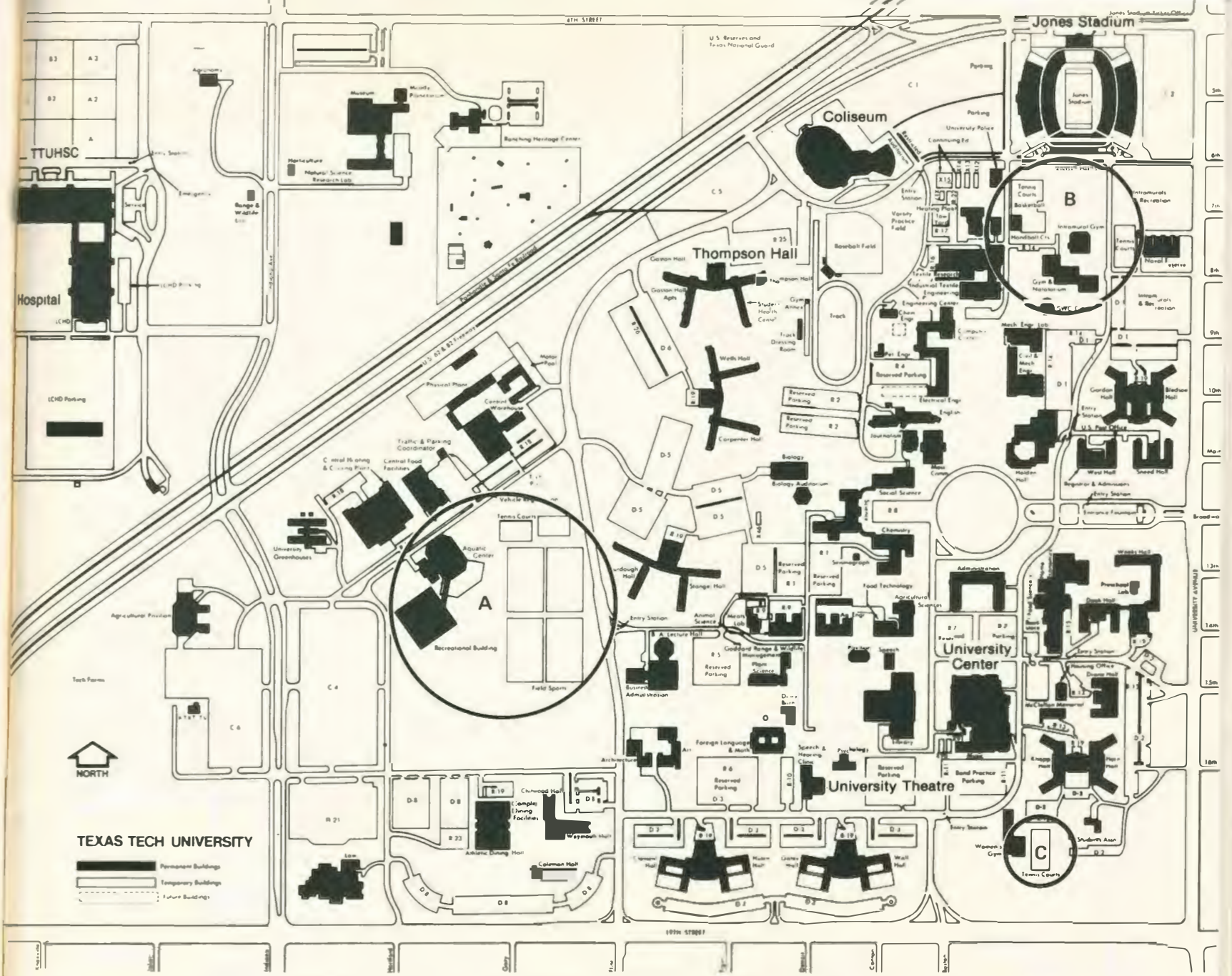
For additional information or specific questions concerning health insurance coverage, students should contact the Office of Student Affairs.

STUDENT CONDUCT

Responsible citizenship among students enrolled in Texas Tech University Health Sciences Center School of Medicine includes honesty and integrity in class work, regard for the rights of others, respect for local, state and national laws and for campus regulations. Specific regulations concerning the rights and responsibilities of students at the School of Medicine are contained in the Code of Student Conduct and Discipline of Texas Tech University. Each student is expected to become thoroughly familiar with these regulations.

STUDENT EMPLOYMENT

It is recommended that, if possible, students arrange their financial affairs so that employment during the academic session will not be necessary. However, if financial need arises, students may undertake limited employment; usually no more than 10 hours per week are advisable. Any student undertaking employment during the academic session is required to notify the Associate Dean for Student Affairs.



LEGEND Recreational facilities for student use, clockwise from top left:

A 1 Year-round Swimming Pool
2 Tennis Courts
3 Field Sports
4 Student Recreation Center

B 1 Tennis Courts
2 Field Sports
3 Men's Gym and Natatorium
4 Handball Courts
5 Basketball Courts

C 1 Tennis Courts

Reservations recommended for tennis and handball courts.

28 TUTORIAL TEAM INSTRUCTION

An important element in the School of Medicine is the Tutorial Team Instruction program. Tutorial Teams consist of the faculty mentors and about 12 students at various levels of training. This program is designed to meet student needs which are not regularly met by the school curriculum. These needs fall into three broad categories:

(1) academic and personal counseling;
(2) educational experiences not provided by the curriculum; and
(3) opportunities for social and leisure time activities.

The mentors not only function as members of the group but also serve as student advocates as needed, assist with student academic advisement and provide role models for the students.

This program provides a forum for students and faculty to discuss controversial and sensitive issues in small group settings and allows students the opportunity to take an active role in their educational experiences. Additionally, students learn to function as group members and receive personalized attention as required. The Tutorial Team is recognized as a formal channel of communication from students to the various offices of the dean.

ACADEMIC REGULATIONS

A grade is assigned for all courses in which a student is regularly enrolled during any semester. Only through regular enrollment can a grade be earned. A passing grade may be earned only if the student is enrolled for the duration of the course and a grade, once given, may not be changed without the approval of the department chairman.

All credits are expressed in semester hours. An overall cumulative weighted grade average of 75 will be required for graduation. The grade of "I" (incomplete) is given only when a student's work is satisfactory in quality but due to reasons beyond his/her control, has not been completed. The grade "I" (incomplete) should also be used when a student is going to be re-tested or otherwise re-evaluated in a course. This is not given in lieu of a failing grade. Grades of "I" received as a result of illness will be dealt with on an individual basis. The instructor assigning the grade will stipulate in writing, at the time the grade is given, the conditions under which the "I" may be removed. Students who receive the grade "I" will have a maximum of two semesters in which to complete work for the course and remove this grade, or it shall be changed to a failing grade at the end of the second semester following receipt of the "I".

The grade of "WP" is given for a course officially dropped provided the student's work is passing at the time the course is dropped. The grade of "WF" is given when the student's work is not passing at the time the course is dropped.

The lowest passing numerical grade for any course is 70. The lowest acceptable weighted average for promotion and/or graduation is 75. If a course is repeated, the second grade shall be used for purposes of promotion. Both grades shall be used for calculation of the cumulative weighted grade average. All grades shall remain on a permanent transcript.

Work completed at another school may be transferred only with the approval of the academic dean and the appropriate department chairman. Grades for transferred work will be recorded as "CR" (credit) and will not be considered for calculating the weighted grade average.

The grade "CR" (credit) should also be used for students enrolled in extra-credit electives during any semester or the summer.

All credits are expressed in semester hours. The second and third digits of the course number represent the credit hours.

Passing Grades:
- Numerical grades 70-100
- S (satisfactory)

Failing Grades:
- Numerical grades under 70
- U (unsatisfactory)

Other Grades:
- CR (credit)
- WP (withdrawal passing)
- WF (withdrawal failing)
- I (incomplete)
- X (course audited)

Grades with NO point values
- S, U, CR, WP, I, X

The weighted average for a semester is determined by dividing the total number of **quality points*** acquired during the semester by the total number of semester hours of all courses in which the student was registered in that semester, exclusive of courses in which a grade of WP or S is received. In the same manner, the cumulative weighted grade average is obtained by dividing the total number of semester hours of all courses for which the student has registered at this school, but excluding hours for which the grade of WP or S is received. The hours of courses receiving grades of WF and and U are included in calculating weighted averages.

A student may repeat courses for credit with the prior approval of the academic dean. When a course is repeated, only the grade made in the last registration is used in calculating the weighted grade average for meeting promotion requirements. Repeated registrations are counted in the total overall weighted grade average.

***Quality Points** for a course are the product of the number of course credits and the numerical grade received by the student.

30 UNDERGRADUATE MEDICAL EDUCATION

The broad goal of Texas Tech University School of Medicine is to prepare physicians for all areas of medical endeavor. Recognizing the specific needs of the nation, a specific goal is to foster interest among its trainees in patient care, and especially in primary care. Furthermore, considering the special health care needs of West Texas, another specific goal is to interest many of its trainees in rural health care delivery.

The undergraduate medical curriculum has two goals. The short-term goal is to prepare medical students for any area of graduate medical education. The long-term goal is to prepare medical students for practice after graduate medical education. In order to attain these goals, the undergraduate medical curriculum:

(1) provides a broad but intense introduction to medical knowledge,
(2) seeks to develop scientific problem-solving skills in medical students,
(3) begins to develop the ability of the medical students to assume sole responsibility for their own education, and
(4) encourages an interest in the primary care specialties, but not to the exclusion of the tertiary care specialties.

CURRICULUM

The curriculum leading to the Doctor of Medicine degree consists of four years (143 weeks) of study in the basic and clinical sciences.

While the first two years of the curriculum are principally devoted to basic sciences and the latter two to clinical sciences, some clinical material is introduced during the first two years and the opportunity is provided for further pursuit of basic science material during the last two years. Elective opportunities are provided during the first, third and fourth years. Some flexibility exists in the third and fourth year curriculum allowing the student to plan the required coursework experiences to best meet his/her educational objectives.

CURRICULUM REVISION

In the interest of maintaining the best possible educational program, the curriculum undergoes continuous review by the Curriculum Council with revision as necessary.

ELECTIVE COURSES

A variety of elective courses are offered within each academic department of the medical school. Descriptions of clinical electives are obtained through the Office of Academic Affairs. The student, in consultation with an advisor, selects five clinical electives which constitute the electives program. Students are provided information on registration in the electives program just prior to the junior year.

CURRICULUM BY YEARS

FIRST YEAR

Term I (17 weeks)
Anatomy
  Gross Anatomy
  Histology
  Embryology
Biochemistry
Electives

Term II (17 weeks)
Biochemistry
Physiology
Neurosciences
Emergency Medical Care
Biostatistics
Electives

SECOND YEAR

Term III (17 weeks)
Pathology
Microbiology
Introductory Psychiatry
Introduction to Medicine
Introduction to Radiology
Preventive Medicine and
  Community Health
Forensic Medicine

Term IV (18 weeks)
Pathology
Pharmacology
Introduction to Medicine
Psychiatric Interviewing
Parasitology
Dermatology
Ophthalmology
Otolaryngology
Advanced Life Support

THIRD AND FOURTH YEARS

Internal Medicine Clerkship	12 weeks
Surgery Clerkship	12 weeks
General Surgery	(7 weeks)
Anesthesiology	(1 week)
Subspecialties	(4 weeks)
Pediatrics Clerkship	8 weeks
Psychiatry Clerkship	8 weeks
Obstetrics & Gynecology Clerkship	8 weeks
Family Practice Clerkship	4 weeks
Family Practice Preceptorship	4 weeks
Electives Program	20 weeks
	76 weeks

ANATOMY

Professor Harry M. Weitlauf, M.D., Chairman
Professors: Berlin, Cavazos*, Markwald, Seliger*
Associate Professors: Coates, Dalley, Hutson, Richards, Rylander*, Yee*
*Assistant Professor: Lox**

The core courses of anatomy are designed specifically as the first anatomy teaching episode for the training of physicians and professional anatomists.

To accomplish this, the Department of Anatomy has structured its courses and teaching methods to fit the needs of today's professional. The course material is trimmed down to what directly applies to the training and practice of an academician. New teaching methods using audio-visual aids, special notes written by the instructors, lecture lattices and demonstrations increase the efficiency of laboratory time.

Thus, by careful incorporation of modern teaching methods, modern instruments, improved faculty contact and careful screening of course material, today's medical student can be taught the necessary material in a meaningful manner.

Required Courses

MAN 50210 -Human Development. The study of human development beginning at fertilization and continuing through embryogenesis, the formation of mature organ systems, the fetal period and culminating with events leading to birth. Normal development is integrated with discussions of various congenital malformations. Students have a unique opportunity for firsthand observation of fetal material during a special laboratory session. This course must be taken in conjunction with MAN 50311 and 50609.

MAN 50311-Human Histology and Cell Biology. An integrated course of anatomy starting with the ultrastructural and light microscopic study of cells and continuing through the basic tissues and their organization into the various organs of the body. This course must be taken in conjunction with MAN 50609 and 50210.

MAN 50609-Human Gross Anatomy. A highly integrated course of general anatomical study (including human prosection) which embodies the gross morphology of the body and coordinates it with the clinical, developmental and microscopic aspects of the human body. This course must be taken in conjunction with MAN 50311 and 50210.

*Joint appointment

Harry M. Weitlauf, M.D.

ANESTHESIOLOGY

Professor Gabor B. Racz, M.D., Chairman
Professor and Associate Chairman Edward T. Thomas, M.D., (Lubbock)
Professor and Associate Chairman G. Dal Santo, M.D., (El Paso)
Professors: Cockings, Lawson
Associate Professor and Director, Research Labs; Heavner (Lubbock)
Associate Professors: Chandra, Williams (El Paso)
Assistant Professor: Watkins (El Paso)
Amarillo - Elective available with clinical faculty. Arrangements to be made with Dr. Racz.

The Department of Anesthesiology offers a unique opportunity for the medical student to apply a knowledge of the basic sciences in a patient setting.

The primary goal is to expose future physicians to current methods of life support, enabling students to approach with confidence the management of the airway of the unconscious patient as well as support of the respiratory and cardiovascular system. Electives and preceptorships are afforded where, under direct supervision, the students will have an opportunity to gain firsthand experience in the art and science of anesthesiology in a spectrum of patients undergoing anesthesia for surgery. Instruction will be given in the management of respiratory problems, acid-base and fluid balance and the use of mechanical ventilators.

The department is involved in the preclinical, basic science teaching in which clinical expertise is used to

express the applicability of such knowledge.

Basic and clinical research projects will be available to interested students.

Required Course

MAY 60102-Advanced Life Support.

Gabor B. Racz, M.D.

Kenneth L. Barker, Ph.D.

BIOCHEMISTRY

Professor Kenneth L. Barker, Ph.D., Chairman

Professors: Behal, Everse, Holly*, Morrow, Shetlar**

*Associate Professors: Garner, Little, Pelley, Perez, Sridhara, Stocco, Williams**

Assistant Professors: Diesterhaft, Whelly**

The Department of Biochemistry of the School of Medicine provides the educational and research programs in biochemistry for (1) professional students in medicine and related health sciences; (2) graduate students majoring or minoring in biochemistry; and (3) medical residents and housestaff.

The Department of Biochemistry provides a required comprehensive course in medical biochemistry for first year medical students.

Required Course

MBC 51025-Medical Biochemistry. A study of life processes at the molecular level with emphasis on the biochemistry of man in health and disease.

*Joint appointment

BIOMEDICAL ENGINEERING AND COMPUTER MEDICINE

Professor Blair A. Rowley, Ph.D., Chairman
Professors: Ayoub, Jarzembski, Portnoy, Ramsey
Assistant Professors: Johnson, Pierchala

The Department of Biomedical Engineering and Computer Medicine is concerned with education, research and development in medicine and the allied health fields. Interdisciplinary methods, which enable the department to draw on specialists covering a wide range of expertise, are used. Educational efforts are directed toward teaching the health professional how to use technology effectively.

The department offers a special interdisciplinary master's degree study program, administered by the Texas Tech University Graduate School, by which a medical student may earn a master's degree while attending medical school. The department also offers special electives for medical students.

Courses are available for engineers in the life sciences leading to a graduate degree with emphasis in biomedical engineering. Students have the option of pursuing the master's or Ph.D. level through the Master of Engineering or the Interdisciplinary Ph.D. programs administered in the College of Engineering.

In research, the department is developing concepts and applications of technology in the problems of health care delivery. In addition, programs in bioelectric phenomena, instrumentation and rehabilitation and other areas of bioengineering, clinical engineering and medical engineering are available.

Efforts also are directed toward the appropriate use of computers in the medical setting and the development of biomathematical expertise in medical research. In particular, the application of computer technology to medically remote populations is an ongoing program. Additional research is directed in the area of computer usage in biostatistical theory.

The department also provides engineering development for all departments of the medical school. It furnishes expertise in intensive care, life support, implantables, monitoring, transduction, safety and instrumentation. In addition, consultation is available to the medical community at large.

Required Course

BME 50150-Biostatistics. This course introduces the basic biostatistical concepts frequently encountered by the student, researcher or medical practitioner. It includes an introduction into the use of descriptive statistics, statistical tests, confidence intervals and other frequently encountered distributions. Examples are taken primarily from the basic and clinical sciences, emphasizing applications encountered by the medical student.

Blair A. Rowley, Ph.D.

DERMATOLOGY

Professor Kenneth H. Neldner, M.D., Chairman

Professor: Shetlar

The Department of Dermatology provides educational and research programs in dermatology for (1) undergraduate medical students; (2) residents; and (3) other students requiring instruction in dermatology. In addition to the required sophomore course, the department offers elective preceptorship training to medical students and residents. The instructional program includes training in general dermatology, pediatric dermatology, dermatopathology, venereology and dermatologic research.

Required Course

MDM 60101-Introduction to Dermatology. This course is designed to acquaint the sophomore student with the etiology, epidemiology, pathophysiology, clinical characteristics and prognosis of selected disorders of the skin. In addition, the student will be instructed in dermatologic diagnostic techniques and be given the opportunity to examine patients with specific skin diseases.

Kenneth H. Neldner, M.D.

Berry N. Squyres, M.D.

FAMILY MEDICINE

Professor Berry N. Squyres, M.D., Chairman

Professors: Gordon; Shields; Smith, H.

Associate Professors: Johnson, C.; Peddicord; Ripley; Scott

Assistant Professors: Bloom; Brown; Gaddis; Kern; Kilham; Robins; Walthall, Wiant

Instructor: Hentges, K.

Associate Clinical Professors: Carr; Fagan; Hope; Johnson, G.; Knox; Smith, G.

Assistant Clinical Professor: Autrey; Bechtol; McClellan; Magee, J.; Magee, M.; Overton; Sneed

The Department of Family Medicine is primarily concerned with provision of training in ambulatory care which involves evaluating and managing unselected patients with unselected illnesses. Included is comprehensive medical care with particular emphasis on the family unit. Stressed is the physician's continuing responsibility for health care delivery, not limited by patient's age, sex or disease entity. Building upon a core of knowledge derived from other disciplines-drawing most heavily on internal medicine, pediatrics, obstetrics and gynecology, surgery and psychiatry-there is established a cohesive unit, combining the behavioral sciences with the biological and clinical sciences. The core of knowledge encompassed by the discipline of family medicine prepares the physician for a unique role in patient management, problem solving, counseling and coordinating total health care delivery for his patients.

The research of the department is conducted in clinical settings and is designed to develop and evaluate more effective methods of health care delivery. The department's laboratories include ambulatory care

centers, physician's offices, emergency rooms, nursing homes and various types of health care clinics, both urban and rural.

Required Courses

MFP 50101-Emergency Medical Care. Techniques of emergency care are taught in the freshman year with a multi-disciplinary approach using appropriate teaching personnel from various departments of the medical school as well as experienced teachers from the community. Methods used are didactic lecture, audio visual demonstrations, simulated procedures, and, when possible, emergency room observation.

MFP 70601-Family Medicine Clerkship. Required during the third year. Core clerkship emphasizing the breadth of family medicine as it includes appropriate utilization of skills in internal medicine, surgery, obstetrics and gynecology, pediatrics and psychiatry. Family-oriented health care, both in the office and hospital, is combined with seminars concerned with clinical skills, family dynamics and social-cultural relationships. The team approach to health care is emphasized along with community medicine and behavioral science.

MFP 70602/80602-Family Practice Preceptorship. Required during the third/fourth year; is not scheduled prior to completion of required clerkships in family medicine, internal medicine and pediatrics. Students are assigned to a variety of practices within the Regional Academic Health Center areas (urban or rural) for a supervised exposure to day-to-day practice problems. Emphasis is on the application of clinical skills within the demands and limits of actual practice. This preceptorship is for a period of four weeks.

INTERNAL MEDICINE

Professor A. W. Holmes, Jr., M.D., Chairman

Professors: Bartholomew, Myers, Stanbaugh

Associate Professors: Allison, Beceiro, Cooper, Ekery, Grooms, Higgins, Lawrence, Mills, Nichols, Nicklaus, Polly, Secrest, Shields, Wimer

Assistant Professors: Abedin, Aung, Diesterhaft, Farley, Gilson, Justice, Komanicky, Lam, Lee, Lutherer, Menendez, Pierce, Pruitt, Raymond, Reed, Sanger, Uddin, Urban, Voda

Instructors: Osborn, Romero

The prime objective of the Department of Internal Medicine is to develop in students the intellectual and physical mechanisms for the careful evaluation of the patient and the use of fundamental principles of the basic sciences in the rational study of the patient and his or her disease. This major aim translates into a series of instructional objectives which include:

1. teaching of the careful elicitation of a history,
2. teaching of a thorough and orderly physical examination,
3. teaching of techniques of clinical problem solving through
   a. didactic discussions of disease processes emphasizing fundamental mechanisms and natural history of the disease,
   b. bedside discussion of patients and their problems and the means by which to help solve those problems.

Clinical teaching occurs in both inpatient and outpatient settings. Student activities are directed by salaried and volunteer members of the faculty and the activities of students are integrated as part of the patient care team. Organized didactic sessions are programmed as necessary to ensure that a given body of knowledge is transmitted.

Required Courses

MIM 60433-Introduction to Medicine. Through a combination of didactic presentations and preceptorial clinical sessions, the student will be introduced to the techniques utilized in obtaining a history, performing a physical examination, and organizing a medical record.

MIM 71817-Basic Clerkship: Internal Medicine. This twelve-week course serves as an introduction to the broad field of internal medicine. Students will be expected to develop the ability to study a patient in an organized way, utilizing historical and physical data to generate logical diagnostic possibilities, which can then be tested by appropriate tests or procedures. While it is desirable for the student to learn some principles of therapy, emphasis is placed upon rational and accurate diagnosis.

A.W. Holmes, Jr., M.D.

38 MEDICAL AND SURGICAL NEUROLOGY

Associate Professor Paul G. Meyer, M.D., Chairman

Associate Professors:
Hutton, Katnik, Leo

Assistant Professors:
Bingham, Roman-Campos, Strahlendorf

Clinical Professors:
Dunn, Gordon, Wolcott

Associate Clinical Professors:
Evans, Garland, McCallum, Morgan (Lubbock); Heitzman, Maccario, Nelson, O'Neal, White, Zolfoghary, (El Paso); Finney, Price (Amarillo)

Assistant Clinical Professors:
Chuang, Sedler (Lubbock); Gunby, Kauffman, Noriega-Sanchez (El Paso); Rimmer, Ryan (Amarillo)

Clinical Instructors:
Lee, Piskun (El Paso)

Consulting Professor: Poser

Medical and Surgical Neurology encompasses the area of neurology and neurosurgery as well as subspecialties in neuroradiology and neuro-ophthalmology.

The department conducts a six-week correlative course for freshman medical students in cooperation with the departments of anatomy and physiology. Faculty members also participate in the sophomore level physical diagnosis coursework and the Junior Medical and Surgical Clerkship.

Elective clerkships are offered in the junior and senior years with members of the faculty at all academic health centers and with clinical faculty in their private practices.

The Tarbox Clinic for Parkinson's Disease in Lubbock is a primary interest of the department.

Required Course

MID 50801-Integrated Neuroscience. A detailed study of the nervous system with an examination of both gross and fine structure and function from the subcellular through the behavioral levels.

Paul G. Meyer, M.D.

MICROBIOLOGY

Professor David J. Hentges, Ph.D., Chairman

Professors:
Lefkowitz, McKenna

Associate Professors:
Fralick, Joys, Straus

Assistant Professors:
Diedrich, Gooch, Rolfe

Visiting Assistant Professor: Chaffin

Adjunct Assistant Professor:
Hayes

The Department of Microbiology in the School of Medicine offers programs in microbiology for (1) professional undergraduate students in the medical curriculum and related health sciences; (2) graduate students majoring in microbiology; (3) other students requiring instruction in microbiology.

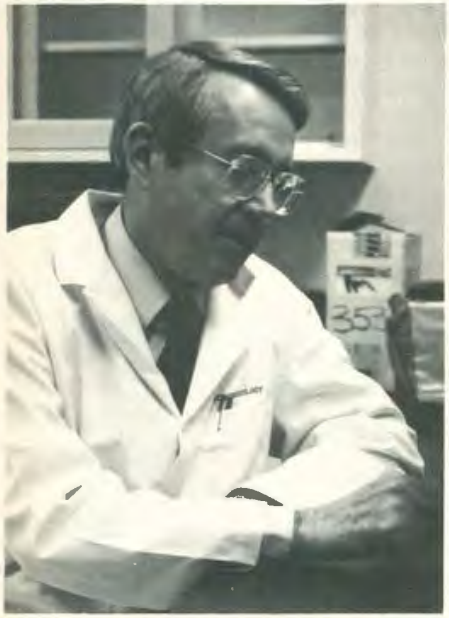
Medical School Program: The Department of Microbiology offers a required comprehensive course in medical microbiology for second year medical students. The course is divided into lecture, laboratory demonstrations, and clinical correlation conferences. The lectures provide information on the role of microorganisms in the production of disease. The clinical correlation conferences, given by members of the various clinical departments in the school of medicine, afford students an opportunity to inquire into the relevance of microbiology in the practice of medicine. The laboratory demonstrations provide experience in establishing diagnosis of disease by standard laboratory diagnostic methods.

The interplay of the parasite (bacterial, mycotic and viral) and the host in the development and subsequent outcome of infectious diseases is the central theme of this

course. A study of immunomechanisms and disorders of the immune system is integrated into the course.

Required Course

MMB 60631-Medical Microbiology. A study of the role and place of bacteria, fungi and viruses in human infectious disease processes, stressing the interplay of the host and parasite relationships. Heavy emphasis will be placed on the biochemical, biological and medical aspects of immune mechanisms and disease processes together with a study of immune deficiencies and diseases of the immunologic system.



David J. Hentges, Ph.D.

OBSTETRICS AND GYNECOLOGY

Professor Wayne Heine, M.D., Chairman

Professors: Anderson, Giles (Lubbock); Reeves, Scragg (El Paso)

Associate Professors: Perry, Salazar (Amarillo); Bobitt (El Paso)

Assistant Professors: Dorsett, Lox, Word, A., Word, L. (Lubbock); Ashby, Carillo, McKii, Yamboa (Amarillo); Sullivan (El Paso)

Obstetrics and Gynecology deals with the woman as a primary care patient during her reproductive years and with those functional aberrations and diseases of the female generative tract occurring at any time during life. The course of study provides the student with a basic knowledge of the reproductive process and an understanding of the function of the female reproductive system, especially during pregnancy and childbirth. The student gains practical experience through the management of normal pregnancy, the evaluation of the status of the fetus *in utero*, the supervision of labor, the conduct of delivery and management of complications.

Gynecology instruction focuses on presenting the basic principles of gynecologic examination and the diagnosis and therapy of diseases of the female reproductive system. This includes the physiology of menstruation, fertility, infertility and fertility regulation, as well as gynecological disease, cytology oncology and pathology.

Required Course

MOB 71247-Obstetrics-Gynecology. A study of the treatment of female patients by the primary care practitioner. Obstetrics-gynecology spans the entire age range of womanhood and is extensively health-oriented with emphasis on prevention of illness and on surgical and obstetrical techniques. The quality of human life is emphasized.

Wayne Heine, M.D.

40 OPHTHALMOLOGY AND VISUAL SCIENCES

Professor James Price, M.D., Ph.D., Chairman
Professors: Buesseler, Holly, Tyner
Associate Professors: Hong, Lamberts, Shihab, Young
Assistant Professor: Halpern (El Paso)

The educational objective in the lecture series is to provide each medical student with a core knowledge that is necessary to physicians who will practice in a wide range of medical disciplines. Seven problem areas, used to structure the series, and enhancement areas are included. The seven problem areas are: visual acuity, ophthalmoscopy, glaucoma, red eye, injuries, amblyopia/strabismus and neuro-ophthalmology. An extensive audio-visual program is available as a required part of the student's work.

Clinical instruction on ocular examination is given during the physical diagnosis rotation.

Freshman and upper class clinical electives are available for the student. A combination of audio-visual material, selected reading material, and patient care experience is used for teaching during these elective rotations. A research elective can be established, depending on appropriate studies being available and on application to the department chairman. Information about these electives can be obtained by contacting the department chairman.

A fully accredited residency program exists and accepts three residents each year at the PGY-2 level. Students interested in our program are encouraged to take elective rotations in Lubbock. We participate in the Ophthalmology Matching Program.

Required Course

MOY 50101-Introduction to Ophthalmology.

James Price, M.D., Ph.D.

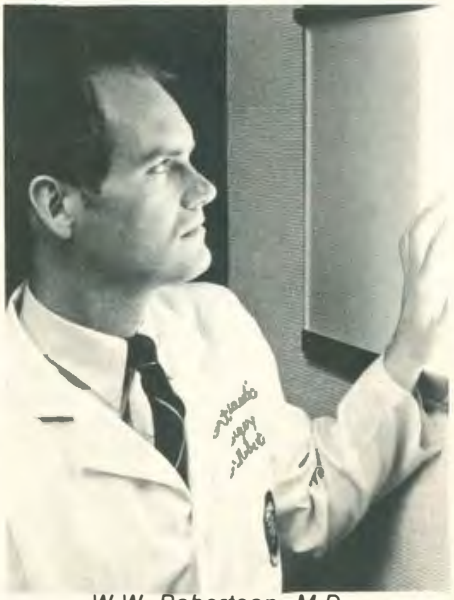
ORTHOPAEDIC SURGERY

Assistant Professor W.W. Robertson, M.D., Acting Chairman
Professor: Hartman
Associate Professor: Yost
Assistant Professor: Janssen

The primary goals of the department are to teach medical students, train physicians in the specialty of orthopaedic surgery, provide high quality medical care and further medical knowledge through clinical and basic research.

The departmental functions are divided into administration, teaching, patient services and research in pediatric orthopaedics, adult orthopaedics, traumatic orthopaedics and sports medicine. The principles of orthopaedic surgery are coordinated with the teaching of the basic sciences as applicable.

An approved residency program in Orthopaedic Surgery is conducted by the faculty members of this department.



W.W. Robertson, M.D.,

PATHOLOGY

Professor Harry F. Sproat, M.D., Chairman
Professor Elmer V. Dahl, M.D., Associate Chairman (El Paso)
Professors: Buddingh, Lockwood, Messiha*, Schultz**
Associate Professors: Larsen, MacNair, Pence, Raftery, Rector (Lubbock); Morales (El Paso)
Assistant Professors: Beach, Gunasegaram, Tran (Lubbock); Boman, Drow, Watts (El Paso)
Clinical Professor: Gordon, Jr.
Associate Clinical Professor: Hutchinson (El Paso)

Pathology, often called the bridge between the basic sciences and clinical medicine, is concerned with the study of the causes, progressive mechanisms and effects of disease. The teaching of laboratory procedures that are helpful in the above studies is correlated with the teaching of the tissue changes that occur in the organ systems in disease processes.

The programs of the department are organized into five divisions: Anatomical Pathology, Clinical Pathology, Forensic Pathology, Comparative Pathology, and Toxicology.

In addition, the pathology department is involved in inter-departmental teaching and participation whenever indicated.

Required Courses

MPA 60943 (Fall Semester)-Pathology I: General Pathology and Introduction to Clinical Pathology. A study of the major categories of general disease processes with an introduction to basic clinical laboratory procedures in which the students are required to attain a satisfactory degree of proficiency.
MPA 60101 (Fall Semester)-Introduction to Forensic Medicine. Overview of regulations governing medical licensure and practice, informed consent, malpractice, medicolegal autopsies, medical records, workmen's compensation, prescription writing, drug control, competency/sanity/commitment, doctor-patient relationships.
MPA 60110 (Spring Semester)-Parasitology; Pathobiology. A study of the protozoan, helminth and arthropod parasites of man, vectors and animal reservoirs of human disease, and venomous and poisonous animals.
MPA 60844 (Spring Semester)-Pathology II: Organ System Pathology. A study of specific disease states by organ system. Use of laboratory procedures in differential diagnosis is further demonstrated and correlated with systems being studied. During both semesters, teams of five or six students rotate on autopsy call within the Department of Pathology and at a local affiliated hospital where they observe autopsy examinations under the supervision of full-time faculty pathologists or local pathologists who are members of the clinical faculty.

*Joint appointment

Harry F. Sproat, M.D.

PEDIATRICS

Professor Edgar O. Ledbetter, M.D., Chairman
Professors: Gururaj, Holman, Sieber, South, Varma
Associate Professors: Andrew, Brown, Byrne, Habersang, Handal, Park, Sridaromont
Assistant Professors: Bourgeois, Chuachingco, Contreras, Hale, Jesurun, Kim, Kwan, Levin, Logvinoff, Naqvi, Wilson
Adjunct Assistant Professors: Marsh, Mirkovic, Wysocki
Instructor: Garcia

The course of study in the Department of Pediatrics provides each student with a closely supervised learning experience in the care of infants and children, both sick and well. Primary emphasis is placed on the practical application of basic science knowledge to the solution of clinical problems. Students observe and participate in diagnostic and patient care activities concerned with premature and term newborn infants, growth and developmental processes, immunology, infectious diseases, hematology, pulmonology, adolescent medicine, developmental disabilities, endocrinology, allergy, cardiology, psychiatry, communicable diseases and problems of a nutritional or metabolic nature. There is emphasis on preventive as well as therapeutic medicine.

Electives for senior students are available in immunology, hematology, developmental disabilities, endocrinology, cardiology, infectious diseases and general pediatrics (at Lubbock); cardiology, hematology, infectious diseases, pulmonology and general pediatrics (at El Paso); and general pediatrics (at Amarillo).

An elective course, introduction to well-baby care, is available to

freshman students at Lubbock. This provides an introduction to the care of infants as well as a broad overview of preventive pediatrics. Basic principles of physical diagnosis are taught during the sophomore year.

Required Course

MPD 71237-Pediatrics. A comprehensive overview of the physician's role in the care of the well and sick child.

Edgar O. Ledbetter, M.D.

PHARMACOLOGY

Professor Alexander D. Kenny, Ph.D., D. Sc., Chairman
Professors: Lombardini, Pang, Pirch, Potter
Associate Professors: Carroll, Tenner
Assistant Professor: Lyness

Pharmacology is the biomedical science concerned with the interactions of chemicals with living systems and their constituent parts. The emphasis in the doctor of medicine program is on the study of chemicals in their role as therapeutic agents used in the prevention, alleviation, treatment, or diagnosis of human disease, and as toxic agents producing undesirable effects. The laboratory component focuses on autonomic-cardiovascular pharmacology. Clinical relevance is stressed both in the lecture material and in a complementary series of clinical conferences.

Required Course

MPH 60712-Medical Pharmacology. A study of chemicals in their role as therapeutic agents used in the prevention, alleviation, treatment, or diagnosis of human disease, and as toxic agents producing undesirable effects.

Alexander D. Kenny, Ph.D., D.Sc.

Charles D. Barnes, Ph.D.

PHYSIOLOGY

Professor Charles D. Barnes, Ph.D., Chairman
Professors: Crass, Kopetzky
Associate Professors: Davies, Lutherer, McGrath, Nathan, Orem
Assistant Professors: Janssen, Strahlendorf, H.; Strahlendorf, J.

The Department of Physiology in the School of Medicine offers educational and research programs for students working for professional degrees in medicine and related health sciences and advanced degrees in physiology.

Required Courses

MPY 50922-Medical Physiology. A study of human physiology with major emphasis on body controlling systems and their interrelations. Pathophysiological mechanisms also are stressed.
MID 50801-Integrated Neuroscience. A detailed study of the nervous system with an examination of both gross and fine structure and function from the subcellular through behavioral levels.

PREVENTIVE MEDICINE AND COMMUNITY HEALTH

Professor Blair A. Rowley, Ph.D., Interim Chairman
Professors: Kokernot, Tyner
Associate Professors: Hayes, Way

Preventive Medicine is a specialized field of medical practice composed of: general preventive medicine, occupational medicine, public health and aerospace medicine. The goal of this department is to provide a center of excellence in: clinical preventive medicine, environmental and occupational health, health care organization and administration, epidemiology and social and behavorial sciences.

The teaching objective is to explain the principles of preventive medicine and health care delivery, particularly as they relate to primary care in general. The service objective is to demonstrate the application of these principles in clinical settings. The research objective is to develop understandings which are basic to preventive medicine and community health.

Required Course

MPM 60201-Preventive Medicine and Community Health. This course introduces the principles and methods of clinical preventive medicine and of health care delivery.

Blair A. Rowley, Ph.D.

44 PSYCHIATRY

Professor Don E. Flinn, M.D., Chairman
Professors: Messiha, Tyner
Associate Professors: Ainslie; Arredondo; Briones; Erickson; Farr, W.; Malek-Ahmadi; Munyon; Johnson; Salmon; Weddige; Yung
Assistant Professors: Aguirre; Farr, S., McMahon; O'Rear; Perez; Prokop; Schultz
Instructor: McGovern

The psychiatry teaching program has two major objectives. The first is to prepare the student to deal with the human aspects of patient care. The patient's illness is influenced by a variety of psychological and social as well as biological factors, and the effective physician must understand them. Although medicine is a science, the practice of medicine is an art. Thus, one of the major goals of the course of instruction is to help the student gain a basic understanding of the factors which influence health and illness, and to be able to apply this knowledge in a skillful doctor-patient relationship.

The second major goal is to provide the student with an understanding of the field of clinical psychiatry. This includes the etiology, manifestation and treatment of emotional disorders. The primary care physician is often the first to see psychiatrically ill patients and must be able to make evaluations and provide appropriate referrals or treatment.

The instructional approach uses lectures, videotapes, patient interviewing in small groups, and participation in the care of psychiatric patients in the clinical setting. Throughout, an attempt is made to help the student integrate the biological and psychosocial knowledge necessary to an understanding of contemporary psychiatry.

Required Courses

MPS 60452-Introduction of Psychiatry. This course includes an overview of normal emotional growth and development and the psychosocial aspects of illness, as well as an introduction to clinical psychopathology. Teaching methods include lectures, videotape presentations, seminars and actual patient demonstrations. The course serves as a didactic base for the Psychiatric Interview Courses and the junior-level Psychiatric Clerkship.

MPS 60273-The Psychiatric Interview. The emphasis in this introductory course is the process of the psychiatric interview and its value as an information gathering, diagnostic, and therapeutic technique. A faculty member supervises each patient interview conducted in a small group setting. A discussion follows which focuses primarily on the conduct of the interview, the psychopathology observed and the diagnostic and therapeutic implications.

MPS 71257-Junior-Senior Clerkship. The clerkship provides a comprehensive experience in clinical psychiatry. The students are assigned to the psychiatry outpatient clinic or inpatient service and participate in the admission, evaluation, diagnosis and treatment of psychiatric patients. Case conferences, at which the student is responsible for presenting a diagnostic formulation and treatment plan for his patients, are an integral part of the clerkship. The clinical work is supplemented by a series of didactic seminars.

A wide variety of electives are available during the I, III and IV years.

Don E. Flinn, M.D.

Jay P. Sackler, M.D.

RADIOLOGY

Professor Jay P. Sackler, M.D., Chairman
Professor: Mark
Associate Professors: Blackwell, Gainer, Huddleston, Leo, Uhrig
Assistant Professors: Hirsch, Madison, Peng, Posteraro

The Department of Radiology employs such modalities as x-radiation, computed tomography, nuclear medicine and ultrasound for the diagnosis of disease.

The department is actively engaged in undergraduate and postgraduate radiological education. Radiology faculty presentations are a regular part of the courses in anatomy and pathology. A 16-hour required course is given in the second year.

A one month elective is offered to the undergraduate medical students in their clinical years after the basic clinical rotation is completed. As a prerequisite, at least one rotation must have been taken in either internal medicine or surgery. The elective student will observe and participate in all phases of departmental activity including conferences and teaching file review.

The Department of Radiology includes the following major specialty areas:

1. General diagnostic radiology: diagnosis through interpretation of x-ray images.
2. Computed tomography: cross-sectional imaging by means of x-ray scanning and computer reconstruction.
3. Neuroradiology: diagnosis of neurological disease with radiological techniques.
4. Angiography: diagnosis of cardiac and vascular abnormalities by catheterization and opacification of heart and vessels.
5. Pediatric radiology: general diagnostic radiology as it is applied to the specific and unique aspects of the care of infants and children.
6. Nuclear medicine: the medical use of radionuclides for diagnostic imaging, functional studies, laboratory procedures and treatment.
7. Diagnostic ultrasound: an imaging modality which relies on reflected, inaudible sound waves to provide diagnostic information.
8. Radiobiology and radiation physics: part of the basic scientific background for the radiologist and those professionals who are concerned with protection of the public against ionizing radiation.

Required Course

MRD 60101-Introduction to Radiology.

SURGERY

Professor Peter C. Canizaro, M.D., Chairman
Professor Walter E. Dickinson, M.D., Acting Associate Chairman (Amarillo)
Professor Edward Saltzstein, M.D., Associate Chairman (El Paso)
Associate Professor James D. Colt, M.D., Associate Chairman (Permian Basin)
Professors: Behal, Feola, Jackson (Lubbock); Savlov (Amarillo)
Associate Professors: Baker, Farquhar (Lubbock); Austerman, Peacock (El Paso)
Assistant Professors: Harnar, Stanton (Lubbock); Ray (El Paso)
Instructors: Canchola (Lubbock); Dougherty, Grate, Portillo (El Paso)
Clinical Professors: El Domeiri, Kock, Woolam (Lubbock); Hardaway, Rodriquez (El Paso)
Clinical Adjunct Professor: Eisner (El Paso)
Associate Clinical Professors: Rowley (Lubbock); Spaulding (Big Spring); Clark, Hays, Oles (Amarillo); Crossett, Thering, Wegleitner (El Paso)
Assistant Clinical Professors: Avant, Mangold (Lubbock); Rao (Big Spring); Samberson (Amarillo); Homan (El Paso)

Instruction programs are designed to acquaint the student with the clinical discipline of surgery and to introduce him to the principles and techniques used in management of surgical disease and injury.

The introduction to surgery provided in the junior clerkship reinforces an understanding of the pathophysiology of surgical disease, the techniques of arriving at judgmental decisions in management, pre- and post-operative care and emergency care. The student learns

as a participating member of the surgical team. Teaching sessions include ward rounds, a lecture series, daily reviews of patients with a faculty member and attending conferences.

Senior clerkships are provided in all surgical specialties as elective preceptoral assignments to West Texas and other surgical centers.

The graduate who demonstrates outstanding competence as a junior and senior clerk, receives the Robert J. Salem Award for Excellence in Surgery.

Divisions within the department include:

Cardiovascular and Thoracic Surgery-This division provides a series of lectures on the fundamentals of cardiovascular and thoracic disease and management during the junior clerkship and a senior elective with the clerk functioning with a preceptor learning techniques of diagnosis and surgical management of congenital and acquired disease.

Emergency Medicine-This division provides instruction in patient management in a modern emergency center to junior and senior clerks in all medical and surgical disciplines.

Oncology-This division provides a senior elective which includes experience participating in the management of the cancer patient using a multimodal, multidisciplinary approach to the treatment of the disease.

Oral Surgery-This division provides education and patient care services on call.

Otorhinolaryngology-This division provides instruction to freshmen, sophomores and juniors and a senior elective in the methodology of examination and use of otorhinolaryngological diagnostic instruments and management of disease and trauma.

Pediatric Surgery-This division provides a series of lectures to junior surgical clerks, residents and faculty on the management of surgical diseases of infants, children and adolescents and offers a senior elective.

Plastic and Reconstructive Surgery-This division presents principles of plastic and reconstructive surgery at the freshman and junior levels and offers senior elective experiences as preceptorships with faculty or at rotations, conferences and rounds of the trauma service unit.

Surgical Research Laboratories-This division facilitates basic and applied research by surgical faculty and offers research electives to senior medical students and residents. The lab assists in solving patient care problems arising on the surgical wards and seeks new and improved methods of patient management.

Trauma and Burns-This division is concerned with the physiologic and metabolic response of the body to severe injury. Offerings include a senior elective on resuscitation, evaluation, triage and initial management of injured patients, and the supportive management of severely traumatized patients during the most acute phase of care. Service includes emergency department rotations, conferences and rounds of the trauma service unit.

Urology-This division offers lectures during the freshman and junior years and a senior elective including instruction in diagnostic steps, management of common urological disorders and basic pathological and abnormal physiological changes.

Required Courses

MGS 60101-Introduction to Otorhinolaryngology. This course is a series of lectures given in conjunction with Medicine 60433 (Introduction to Medicine). The student is taught the proper techniques and instruments for examination of the ear, nose and hypopharynx. Common diseases are discussed in terms of changes noted in normal examinations.

MGS 71827-MGS 71227-General Surgery. An introduction to the pathophysiology of surgical diseases and the principles and techniques used in their diagnosis and management. Course includes participation in pre- and post-operative patient care, operating room and clinic experience as a member of a team of the surgical faculty.

Peter C. Canizaro, M.D.

RESIDENCIES AND FELLOWSHIPS

The School of Medicine of Texas Tech University Health Sciences Center (TTUHSC) is a regional medical school with clinical campuses at Amarillo, El Paso and Lubbock. A fourth Regional Academic Health Center is being developed for the Permian Basin. Emphasis is placed on primary care programs supported by appropriate specialty and subspecialty residencies and fellowships. The primary teaching hospitals are the R.E. Thomason General Hospital (El Paso), Lubbock General Hospital (Lubbock), Northwest Texas Hospital (Amarillo), and Medical Center Hospital (Odessa). There are two Dean's Committee V.A. Centers at Amarillo and Big Spring. In addition, TTUHSC has affiliations with over 40 other community facilities in West Texas. There currently are 11 approved programs at Lubbock with four free-standing residencies at Amarillo and eight at El Paso with a transitional residency. All these programs are approved by the Accreditation Council on Graduate Medical Education of the American Medical Association and the respective residency review committees. The largest program is operated by the Department of Family Medicine which has over 60 residents in training at the three centers. Lubbock's surgical residency rotates residents to Amarillo.

Approved residency programs at TTUHSC include:

Anesthesiology	(EP, L)	Pediatrics	(EP, L)
Dermatology	(L)	Preventive Medicine	(L)
Emergency Medicine	(EP)	Psychiatry	(A, EP, L)
Family Practice	(A, EP, L)	Surgery	(EP, L)
Internal Medicine	(A, EP, L)	Transitional	(EP)
Obstetrics and Gynecology	(A, EP, L)		A-Amarillo
Ophthalmology	(L)		EP-El Paso
Orthopaedic Surgery	(EP, L)		L-Lubbock

GENERAL REQUIREMENTS FOR APPOINTMENTS

All applicants are required to be graduates of a medical school accredited by the Council on Medical Education of the American Medical Association or from a medical school listed in the World Directory of Medical Schools published by the World Health Organization. Graduates of foreign medical schools must be certified by the Educational Council for Foreign Medical Graduates or have a full and unrestricted license to practice medicine in a state or territory, or complete a "Fifth Pathway" in accordance with the requirements as outlined by the Liaison Committee on Graduate Medical Education of the AMA. (See Directory of Residency Training Programs, American Medical Association, Chicago, IL (1981-82). While residents are not required to hold an unrestricted medical license, they are urged to obtain one within the first two years if they intend to complete a residency program at Texas Tech University Health Sciences Center. However, housestaff who do not hold such a Texas License must apply for an Institutional Permit and register annually with the Texas State Board of Medical Examiners. This may be done through the Office of Graduate Medical Education at the time of beginning service and thereafter on or before the expiration date.

APPLICATION INFORMATION FOR RESIDENCIES AND FELLOWSHIPS

Applications for appointments and information requests should be directed to:

Lubbock:
Director of Residency Program
Department in which the candidate has an interest
Texas Tech University Health Sciences Center
Lubbock, TX 79430

Amarillo:
Director of Residency Program
Department in which the candidate has an interest
Texas Tech Regional Academic Health Center at Amarillo
1400 Wallace Boulevard
Amarillo, TX 79106

El Paso:
Director of Residency Program
Department in which the candidate has an interest
Texas Tech Regional Academic Health Center at El Paso
4800 Alberta Avenue
El Paso, TX 79905

or:

Office of Graduate Medical Education
Texas Tech University Health Sciences Center
Lubbock, TX 79430

GRADUATE PROGRAMS

GENERAL INFORMATION

Development of a strong program of graduate education in the basic medical and related health sciences is one of the responsibilities and goals of the Texas Tech University Health Sciences Center. This decision is based on the realization that present day medicine is dependent upon the academic framework and intellectual discipline of the chemical, biological, behavioral and medical sciences.

Graduate programs leading to the Master of Science and Doctor of Philosophy degrees are offered in the basic medical sciences: Anatomy, Medical Biochemistry, Medical Microbiology, Pharmacology and Physiology.

Interdisciplinary M.S. and Ph.D. programs with concentration in Biomedical Engineering are offered through the cooperation of the HSC Department of Biomedical Engineering and the College of Engineering at Texas Tech University. Individual departmental descriptions can be found within this bulletin.

The master of science and doctor of philosophy degrees will be conferred in recognition of the soundness of scholarship in the specific field of knowledge. Evidence of such attainment will be provided through comprehensive written and oral examinations and through the presentation of an acceptable thesis or dissertation based upon independent research.

The basic admission requirements include a bachelor's degree or the equivalent from an accredited college or university. An average of B and a score of 1100 on the combined verbal and quantitative portions on the Graduate Record Exam is highly desirable.

Instructions and materials for making application for admission to any of the programs at Texas Tech University Health Sciences Center are available from:

Director of Graduate Studies
Texas Tech University
Health Sciences Center
Lubbock, TX 79430

The Texas Tech University Health Sciences Center reserves the right to cancel any scheduled course, as well as to withdraw any program from the list of graduate offerings, if the best interests of the institution require such action.

ANATOMY

Professor Harry M. Weitlauf, M.D., Chairman
Professors: Berlin, Cavazos*, Markwald, Seliger*
Associate Professors: Coates, Dalley, Hutson, Yee
*Assistant Professor: Lox**

Majors and Minors for the Master's Degree and the Doctor's Degree in Anatomy

The Department of Anatomy offers programs leading to the Master of Science and Doctor of Philosophy degrees in the anatomical sciences. The objective of this graduate training is to prepare superior students for careers in teaching and research in the field of anatomy. The major areas of employment for anatomists are in medical and paramedical professional schools and research institutes.

The Department of Anatomy offers a program emphasizing well-rounded training in gross anatomy, microscopic anatomy, developmental anatomy and neuroscience.

Specialized training is offered in areas such as cell biology, developmental biology and reproductive biology. Every effort is made to use the most modern concepts of teaching, stressing the relationships between structure and function.

Most graduate courses offered by the Department of Anatomy build on the knowledge a student has obtained by taking ANM 5610, 5611 and 5712. Thus, for each course indicated by an asterisk* below, the prerequisite is one or more of the above three courses or equivalent. Students wishing to register for any anatomy courses must have written permission from the chairman or director of graduate studies.

*Joint Appointment

Graduate Courses

***ANM 5113, *5213**-Selected Topics in Anatomy. Material may vary from semester to semester. May be repeated for credit if different topics are covered for each registration.

ANM 5122-The Fine Structure of the Nervous System. A seminar course covering major topics of the ultrastructural organization of the central and peripheral nervous system, including neurons and their processes, glia and synapses.

***ANM 5301**-Clinical Applications of Electron Microscopy. Specimen preparation; theory and use of the electron microscope for clinical medicine, including specimen analysis and diagnosis of disease.

***ANM 5303**-Advanced Anatomical Studies. Advanced studies in surgical anatomy, gross anatomy, histology, embryology, neuroscience, or cell biology.

***ANM 5305**-Medical Cell Biology. An interdepartmental course for graduate students in the biomedical sciences. Emphasis is on the medical aspects of cell structure and function, including analysis of recent concepts and current literature. Techniques and methods of cell biology will also be examined in the laboratory.

***ANM 5306**-Biodynamics of Bone. Study of the morphology and cell biology of bone and bone changes.

***ANM 5307**-Surgical Anatomy. A study of the anatomy of the landmarks, approaches, and problems of the surgeon as related to the head and neck, musculoskeletal system, abdomino-pelvic cavity, and thoracic cavity.

***ANM 5309**-Biology of Reproduction. The various aspects of biological reproduction with an emphasis on human problems. The reproductive process will be taught from union of the gametes to the delivered fetus. Morphology will be stressed.

***ANM 5312**-Analysis of Development. A comprehensive study of the mechanisms involved during embryogenesis including differentiation, cell motility, epithelial-mesenchymal interactions, etc. Relevant literature is reviewed through faculty and student presentations. A laboratory provides practical experience in identifying embryonic structures and utilization of current methods for studying development.

***ANM 5313** Selected Topics in Anatomy. Material may vary from semester to semester. May be repeated for credit if different topics are covered for each registration.

***ANM 5317**-Neuroendocrinology. Lectures and discussions on selected topics of current interest concerning the regulatory mechanisms and interrelationships of the neural and endocrine systems. The role of the hypothalamus as it relates to and controls the other endocrine organs will be stressed.

***ANM 5318**-Structure and Function of the Nervous System. A detailed study of the neural system with an examination of both gross and fine structure, as well as cell biology of both the peripheral and central portions of the nervous system.

***ANM 5321**-Advanced Gross Anatomy. An in-depth gross anatomical study devoted to one of the following areas of emphasis: topographical anatomy, head and neck, thorax and abdomen, pelvis and perineum, extremities and back, depending upon the student's needs. The course may be repeated for credit if another area of emphasis is selected.

ANM 5330-Advanced Anatomy for Sports Medicine. Gross anatomy designed for sports medicine with emphasis on body parts most susceptible to athletic injuries.

ANM 5333-Microanatomy of Human Tissues and Organs. A detailed course in microscopic anatomy designed primarily for the non-anatomy graduate student, advanced undergraduate student in biological sciences, and the allied health student who desires additional training in microscopic anatomy.

***ANM 5410**-Introduction to Research Methods in Anatomy. Introduction to research methods available within the department. Practical experience in microscopy (light and electron microscopy) and tissue preparation is gained through student projects. A journal club stresses analysis of experimental technique and design.

***ANM 5501**-Histochemistry and Cytochemistry. An introductory course emphasizing light and ultracytochemical methods (substrate film, digestion, extraction, blocking and enzyme marking)

for elucidating the chemical composition of cell structure. The chemical basis of staining results related to topics in cell biology, including mitochondrial structure and function, active transport and secretory mechanisms, membrane flow and differentiation, and the physiological importance of the cell coat.

ANM 5610- Cell Biology, Histology and Embryology. Human microanatomy and embryology. An integrated course of anatomy starting with the ultrastructural and light microscopic study of cells and through developmental and microscopic anatomy. This course must be taken in conjunction with ANM 5611.

ANM 5611-Gross Anatomy. A highly integrated introductory course of anatomical study (including human prosection) which embodies the gross morphology of the body and coordinates it with the clinical, developmental, and microscopic aspects of the human body. This course must be taken in conjunction with ANM 5610.

***ANM 5613**-Advanced Histology. An in-depth study of ultrastructural, cell biological and histopathologic aspects of tissues and organs. In addition to traditional areas, attention is focused on connective tissue macromolecules, ossification, nerve intracellular transport and the structural function correlates of the endocrine, renal and reproductive systems.

***ANM 5712**-Correlative Neuroanatomy. A detailed course of neuroscience, passing from the study of ultrastructural cytology, through the light microscopic, gross and neuroanatomical aspects of the nervous system. Strong emphasis on the functional and clinical aspects of neuroscience.

HSC 5810-Integrated Neuroscience. A detailed study of the nervous system with an examination of both gross and fine structure and function from the subcellular through the behavioral levels.

ANM 6000-Master's Thesis. Enrollment required at least twice.

ANM 7000-Anatomical Research.

ANM 7101-Anatomy Seminar.

ANM 8000-Doctor's Dissertation. Enrollment required at least four times.

BIOCHEMISTRY

Professor Kenneth L. Barker, Ph.D.
Chairman
Professors: Everse, Holly, Morrow, Shetlar
Associate Professors: Garner, Little, Perez, Sridhara, Stocco
Assistant Professor: Whelly

This department offers study in the following graduate degree programs: medical biochemistry, master of science and doctor of philosophy.

The programs are designed to prepare students for research and teaching careers in biochemistry as related to the medical and life sciences.

Areas of active research in the department include biochemistry of hormone action, therapeutic applications of immobilized enzymes, developmental biochemistry, biochemical mechanisms in tissue regression, mitochondrial biogenesis, molecular biology and somatic cell genetics.

BCH 5921 is open only to students requiring this course as part of a regular graduate degree program, and enrollment requires permission of both the department chairman and the associate dean for graduate studies. Other courses may be taken by all graduate students who have the proper prerequisites and permission of the instructor. The department should be consulted for current offerings.

Information covering specific requirements for degree programs is contained in the departmental Graduate Student Handbook.

Inquiries about the graduate program in Biochemistry should be sent to:

Coordinator of Graduate Studies
Department of Biochemistry
Texas Tech University
Health Sciences Center
Lubbock, Texas 79430

Graduate Courses

BCH 5921-Biochemistry. Prerequisite: CHEM 335, 336 or equivalent. Human life processes at the molecular level with emphasis on biochemical homeostasis and control mechanisms.

BCH 6101-Biochemistry Conference. Informal conferences between faculty and students considering topics of current interest in biochemistry not normally included in other courses. Topics such as ethics in science, writing scientific papers, preparation of research grant applications, career development, etc., will be emphasized.

BCH 6121—History of Biochemistry. Highlights in the advancement of biochemical knowledge will be discussed.

BCH 6127—Seminar in Cell Biology. Prerequisite: permission of instructor. May be repeated. Presentation of current research topics in the genetics and molecular biology of eukaryotic cells, and related areas: oncogenesis, differentiation, aging.

BCH 6135, 6235, 6335, 6535-Topics in Biochemistry. Prerequisite: consent of instructor. Lectures in specific areas of biochemistry not included in other courses. Topics such as biochemistry of cancer, membrane structure and function, inborn errors of metabolism, biochemistry of cellular organelles, immunochemistry, neurochemistry, and physical properties of biochemical systems will be covered. May be repeated for credit with change of content.

BCH 6320-Clinical Biochemistry. Prerequisite: BCH 5921, CHEM 433, 436, 437, or equivalent. A study of clinical chemistry with emphasis on the interpretation of clinical laboratory data and concepts of laboratory-assisted diagnosis of human disease.

BCH 6321-Biophysical Characterization of Macromolecules. Prerequisite: BCH 5921, CHEM 433, 436, 437 or equivalent and consent of instructor. A study of the major techniques used in the biochemical laboratory for the biophysical characterization of macromolecules.

BCH 6322-Biomedical Radioisotope Techniques. Prerequisite: BCH 5921, CHEM 433, 436, 437 or equivalent. Basic radioisotope techniques as used in biomedical research with special emphasis on liquid scintillation counting techniques.

BCH 6326—Advanced Human Genetics. Prerequisite: a course in genetics. Detailed consideration of population genetics, cytogenetics, molecular biology and biochemistry as related to human heredity.

***BCH 6337**-Mechanisms of Enzyme Action. Prerequisite: BCH 5921 or equivalent. A study of the principles of catalysis and their applications in enzyme-catalyzed reactions. Topics are selected specifically to meet the needs of students in medical biochemistry.

***BCH 6521**-Human Intermediary Metabolism and Its Regulation. Prerequisite: BCH 5921, CHEM 433, 436, 437 or equivalent. Consideration of normal and abnormal human intermediary metabolism with major emphasis on biosynthetic and catabolic pathways and on modulation and control.

***BCH 6522**-Molecular Biology of Eukaryotes. Prerequisite: BCH 5921 or equivalent and permission of instructor. An in-depth study of current knowledge of macromolecular biosynthesis and its control in eukaryotes.

***BCH 6523**-Regulatory Mechanisms in Biochemistry. Prerequisite: BCH 5921 or equivalent and permission of instructor. A study of current knowledge of molecular mechanisms for the regulation of cellular processes including both endocrine and non-endocrine mechanisms.

*Core courses offered every other year required of all biochemistry graduate students.

BCH 6000-Master's Thesis. Enrollment required at least twice.

BCH 7000-Biochemical Research.

BCH 8000-Doctor's Dissertation. Enrollment required at least four times.

BCH 9000-Postdoctoral Research. Independent study by postdoctoral fellows under the direction of the graduate faculty of the Department of Biochemistry. May be repeated for credit.

BIOMEDICAL ENGINEERING AND COMPUTER MEDICINE

Professor Blair A. Rowley, Ph.D., Chairman
Professors: Ayoub, Jarzembski, Portnoy, Ramsey
Assistant Professors: Johnson, Pierchala

Graduate studies in biomedical engineering or health computing are offered in cooperation with the Texas Tech University College of Engineering and the Graduate School. Biomedical engineering study is offered for the master's and doctor of philosophy degrees involving bioengineering (engineering methods applied to the solution of problems in the life sciences), clinical engineering (improvement of health care delivery in the clinic and hospital through the application of engineering sciences), and medical engineering (traditional engineering methods as applied to the development and manufacture of medical instruments and devices).

Health computing involves study in health sciences, information management and computer sciences leading to a master's degree. Students receive training in a core area which supports Health Computing Administration, Health Information Systems and Health Research Computing.

The courses below currently are offered by the faculty in the School of Medicine but are subject to change to meet the requirements of these dynamic, growing fields of study. An individualized program of study is developed for each student to meet his or her needs and interests. Courses are selected from current offerings and special topics in this department, various departments of Texas Tech University and the basic science departments of the medical school.

Although not listed as a formal course, the clinical internship is an important part of education and training in the clinical engineering program. Individual internship programs are tailored to the student within the Texas Tech University Health Sciences Center, local cooperating hospital, or area Veterans Administration hospitals and clinics.

Graduate Courses

BME 5101, 5201, 5301—Selected Topics in Biomedical Engineering. Material may vary from semester to semester. May be repeated for credit if different topics are covered for each registration. Typical topics are concepts of biomedical engineering, transport phenomena and living systems and engineering in health care delivery systems.

BME 5103—Biomedical Engineering Methods Laboratory for Life Science Experimentation. Prerequisite: consent of instructor. A course to introduce the biomedical engineering student to the special problems of measurement, control, reliability and accuracy in the life science laboratory.

BME 5304—Systems Analysis in Biomedicine. Using realistic yet simple physiological examples, analysis methods are developed in models and analogs, system properties of resistance and storage, step response, transfer functions, impedance, periodic signals, transient oscillations, resonance, and feedback.

BME 5306—Health Care Delivery Systems. Prerequisite: consent of instructor. Specific requirements of health care delivery systems in the physician's office, clinic, hospital, medical center, and emergency care are covered. Includes analysis of intensive care, automated data collection and analysis, data base used in diagnosis, multiphasic screening, laboratory systems, use of computers, communication, and systems concepts.

BME 5307—Biological Data Collection and Analysis. A study of the concepts of data collection and analysis. Topics to be covered include noise description and reduction; data input methods including transduction theory, signal description, conditioning and transmission; and real time method methods for recovering the desired information. Also covered will be hardware-software methods for inferring significance from the resulting data.

BME 5309—Modeling of Living Systems. An introduction to the theory and application of modeling techniques to living systems. Current methods of mathematical modeling including model formulation and solution will be discussed. Methods of testing , normalizing, and verifying mathematical models using experiments will be presented. Students will be required to complete a project using mathematical modeling to analyze a physiological system.

BME 5310-Hospital Engineering Systems. A study of the engineering systems that are required for the efficient functioning of a modern health care delivery system, including analysis of the interrelationships that exist between such systems. Included are electric power systems, mechanical systems, communication and data processing systems, patient monitoring systems, and physical plant.

BME 5400—Concepts of Biomedical Engineering. Prerequisite: consent of instructor. An introduction to the basic concepts of biomedical engineering, including bioengineering, clinical engineering and medical engineering. The following subjects are treated: research, product development, legal implications, documentation, introduction to analysis of living systems and clinical instruments in common use.

BME 6301—Bioelectric Phenomena. To introduce graduate students with backgrounds in the physical sciences and engineering to the electrical behavior of nerve and muscle using mathematical techniques to provide a quantitative basis for observed phenomena. Electrode theory, membrane structure and phenomena, propagated action potential, and electrocardiography.

BME 6302—Hospital Engineering Management. Prerequisite: BME 5310 or consent of instructor. A continuation of BME 5310 with emphasis on clinical engineering economics, cost controls, maintenance management, medical center organizational strategies, management of technical personnel and management of controls appropriate to the medical center.

BME 6307-Instrumentation for Biological Data Analysis. Prerequisite: BME 5307 or consent of instructor. A continuation of BME 5307 to include the application of microprocessor-based hardware systems to biological data processing.

BME 7000-Research. Prerequisite: admission to doctoral study and consent of instructor. May be repeated for credit.

CMB 5101, 5201, 5301—Selected Topics in Computer Medicine and Biomathematics. Material may vary from semester to semester. May be repeated for credit if different topics are covered for each registration.

CMB 5302-Intermediate Biostatistical Analysis for the Medical Sciences. Prerequisites: an introductory knowledge of calculus and statistics or consent of instructor. This course provides graduate students in health-related areas with a working knowledge of commonly used statistical techniques for analyzing biological data. Emphasis on training the student to recognize the design of the experiment, what reasonable assumptions may be made, and to perform the necessary analysis.

CMB 5303—Programming for the Medical Sciences. An introduction to medical applications of computer programming. Comparison between levels and structures of programming languages, choosing a language based on job and hardware characteristics, programming the microcomputer, and the use of packaged software in the clinical and basic sciences are covered.

CMB 7000-Research.

54 HEALTH COMMUNICATIONS

Professor Charles W. Sargent, Ph.D., Chairman

Departmental research includes the communication aspects of health care, the diffusion of health information, the role of the patient-consumer and health information programs based on knowledge-level and attitude data.

Graduate Courses

HCOM 560—Health Communications Internship. Students will perform communications functions in health agencies for eight weeks under joint supervision of the chairman of the student's advisory committee and an on-site supervisor.
HCOM 5315—Health Communications Research. Critical examination and synthesis past and ongoing research on the health communications process, focusing on mass communications research concerning health and medicine.
HCOM 5319—Seminar in Current Topics of Information Sciences. This course will vary each semester emphasizing either information science topics or other topics in the health communications area.

Charles W. Sargent, Ph.D.

MICROBIOLOGY

Professor David J. Hentges, Ph.D., Chairman
Professors: Lefkowitz, McKenna
Associate Professors: Fralick, Joys, Straus
Assistant Professors: Diedrich, Gooch, Rolfe
Visiting Assistant Professor: Chaffin
Adjunct Assistant Professor: Hayes

The faculty of the Department of Microbiology offers broadly based programs leading to master of science and doctor of philosophy degrees in medical microbiology. Major areas of research interest in the department include: viral immunology, tumor immunology, microbial genetics, infectious diseases, molecular biology, radiation microbiology and immunochemistry.

A master's degree ordinarily requires two years to complete. During the period of study, the student takes 30 hours of course work, develops a research project under the supervision of a faculty advisor, and writes a thesis based on the outcome of the research.

Students interested in obtaining a Ph.D. degree first take a preliminary examination and, after completing course work, a qualifying examination. The program of study is determined by the student's advisor and appointed advisory committee. A Ph.D. dissertation, based on the results of original research, is written and defended by the student. The department does not require proficiency in a foreign language as a condition to obtaining a doctoral degree. Completion of a master's degree is not a prerequisite for entrance into the doctoral program. Inquiries about the Graduate Program in Microbiology should be sent to:

Director of Graduate Studies
Department of Microbiology
Texas Tech University Health Sciences Center
Lubbock, Texas 79430

Graduate Courses

MIB 5181, 5281, 5381-Selected Topics in Microbiology.

MIB 6000-Master's Thesis. Enrollment required at least twice.

MIB 6321—Tumor Immunology. Prerequisite: introductory courses in microbiology, biochemistry, pathology and immunology or permission of instructor. The objectives of this course will be to collate the various immunological, biochemical and pathological parameters of tumor growth, both in animal model systems and in man. Emphasis will be placed on investigations of current concepts of tumor immunity, transplantation and auto-immunity; immunological tolerance, surveillance and enhancement; and viral induced immunosuppression and inherited immunodeficiency states.

MIB 6322—Viral Oncology. Prerequisites: introductory courses in microbiology, immunology and virology or consent of instructor. This course is designed to introduce the concept of a viral etiology of cancer. It will be developed through an examination of the effects of oncogenic viruses on intact animals as well as isolated cells in vitro. Emphasis will be placed on the immunological relationships and host response to viruses using many of the known animal models. The implications of a possible viral etiology of human cancer will be explored.

MIB 6323—Topics in Bacterial Genetics. Prerequisites: general microbiology, microbial genetics or equivalent, and consent of instructor. Lectures, demonstrations and review of literature on inheritance in bacteria and their viruses with emphasis on aspects relevant to infectious diseases.

MIB 6324—The Molecular Biology of Microorganisms. Lectures and discussions illustrating how modern techniques of genetics and biochemistry are being used to elucidate the structure and function of DNA, RNA and protein in procaryotic cells. Courses in biochemistry and microbial genetics suggested, but not required.

MIB 6325—Biology of Animal Viruses. Lectures and laboratory work illustrating viral infection and replication within the affected cell and interaction at the cellular level between virus and host.

MIB 6326—Medical Virology. A study by lectures and discussions of the pathogenesis of viral diseases of man. The course treats viral infections at the level of the metazoan organisms, with chemotherapy and/or prophylaxis where indicated.

MIB 6327—Molecular Biology of Procaryotic Membranes. Prerequisite: permission of instructor. The molecular organization of procaryotic membranes with emphasis on the correlation between structure and function of biological membranes.

MIB 6328—Radiation Biology. Prerequisite: permission of instructor. This course will deal with the effects of ionizing radiation on biological systems at the molecular, cellular, organ, and whole body level of organization. Introductory material on radiation chemistry and physics will be included.

MIB 6329—Structural Concepts in Immunology. Prerequisite: consent of instructor. A course designed to consider the chemical nature of molecules involved in the immune reaction and the relationship between their structure and function.

MIB 6330—Cellular Mechanisms of the Immune Response. Prerequisite: general immunology, pathogenic microbiology or consent of instructor. Topics will cover the broad spectrum of present day knowledge of immunobiology. Contents of the course will explore ontogeny of the immune response, characterization of lymphocyte populations, induction and regulation of immunity and genetics of the immune response.

MIB 6331—Current Concepts of Genetic Engineering. Prerequisite: consent of instructor. Study will include recently developed techniques which allow cloning of eucaryotic genes in bacteria and their influence on biological research. An understanding of the principles involved and possibilities for students planning to pursue careers in biological research.

MIB 6332-Advances in Microbiology and Immunology. Prerequisite: MIB 6631 or equivalent. An advanced discussion of medical microbiology and immunology with emphasis placed on areas in which progress is being made at a rapid rate.

MIB 6335-Mechanisms of Bacterial Pathogenicity. Prerequisites: MIB 6631 or consent of instructors. A study of the mechanisms by which bacteria produce disease in human and animal hosts.

MIB 6337-Medical Mycology. Prerequisite: two semesters of microbiology or consent of instructor. Course is concerned with medically important fungi and the mycoses caused by these organisms. Laboratory sessions will emphasize identification methods.

MIB 6347—Microbial Ecology. Prerequisite: at least an introductory course in microbiology, or permission from the instructor. The aim of this course is to provide an understanding of the place of microorganisms in nature and in human society. Bacteria, fungi, protozoa, and algae will be considered with regard to their structure, function and role in a variety of ecosystems. The influence of physical, chemical and biological factors on microorganisms and microbial contributions to the environment will be described. Among the major themes of the course are the following: interactions between microbial populations; interactions of microbial populations with plants and animals; microbial ecology of aquatic and terrestrial environments.

MIB 6631—Medical Microbiology. A study of the role and place of bacteria, fungi and viruses in human infectious disease processes, stressing the interplay of the host and parasite relationships. Heavy emphasis will be placed on the biochemical, biological, and medical aspects of immune mechanisms and disease processes together with a study of immune deficiencies and diseases of the immunologic mechanism.

MIB 7000-Research. Prerequisite: consent of instructor. May be repeated.

MIB 7101-Microbiology Seminar. May be repeated. Presentation of current research topics by faculty and students in all areas of microbiology.

MIB 7102-Literature Reviews Seminar. Review of literature on special topics either assigned by instructor and/or selected by students. May be repeated.

MIB 8000-Doctor's Dissertation. Enrollment required at least four times.

Other courses available for the programs in microbiology are listed in the Graduate School Catalog.

PHARMACOLOGY

Professor Alexander D. Kenny, Ph.D., D. Sc., Chairman
Professor J. Barry Lombardini, Ph.D. Director, Graduate Studies
Professors: Pang, Pirch, Potter
Associate Professors: Carroll, Tenner
Assistant Professor: Lyness

The Pharmacology Graduate Program offers studies leading to the master of science and doctor of philosophy degrees. A minimum of three years of study beyond the bachelor's degree is required for the Ph.D. degree, but experience indicates that it usually takes at least four years and sometimes longer. The student must maintain a B average in pharmacology courses and a B average in all other courses taken for graduate credit. During the period of study the student will complete the required graduate course work, take a preliminary examination, demonstrate a proficiency in biostatistics, take a qualifying examination, complete a Ph.D. dissertation based on original research, and take a final examination in the dissertation field. A minimum of two years of study beyond the bachelor's degree is required for the M.S. degree. During the period of study the student will complete the required course work (thirty hours minimum, including thesis research), complete an M.S. thesis based on original work, and take a final comprehensive examination in pharmacology.

The major areas of research in the Department of Pharmacology are: endocrine, autonomic, cardiovascular, renal, neurochemical, biochemical and comparative pharmacology; drug metabolism; neuropharmacology; pharmacology of the eye; and psychopharmacology. More specific areas include calcium homeostasis and regulation of vitamin D endocrine system; evolutionary aspects of osmoregulation in lower vertebrates; pharmacology of brain electrical potentials; pharmacology of cardiac receptors; pharmacology of intraocular pressure; structure-activity relationships of parathyroid hormone; hypotensive peptides; effects of drugs on behavior; animal drug self-administration model; biochemical aspects of neurotransmitter function in the brain; and taurine function and metabolism.

Inquiries about the Pharmacology Graduate Program should be sent to:

Director of Graduate Studies
Department of Pharmacology
Texas Tech University
Health Sciences Center
Lubbock, TX 79430

Phone: 806/743-2425

Graduate Courses

PHM 5101, 5201—Topics in Pharmacology. Prerequisite: consent of instructor. Specific areas of pharmacology not normally included in other courses. May be repeated for credit with change in content.

PHM 5130—Clinical Pharmacology. Prerequisite: PHM 5613. Participation in clinical rounds in a medical or surgical specialty in order to observe the therapeutic regimens being used in the treatment of specific diseases.

PHM 5132—Teaching of Pharmacology. Prerequisite: PHM 5613. Faculty-supervised teaching experience for advanced graduate students. Includes instruction in laboratories for medical and other Health Sciences Center students as well as lecturing in pharmacology courses designed for students with majors outside the department. May be repeated for pass-fail credit.

PHM 5228—Special Topics in Chemotherapy. Prerequisite: PHM 5613. Basic and current concepts concerning mechanisms of action, pharmacokinetics, and therapeutic efficacies of antimicrobial and antineoplastic agents.

PHM 5229—Comparative Pharmacology. A study of drug action in nonhuman animals with special attention given to vertebrate and invertebrate animal models in pharmacological research. Discussion of plants and animals as sources of drugs and toxins.

PHM 5233—Advanced Topics in Neuropharmacology. Prerequisite: consent of instructor. A structural in-depth study of specific topics in neuropharmacology. Topics to be studied will vary each semester. The course will consist of lectures, discussions and oral presentations of original papers by the class. May be repeated for pass-fail credit with change in contents.

PHM 5301—Topics in Pharmacology. Prerequisite: consent of instructor. Specific areas of pharmacology not normally included in other courses. May be repeated for credit with change in content.

PHM 5323—Pharmacodynamics. Prerequisite: BCH 5721, PHY 5822, PHM 5613 or equivalent. Emphasizes the sites at which and the mechanisms by which drugs produce their biological effects.

PHM 5324—Pharmacokinetics. Prerequisite: PHM 5613 or equivalent. An advanced study of the principles and factors governing the access of a drug to its site of action. Such factors include the absorption, distribution, metabolism, and excretion as well as the influences of species, age, disease, and the interaction of other drugs.

PHM 5326—Pharmacology of the Autonomic Nervous System. Prerequisite: BCH 5721, PHY 5822, PHM 5613 or equivalent. A conceptual study of drugs which alter the function of the autonomic nervous system. Emphasis will be on mechanisms by which drugs affect transmitter synthesis, release, uptake, and metabolism as well as receptor function.

PHM 5327—Neuropsychopharmacology. Prerequisite: PHM 5613. A study of current biochemical, physiological and behavioral evidence regarding mechanisms of action of the major classes of drugs which affect the central nervous system.

PHM 5330—Pharmacology in Sports Medicine. Prerequisite: consent of instructor. Study of chemical substances used in sports with the deliberate intention of altering performance. Particular emphasis will be placed on stimulants, anabolic steriods, analgesics, antl-Inflammatory agents and antianxiety agents.

PHM 5334—Environmental and Industrial Toxicology. Prerequisite: consent of instructor. A study of chemicals (food additives, pesticides, solvents, heavy metals, air pollutants) their biological effects, detection and antidotes. Emphasis will be on the effects of industrial chemicals and their hazard to man, domestic animals and other living members of the environment.

PHM 5425—Techniques in Pharmacological Research. Prerequisite: BCH 5721, PHY 5822, or equivalent. A lecture and laboratory course designed to provide an introduction to and hands-on experience with standard experimental techniques used in pharmacological research.

PHM 5613—Pharmacology. A study of pharmacology with emphasis on mechanisms of drug action, drug interactions, and therapeutics.

PHM 6000-Master's Thesis. Enrollment required at least twice.

PHM 7000-Pharmacology Research.

PHM 7101-Pharmacology Seminar.

PHM 8000-Doctor's Dissertation. Enrollment required at least four times.

PHYSIOLOGY

Professor Charles D. Barnes, Ph.D., Chairman
Professors: Crass, Kopetzky
Associate Professors: Davies, Heavner, Lutherer, McGrath, Nathan, Orem
Assistant Professors: Janssen; Stanton; Strahlendorf, H.; Strahlendorf, J.

The Department of Physiology in the health sciences center offers graduate programs leading to the master of science degree and the doctor of philosophy degree. Training in physiology is provided in the following fields of study: cardiovascular physiology, including autonomic receptors, hemodynamics, and metabolism; respiratory physiology; body fluid physiology; endocrine physiology; neurophysiology; and biophysics. Research is progressing in the department within each of these areas. The program is designed to train persons who will teach and conduct research in medical institutions. Students must have permission of the instructor to register for any of the following courses.

Graduate Courses

PHY 5304—Physiological Responses to Altered Environments. Prerequisite: college biology and chemistry or permission of instructor. The physiological changes and potential health effects associated with energy usage and development. Emphasis is on understanding mechanisms of actions, effects of extreme environmental and occupational conditions (i.e., altitude, temperature, pollution), and risk evaluation.

PHY 5305—Advanced Physiology of Exercise. Prerequisite: PE 538 or equivalent. Lecture and laboratory experience in the areas of cardiorespiratory, histochemical,

biochemical and environmental considerations.

PHY 5402—General Physiology. Prerequisite: permission of instructor. An introduction to the physiology of mammalian organ systems placing emphasis on the human. Subject matter includes cellular, cardiovascular, respiratory, renal, gastrointestinal, and endocrine physiology as well as water and electrolyte balance and neurophysiology.

PHY 5803—A study in human physiology emphasizing body-controlling systems and their interrelationships. Pathological mechanisms are stressed also.

HSC 5810—Integrated Neuroscience. A detailed study of the nervous system with an examination of both gross and fine structure and function from the subcellular through the behavioral levels.

PHY 6000-Master's Thesis. Enrollment required at least twice.

PHY 6301-Introduction to Physiological Research. Designed to teach beginning graduate students research approaches and techniques. The student registers for a maximum of three semesters (the first requiring a rotation among all faculty laboratories and the latter two assignments to single but different laboratories). Research problems and methodology are determined by the current project(s) of each laboratory. The student is expected to spend nine hours per week learning instrumentation, surgical procedures and analytical evaluation of data.

PHY 6304—Advanced Physiology. This detailed consideration of physiological systems should be taken concurrently with PHY 5803.

PHY 6305—Topics in Physiology. Each year, the department selects a topic and coordinates a Distinguished Lecturers in Physiology series. Five to eight invited speakers present seminars on specialized aspects of the selected topic. Between seminars, students examine materials in preparation for the upcoming seminar.

PHY 6311—Neurophysiology. A study of the physiology of nerve cells and their processes emphasizing excitability, conduction and synaptic transmission. The major portion of the course is devoted to the physiology of neural systems, including mechanisms of sensory and motor system function, neurobiological rhythms, integration, and the role of the central nervous system.

PHY 6312—Experimental Neuroscience. Prerequisite: consent of instructor. Students learn current techniques (e.g., anesthesia, decerebrate preparation, laminectomy, invertebrate preparation, and intracellular recording and staining) and study factors modifying drug responses.

PHY 6313—Advanced Neurophysiology. Prerequisite: PHY 5803 or consent of instructor. An in-depth study of the nervous system from the molecular to the behavioral level, emphasizing electrophysiology and reflexes.

PHY 6314—Membrane Biophysics. Prerequisite: PHY 5803, 6311, BME 6301 or consent of instructor. Current topics and techniques in the physiology of excitable membranes. Discussions cover the Hodgkin-Huxley papers and more recent theoretical approaches to excitation and conduction in nerve, skeletal muscle and cardiac muscle. Students are introduced to such biophysical techniques as the voltage clamp, membrane noise analysis, lipid bilayers and optical fluorescence.

PHY 6315—Physiology of Neuroeffector Systems. A consideration of adrenergic, cholinergic, histaminic and serotonin receptor systems and their physiological applications.

PHY 6316-Topics on the Neurophysiology of Sleep. Possible topics include the neural physiology, phenomenology, physiology and pathologies of sleep.

PHY 6317—The Synaptic Organization of the Brain. Prerequisite: PHY 6311 or equivalent. A multidisciplinary approach to structure-function relations of synapses in different portions of the mammalian brain: neurochemical and biophysical findings are combined with a study of junctional organization to facilitate the understanding of a functional pattern.

PHY 6319—The Physiology of Muscle. An in-depth study of muscle physiology, including structural, biochemical, electrical and mechanical characteristics. Consideration will be given also to control mechanisms (neural, humoral and myogenic) of skeletal, smooth and cardiac muscle.

PHY 6321—Cardiodynamics. A consideration of cardiac physiology and pathophysiology and their clinical applications.

PHY 6322—Physiological Chemistry of the Heart and Blood Vessels in Health and Disease. Readings and laboratory experiments directed toward understanding metabolic function and regulation of the heart and blood vessels in health and disease.

PHY 6331—Respiratory Physiology. Prerequisite: Medical physiology or equivalent with permission of instructor. An in-depth course concerning all aspects of respiratory physiology with the exception of the regulation of respiration. Areas covered include mechanics of respiration, gas exchange, CSF acid-base balance, blood acid-base balance, and oxygen and carbon dioxide transport. The comparative aspects of respiratory physiology are addressed also.

PHY 6332—Regulation of Respiration. An in-depth course concerning the chemical and neural regulation of respiration. Areas to be studied can include regulation of breathing during sleep, altitude acclimatization, and regulation of breathing during exercise.

PHY 6341—Renal Physiology. Lectures and discussions covering normal and pathological renal physiology. Current concepts and techniques explored from anatomical, historical, phylogenic and experimental approaches.

PHY 6351—Advanced Gastrointestinal Physiology. Readings and classical experiments related to the secretory and contractile functions of the gastrointestinal tract.

PHY 6361—Advanced Endocrinology. Various endocrinopathies are discussed in terms of recent advances in the areas of assay of endocrine gland function, control of hormone secretion, actions of hormones, mechanisms of action, and the interrelationships among hormones.

PHY 6362—Endocrinology of Pregnancy. Topics pertain to the role of endocrine glands in the support of the fetus, the maternal-fetal exchange, the development of endocrine function in the fetus, and the changes occurring at birth.

PHY 7101—Physiology Seminar. This weekly seminar series provides invited speakers from this and other departments as well as other universities and laboratories with the opportunity to present their current research in some area of physiology.

PHY 7102—Readings in Physiology. Students review literature on special topics of research. (Students may be assigned or may select these topics.) May be repeated for credit.
PHY 7300—Physiological Research. Designed as an independent study activity with some directed research in individual faculty members' laboratories. Students perform pilot studies in preparation for theses or other research that could extend logically into dissertation research.
PHY 8300—Doctor's Dissertation. Enrollment required at least four times.

PREVENTIVE MEDICINE AND COMMUNITY HEALTH

Professor Blair A. Rowley, Ph.D., Interim Chairman
Professors: Kokernot, Tyner
Associate Professors: Hayes, Way

The Department of Preventive Medicine and Community Health offers a core of courses in epidemiology and preventive medicine. These courses are open to graduate students in a variety of health, biomedical, and health and social behavior fields. Prerequisite: permission of the instructor.

Graduate Courses

PVM 632—Medical Entomology.
PVM 633—Principles of Epidemiology. The course considers the variety, behavior and distribution of both infectious and noninfectious diseases in population. It will show how an understanding of the etiology, transmission and pathogenesis of disease can lead to methods of disease prevention. Emphasis will be placed on the principles and methods of epidemiologic investigation.
PVM 634—Topics in Community Health. This course will consider various topics in epidemiology, preventive medicine and community health not normally included in other courses. May be repeated for credit with change in content.

COURSES IN HEALTH ORGANIZATION MANAGEMENT

University Professor John A. Buesseler, M.D., M.S. (Business Administration)

HOM 5308—Health Organization Management. Prerequisite: consent of instructor. Designed to provide an overview of the health care system, its managerial, social, behavorial and economic aspects from a macroscopic viewpoint.
HOM 5309—Contemporary Issues in Health Organization Management. Prerequisite: consent of instructor. Designed to analyze and evaluate selected contemporary problems, issues and trends in organized health care delivery primarily at the micro level.
HOM 7000-Individual Research in Health Organization Management. Prerequisite: consent of instructor. Directed research or investigation in which the student focuses on a problem area in health care organizations under individual supervision of the professor.

60 COURSES IN SPORTS HEALTH

Professor Charles E. Shields, M.D., Family Medicine/Internal Medicine
Associate Professor Robert P. Yost, M.D., Orthopaedic Surgery/Sports Medicine

ANM 5330—Advanced Anatomy for Sports Medicine.
HS 5310—Management of Sports Injuries and Illnesses.
PHM 5330—Pharmacology of Sports Medicine.
PHY 5305—Advanced Physiology of Exercise.

The interdisciplinary program in sports health includes coursework in health sciences center and university academic departments. For details and course descriptions, consult the *Graduate Catalog* of Texas Tech University, 1983-84.

AGUIRRE, Salvador R., Assistant Professor of Psychiatry; M.D., Autonomous University of Chihuahua, 1971.
AINSLIE, John D., Associate Professor of Psychiatry; M.D., University of California at Berkeley, 1946.
ANDERSON, Ralph J., Professor of Obstetrics & Gynecology; M.D., University of Western Ontario, 1964.
ANDREW, Leora P., Associate Professor of Pediatrics; M.D., University of Texas Medical Branch, 1950.
ARREDONDO, Rodolfo M., Associate Professor of Psychiatry; Ed. D., Texas Tech University, 1976.
ASHBY, Wendall B., Assistant Professor of Obstetrics & Gynecology; M.D., University of Texas Medical Branch at Galveston, 1974.
AUSTERMAN, Warrington, Associate Professor of Surgery; M.D., Albany Medical School, 1944.
BAGG, Raymond J., Professor of Orthopaedic Surgery; M.D., New York Medical College, 1958.
BAKER, C. Richard F., Jr., Associate Professor of Surgery; M.D., Johns Hopkins University School of Medicine, 1961.
BARKER, Kenneth L., Professor and Chairman of Biochemistry; Professor of Obstetrics & Gynecology; Ph.D., Ohio State University, 1964.
BARNES, Charles D., Professor and Chairman of Physiology; Ph.D., State University of Iowa, 1962.
BARTHOLOMEW, Bruce A., Professor of Internal Medicine; M.D., University of Michigan Medical Center, 1958.
BEACH, Diane K., Assistant Professor of Pathology; M.D., University of Texas Health Science Center at Austin, 1972.
BECEIRO, Jose R., Associate Professor of Internal Medicine; Associate Dean for Continuing Medical Education; M.D., Faculty of Medicine, University of Santiago, Spain, 1964.
BEHAL, Francis J., Professor of Surgery and Biochemistry; Ph.D., University of Texas at Austin, 1958.
BINGHAM, William F., Assistant Professor of Medical and Surgical Neurology; M.D., Jefferson Medical College of Philadelphia, 1964.
BLACKWELL, David Eric, Associate Professor of Radiology; M.D., Bowman Gray School of Medicine, 1973.
BLOOM, Patricia J., Assistant Professor of Family Medicine; M.D., University of Iowa, 1977.
BOBITT, John R., Associate Professor of Obstetrics and Gynecology; M.D., University of Illinois, 1964.
BOMAN, Darius A., Assistant Professor of Pathology; M.D. Seth G.S. Medical School and University of Bombay, 1973.
BOURGEOIS, Michael J., Assistant Professor of Pediatrics; M.D., LSU Medical Center, Shreveport, 1975.
BRAME, Jim Bob, Associate Professor of Family Medicine; M.D., Tulane University School of Medicine, 1963.
BRIONES, David F., Associate Professor of Psychiatry; M.D., University of Texas Medical Branch at Galveston, 1971.
BROWN, Craig D., Assistant Professor of Family Medicine; M.D., University of Texas Medical Branch at Galveston, 1971.
BROWN, Joseph, III, Associate Professor of Pediatrics; M.D., Emory University School of Medicine, 1961.
BUDDINGH, Fred, Professor of Pathology; D.V.M., Colorado State University, 1951; Ph.D., University of California at Davis, 1969.
BUESSELER, John A., University Professor; Professor of Ophthalmology; M.D., University of Wisconsin School of Medicine, 1944; M.S., University of Missouri, 1965.
BUZELLO, Walter, Visiting Professor of Anesthesiology; M.D., J.W. Goethe University, Frankfurt, W. Germany, 1965.
BYRNE, Basil, Associate Professor of Pediatrics; M.D., Indiana University School of Medicine, 1940.
CANIZARO, Peter C., Professor and Chairman of Surgery; M.D., University of Texas Southwestern Medical School, 1960.
CARRILLO, Arturo G., Assistant Professor of Obstetrics and Gynecology; M.D., University of Chihuahua, 1972.
CARROLL, Paul T., Associate Professor of Pharmacology; Ph.D., University of Maryland, 1973.
CAVAZOS, Lauro F., Professor of Anatomy, President of Texas Tech University Health Sciences Center; Ph.D., Iowa State University, 1954.
CEBRAT, Stanislaw, Visiting Assistant Professor of Biochemistry; Ph.D., Institute of Immunology and Experimental Therapy, Polish Academy of Sciences, Wroclaw, Poland, 1971.
CHAFFIN, W. La Jean, Visiting Assistant Professor of Microbiology; Ph.D., University of Wisconsin, 1972.
CHANDRA, Phool, Associate Professor of Anesthesiology; M.D., University of Lucknow, India, 1953.
CHUACHINGCO, Joyce C., Assistant Professor of Pediatrics; M.D., University of the Philippines, Manila, 1971.
COATES, Penelope W., Associate Professor of Anatomy; Ph.D., University of Texas Southwestern Medical School at Dallas, 1969.
COCKINGS, Eaon, Professor of Anesthesiology; M.D., University of Manchester College of Medicine, England, 1955.
CONTRERAS, Edwing A., Assistant Professor of Pediatrics; M.D., San Marcos University Medical School, Lima, Peru, 1970.
COOPER, M. Wayne, Associate Professor of Internal Medicine; M.D., University of Texas Medical Branch at Galveston, 1969.
CRASS, Maurice F., III, Professor of Physiology; Ph.D. Vanderbilt University School of Medicine, 1965.

DAHL, Elmer V., Professor of Pathology; M.D., University of Southern California, 1953.

DAL Santo, Gianfranco, Professor of Anesthesiology; M.D., University of Padova Medical School, Italy, 1950.

DALLEY, Bernell, Associate Professor Anatomy; Ph.D., University of Nebraska, 1974.

DAVIES, Donald G., Associate Professor of Physiology; Ph.D., Johns Hopkins University, 1970.

DERK, Thomas, Instructor of Anesthesiology; M.D., University of Illinois-Chicago Medical Center, 1978.

DIEDRICH, Dana L., Assistant Professor of Microbioloby; Ph.D., Pennsylvania State University, 1974.

DIESTERHAFT, Martin D., Assistant Professor of Internal Medicine and Biochemistry; Ph.D., University of Oklahoma, Norman, 1970.

DOUGHERTY, Steve H., Instructor of Surgery; M.D., University of Calif. at San Francisco-Medical Center, 1973.

DROW, Doris L., Assistant Professor of Pathology; Ph.D., University of Wisconsin, 1978.

ERICKSON, Harold M., Jr., Associate Professor of Psychiatry and Pediatrics; M.D., University of Oregon Medical School, 1964.

EVERSE, Johannes, Professor of Biochemistry; Ph.D., University of California at San Diego, 1973.

FARLEY, Patrick C., Assistant Professor of Internal Medicine; M.D., University of Illinois, 1971.

FARQUHAR, John S., Associate Professor of Surgery/ Emergency Services; M.D., Indiana University School of Medicine, 1959.

FARR, Stephen P., Assistant Professor of Psychiatry; Ph.D., University of Louisville, 1978.

FARR, Walter F., Jr., Associate Professor of Psychiatry; M.D., Medical College of Georgia, 1965.

FEOLA, Mario, Professor of Surgery; M.D., Faculty of Medicine and Surgery; University of Naples, Italy, 1950.

FLINN, Don E., Professor and Chairman of Psychiatry; M.D., Harvard Medical School, 1946.

FRALICK, Joe A., Associate Professor of Microbiology; Ph.D., University of Tennessee, 1970.

GADDIS, William, Assistant Professor of Family Medicine; M.D., Baylor College of Medicine, 1942.

GAINER, Barbara J., Associate Professor of Radiology; M.D., University of Texas Southwestern Medical School at Dallas.

GARCIA, Rafael R., Instructor of Pediatrics; M.D., University of California at San Francisco, 1975.

GARNER, Charles W., Associate Professor of Biochemistry; Ph.D., University of Texas at Austin, 1969.

GILES, Harlan R., Professor of Obstetrics and Gynecology; M.D., Duke University School of Medicine, 1969.

GILMER, Emily A., Assistant Professor of Health Communications; Associate Director, Health Sciences Library; M.A., University of Missouri, 1972.

GILSON, Violet, Assistant Professor of Internal Medicine; M.D., Medical College of Ohio, 1976.

GOOCH, Gary T., Assistant Professor of Microbiology; Ph.D., Brigham Young University, 1974.

GORDON, William H., Sr., Professor of Family Medicine; M.D., Medical College of Virginia, 1933.

GRATE, Isaac, Jr., Instructor of Surgery; M.D., Meharry Medical College, 1978.

GUNASEGARAM, Sue, Assistant Professor of Pathology; M.D., University of Sri Lanka, 1966.

GURURAJ, Vymutt J., Professor of Pediatrics; M.D., University of Mysore, India, Government Medical College, 1959.

HABERSANG, Rolf, Associate Professor of Pediatrics; Assistant Professor of Pharmacology; M.D., University of Basel, Switzerland, Faculty of Medicine, 1970.

HALE, Thomas W., Assistant Professor of Pediatrics and Pharmacology; Ph.D., University of Kansas, Lawrence, 1978.

HANDAL, Gilberto A., Associate Professor of Pediatrics; M.D., Faculty of Medicine, University of Santiago, Chile, 1966.

HARNAR, Timothy J., Assistant Professor of Surgery; M.D., University of New Mexico School of Medicine, 1976.

HARTMAN, J. Ted, Professor of Orthopaedic Surgery and Dean; M.D., Northwestern University School of Medicine, 1952.

HAYES, Jack, Associate Professor of Preventive Medicine and Community Health and Microbiology and Pediatrics; Ph.D., University of Texas School of Public Health, Houston, 1973.

HEAVNER, James E., Associate Professor of Anesthesiology; D.V.M., Veterinary School-University of Georgia, 1968; Ph.D., University of Washington School of Medicine, 1971.

HEINE, M. Wayne, Professor and Chairman of Obstetrics and Gynecology; M.D., Duke University School of Medicine, 1958.

HENTGES, David J., Professor and Chairman of Microbiology; Ph.D., Loyola University, Chicago, 1961.

HENTGES, Kae, Instructor of Family Medicine; Ed.S., M.S.P.H., University of Missouri, 1979.

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PIERCE, Wendell L., M.D., Associate Clinical Professor
PUNHONG, Prasert, M.D., Assistant Clinical Professor
RAETZCH, Andrew, M.D., Assistant Clinical Professor
RAMANATHAN, Chittur V., M.D., Assistant Clinical Professor
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REHM, Richard D., M.D., Associate Clinical Professor
ROE, Emmett B., M.D., Clinical Instructor
ROSEN, Albert M., M.D., Associate Clinical Professor
RUSSELL, Woolworth A., M.D., Assistant Clinical Professor
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STEWART, E. Paul, M.D., Associate Clinical Professor
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WHITE, L.A., Jr., M.D., Associate Clinical Professor
WILKINSON, Maurice G., M.D., Clinical Instructor
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INTERNAL MEDICINE

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BROWN, Tommy J., D.O., Assistant Clinical Professor
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BUSBY, Carroll L., M.D., Associate Clinical Professor
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CAVARETTA, Charles P., M.D., Associate Clinical Professor
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ORTHOPAEDIC SURGERY

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CITRON, Ralph, M.D., Associate Clinical Professor
DEAN, Thurston E., M.D., Associate Clinical Professor
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FERNANDES, Alex R.O., M.B., Assistant Clinical Professor
FONG, Don Leon, M.D., Associate Clinical Professor
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GHISELLI, Antonio, M.D., Assistant Clinical Professor
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HYDE, Robert F., M.D., Associate Clinical Professor

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JONES, William Kary, M.D., Associate Clinical Professor
KING, Barry Griffith, M.D., Associate Clinical Professor
KING, Robert R., M.D., Assistant Clinical Professor
LEONARD, Morton H., Sr., M.D., Clinical Professor
LEWIS, Royce C., Jr., M.D., Clinical Professor
LICON, Octavio, M.D., Assistant Clinical Professor
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PATEL, Suryakant J., M.D., Assistant Clinical Professor
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SCHWARZENTRAUB, Paul, D.P.M., Assistant Clinical Professor
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THEO, John P., M.D., Associate Clinical Professor
THOMAS, Edward F., M.D., Associate Clinical Professor
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WESTBROOK, Richard S., M.D., Associate Clinical Professor
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PATHOLOGY

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NANNINI, Louis, M.D., Associate Clinical Professor
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DENNEY, Robert G., M.D., Assistant Clinical Professor
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NOBLES, Millard W., M.D., Associate Clinical Professor
PORTER, Scott C., M.D., Assistant Clinical Professor
RAPP, Gary S., M.D., Associate Clinical Professor
SENYSZYN, John H., M.D., Associate Clinical Professor
SMALLEY, Robert H., M.D., Associate Clinical Professor
STEWART, Howard R., M.D., Associate Clinical Professor
TERRY, Ward M., M.D., Associate Clinical Professor
TROTTER, William P., M.D., Associate Clinical Professor
TUSTIN, James Ferguson, Jr., M.D., Assistant Clinical Professor
VOTAVA, Charles, M.D., Associate Clinical Professor
WILLIAMS, Buerk, M.D., Associate Clinical Professor
WILLIAMS, Thomas B., M.D., Assistant Clinical Professor
WORD, J. Max, M.D., Assistant Clinical Professor

SURGERY

Division of Cardiovascular Surgery

CHING, Ernesto C., M.D., Assistant Clinical Professor
JUDSON, John P., M.D., Assistant Clinical Professor
KIDD, Joe Neil, M.D., Assistant Clinical Professor
LIDDICOAT, John E., M.D., Associate Clinical Professor
PARKER, Thomas N., M.D., Associate Clinical Professor
SUCKARIEH, Joseph, M.D., Assistant Clinical Professor

Division of General Surgery

SALEM, Robert J., M.D., Clinical Professor & Chief
ALLEN, Ted Wayne, M.D., Associate Clinical Professor
BAST, Lowell E., M.D., Associate Clinical Professor
BLANCO, Victor M., M.D., Assistant Clinical Professor
BRONWELL, Alvin W., M.D., Clinical Professor
CABELLON, Silverio, Jr., M.D., Assistant Clinical Professor
CASTAGNO, Joseph, M.D., Associate Clinical Professor
CAVANAUGH, Daniel G., M.D., Associate Clinical Professor
CHAMBERS, Clint E., M.D., Assistant Clinical Professor
CLARKE, Richard B., M.D., Associate Clinical Professor
COLERIDGE, Samuel T., M.D., Assistant Clinical Professor
DICKINSON, Walter E., M.D., Associate Clinical Professor
ENGLISH, Otis Willis, M.D., Associate Clinical Professor
FRANKLIN, Richard H., M.D., Assistant Clinical Professor
GEE, Terry, D.V.M., Assistant Clinical Professor
GOLDSTON, Alton B., M.D., Associate Clinical Professor
GRIFFIN, Gerald D., M.D., Clinical Instructor
HALL, David S., M.D., Clinical Instructor
HANDS, Sebel V., M.D., Associate Clinical Professor
HANSEN, Henry A., II, M.D., Clinical Instructor
HARDAWAY, Robert M., M.D., Clinical Professor
HARRIS, Richard J., M.D., Associate Clinical Professor
HAYS, Robert J., M.D., Associate Clinical Professor
HEIMBECKER, Daniel A., M.D., Clinical Instructor
HEMPSTEAD, James E., M.D., Associate Clinical Professor
HIRSCH, Edward, M.D., Assistant Clinical Professor
HUNT, Ewell L., M.D., Associate Clinical Professor
KAPLAN, Burton H., M.D., Assistant Clinical Professor
KELLEHER, John C., Jr., M.D., Assistant Clinical Professor
LEE, Steven, M.D., Assistant Clinical Professor
LONG, John C., M.D., Associate Clinical Professor
MANGOLD, David E., M.D., Assistant Clinical Professor
MATHEWS, James E., M.D., Assistant Clinical Professor
MATOS-SERRANO, Gregorio, M.D., Associate Clinical Professor
MIRANDA, Carlos, M.D., Assistant Clinical Professor
MOORE, Donald M., M.D., Associate Clinical Professor
MOTES, Joseph L., M.D., Assistant Clinical Professor
OLES, Charles Patrick, M.D., Associate Clinical Professor
PESTER, Thomas L., M.D., Assistant Clinical Professor
RAO, Krishna, M.D., Assistant Clinical Professor
RAO, Turlapati R., M.D., Assistant Clinical Professor
RODRIQUEZ, Ariel, M.D., Clinical Professor
RUESS, Robert W., M.D., Assistant Clinical Professor
RUTLEDGE, Randolph, M.D., Clinical Professor
SAMBERSON, Randall R., M.D., Assistant Clinical Professor
SELBY, John Horace, M.D., Clinical Professor
SHROFF, Nipank N., M.D., Assistant Clinical Professor
SMITH, Roy L., M.D., Associate Clinical Professor
SMITH, William G., M.D., Assistant Clinical Professor
SPAULDING, Keith W., M.D., Associate Clinical Professor
STIRMAN, Jerry A., M.D., Clinical Professor
THAMES, Elbert A., M.D., Assistant Clinical Professor
THOMAS, W. Ralph, M.D., Associate Clinical Professor
WARSHAW, Harold, M.D., Associate Clinical Professor
WHITE, William A., M.D., Associate Clinical Professor
WIESNER, William A., M.D., Clinical Professor

WIKE, Charles C., M.D., Associate Clinical Professor
WOOLAM, Gerald L., M.D., Clinical Professor

Division of Oncology

EL DOMEIRI, Ali, M.D., Clinical Professor

Division of Oral Surgery

CURREY, Barry J., D.D.S., Clinical Instructor
DeWITT, J. Denton, D.D.S., Assistant Clinical Professor
HOMAN, William K., D.D.S., Assistant Clinical Professor
JOHNSON, Randell, D.D.S., Assistant Clinical Professor
SMITH, Ronald G., D.D.S., Assistant Clinical Professor
TATE, E. Gene, D.D.S., Assistant Clinical Professor

Division of Otorhinolaryngology

ANDREW, William F., M.D., Associate Clinical Professor
CHASE, Gaylord R., M.D., Associate Clinical Professor
HALE, William P., M.D., Associate Clinical Professor
HEALY, Maurice J., M.D., Clinical Professor
MEHDIABADI, Rustam J., M.D., Assistant Clinical Professor
NEAL, Thomas F., M.D., Assistant Clinical Professor
PATE, John W., M.D., Assistant Clinical Professor
RENAULT, Louis J., M.D., Assistant Clinical Professor
ROWLEY, Nicholas J., M.D., Assistant Clinical Professor
STORRS, Lloyd A., M.D., Clinical Professor
WEEKS, Lyle D., M.D., Assistant Clinical Professor
WEGLEITNER, Mark J., M.D., Associate Clinical Professor

Division of Plastic Surgery

GUERRA, Cesar Horacio, M.D., Assistant Clinical Professor
GUM, Ronald A., M.D., Assistant Clinical Professor
KOCH, Leonard Irving, M.D., Clinical Professor
LEWIS, Royce C., Jr., M.D., Clinical Professor
MOORE, Jeff R., M.D., Associate Clinical Professor
NORTH, Ronald J., M.D., Associate Clinical Professor
ROWLEY, Milton Martin, M.D., Associate Clinical Professor
THERING, Harlan R., M.D., Associate Clinical Professor
TUBB, Terry D., M.D., Clinical Instructor
WOLF, Roland Orville, M.D., Associate Clinical Professor

Division of Thoracic Surgery

DALTON, Martin L., Jr., M.D., Clinical Professor & Chief
BAAY, John E.W., M.D., Associate Clinical Professor
CHING, Ernesto C., M.D., Assistant Clinical Professor
CROSSETT, Egbert S., M.D., Associate Clinical Professor
GUYNES, William A., M.D., Assistant Clinical Professor
MARTIN, George William, M.D., Associate Clinical Professor
MARTINEZ, Henry E., M.D., Associate Clinical Professor
MEADOWS, Charles T., M.D., Assistant Clinical Professor
SELBY, John Horace, M.D., Clinical Professor
SUTHERLAND, Robert D., M.D., Associate Clinical Professor
THOMAS, Malcolm J., Jr., M.D., Associate Clinical Professor

Division of Urology

ANTHONY, William A., M.D., Associate Clinical Professor
AVANT, Odis L., M.D., Assistant Clinical Professor
BUFORD, Robert Lee, M.D., Clinical Instructor
CHAN, James Y., M.D., Associate Clinical Professor
COUGHLIN, John P., M.D., Assistant Clinical Professor
COWAN, James W., M.D., Assistant Clinical Professor
CURTIS, Wickliffe P., M.D., Associate Clinical Professor
DEVANNEY, Louis R., M.D., Associate Clinical Professor
DIAZ-BALL, Fernando L., M.D., Associate Clinical Professor
GARDUNO, Abel, M.D., Assistant Clinical Professor
GRISSOM, Robert T., M.D., Clinical Instructor
HEWITT, A. Lee, M.D., Associate Clinical Professor
HOUSER, Edward F., Jr., M.D., Associate Clinical Professor
KIBBEY, Richard G., M.D., Assistant Clinical Professor
KIRK, James F., M.D., Clinical Instructor
LONG, Jack C., M.D., Associate Clinical Professor
MALDONADO, Leonard M.D., Associate Clinical Professor
NASLUND, Edward G., M.D., Associate Clinical Professor
PATE, Virgil A., M.D., Assistant Clinical Professor
SAND, Vijaichand S., M.D., Assistant Clinical Professor
STALCUP, Obie L., M.D., Clinical Instructor
TABER, David Owen, M.D., Associate Clinical Professor

Division of Trauma & Emergency Medicine

JOHNSON, Arthur G., M.D., Clinical Instructor
SANNER, Patricia H., M.D., Assistant Clinical Instructor

FALL 1983 CALENDAR

MAY	
31 (Tues)	3rd Year—Early Clerkships May Begin
JULY 28-29 (Thu-Fri)	"Early Bird" Session
AUGUST	
1 (Mon)	3rd & 4th Years—Clerkships Begin
1 & 2 (Mon & Tue)	1st Year—Orientation ("Early Bird" Sessions)
	1st Year—Orientation
3(Wed)	1st Year—Classes Begin
8(Mon)	1st & 2nd Years—Registration
9(Tue)	2nd Year— Orientation
10(Wed)	2nd Year—Classes Begin
SEPTEMBER	
5 (Mon)	1st, 2nd, 3rd, 4th Year—Labor Day Holiday
NOVEMBER	
23 (Wed) Noon thru 27 Sun	1st, 2nd, 3rd, 4th Years—Thanksgiving Holidays
DECEMBER	
9 (Fri)	1st & 2nd Years—Last Day of Classes
12 thru 16 (Mon-Fri)	1st & 2nd Years—Exam Week (Terms I and III)
17 (Sat) thru January 1 (Sun)	1st, 2nd, 3rd, 4th Years—Christmas/New Years Holidays

SPRING 1984 CALENDAR

JANUARY	
2 (Mon)	1st, 2nd, 3rd, 4th Years—Classes/ Clerkships Begin
MARCH	
10-18 (Sat-Sun)	1st, 2nd, 3rd, 4th Years—Spring Holidays
MAY 4 (Fri)	1st Year—Term II Ends
7-11 (Mon-Fri)	1st Year—Exam Week (Term II)
11 (Fri)	2nd Year—Term IV Ends
14-18 (Mon-Fri)	2nd Year—Exam Week (Term IV)
JUNE	
3 (Sun)	4th Year-Graduation

TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER BULLETIN 1983-84

SCHOOL OF MEDICINE

AND BASIC SCIENCES GRADUATE PROGRAMS