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TEXAS TECH UNIVERSITY HEALTH SCIENCES CENTER
OFFICE OF THE VICE PRESIDENT
LUBBOCK, TEXAS 79430

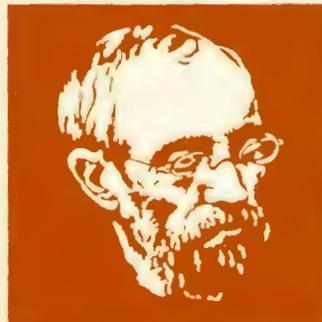


OFFICE OF THE VICE PRESIDENT
FOR THE HEALTH SCIENCES CENTERS
P. O. BOX 4569
LUBBOCK, TEXAS 79409

Texas Tech University School of Medicine

BULLETIN

1977-78



BULLETIN

TEXAS TECH UNIVERSITY SCHOOL OF MEDICINE



SEPTEMBER 1977
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This catalog is an official bulletin of Texas Tech University School of Medicine containing policies, regulations, procedures and fees in effect as the publication went to press. The School of Medicine reserves the right to make changes at any time to reflect current board policies, administrative regulations and procedures, amendments by state law and fee changes.

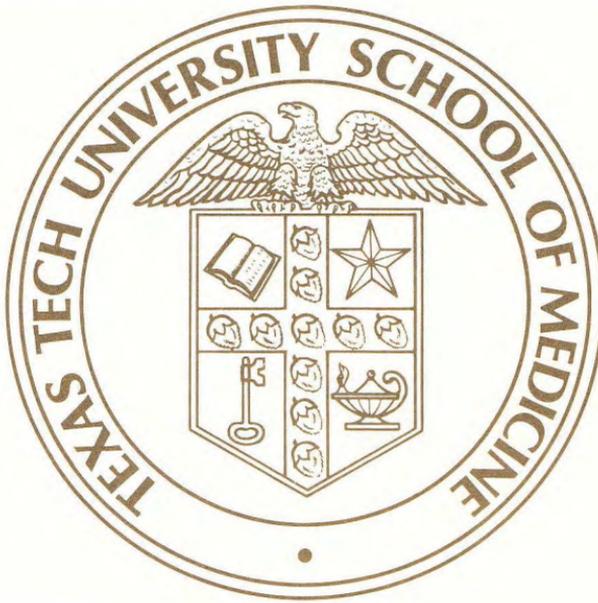
Texas Tech University School of Medicine is open to all persons regardless of race, color, religion, sex or national origin who are otherwise eligible for admission as students. The School of Medicine is an Equal Opportunity Employer and no applicant or employee will be discriminated against because of race, color, religion, sex or national origin concerning employment or during the course of employment at this institution.

Since the programs, policies, statements and/or courses contained herein are subject to continuous review and evaluation, the School of Medicine reserves the right to make changes at any time without notice. This publication is therefore intended for information only.

The Bulletin is published by Texas Tech University School of Medicine, P.O. Box 4569, Lubbock, Texas 79409.

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TABLE OF CONTENTS

Academic Calendars	6
General Information	
History	7
Objectives	8
Regional Medical Education	8
Physical Facilities—Lubbock, El Paso, Amarillo ..	8
Faculty	12
Library of the Health Sciences	12
Texas Tech University School of Medicine Foundation	12
ADMISSION	
General Requirements	13
Residency Requirements	14
Application Procedures	14
Timetable of Application and Acceptance	15
Tuition and Fees	15
Refund of Tuition and Fees	17
Financial Aid	17
STUDENT LIFE	
Organizations	18
Housing	18
Student Hospitalization Coverage	18
Student Health Service	18
The Course of Study	
Undergraduate Medical Education	20
Curriculum	20
Curriculum Revision	20
Academic Regulations	21
Tutorial Team Instruction	21
Freshman Curriculum	23
Sophomore Curriculum	23
Junior Curriculum	24
Senior Curriculum	24
DOCTOR OF MEDICINE PROGRAM (DEPARTMENTS AND COURSES)	
Anatomy	26
Anesthesiology	27
Biochemistry	28
Biomedical Engineering and Computer Medicine	29
Dermatology	30
Family Practice	30
Medicine	32

Microbiology	33
Obstetrics and Gynecology	34
Ophthalmology and Visual Sciences	35
Orthopaedic Surgery	35
Pathology	36
Pediatrics	37
Pharmacology and Therapeutics	37
Physical Medicine and Rehabilitation	38
Physiology	39
Preventive Medicine and Community Health ...	40
Psychiatry	41
Radiology	42
Surgery	43
Division of General Surgery	43
Division of Cardiovascular Surgery	44
Division of Thoracic Surgery	44
Division of Organ Transplantation	44
Division of Urology	45
Division of Oncology	45
Division of Pediatric Surgery	45
Division of Trauma and Burns	45
Division of Otorhinolaryngology	46
Division of Plastic and Reconstructive Surgery ..	46
Division of Neurological Surgery	46

POSTGRADUATE MEDICAL EDUCATION

Internship and Residency Programs	47
General Requirements for Appointment	47
Application	47

GRADUATE PROGRAMS

(DEPARTMENTS AND COURSES)

Anatomy	48
Biochemistry	50
Biomedical Engineering and Computer Medicine	52
Health Communications	54
Microbiology	56
Pharmacology	58
Physiology	59
Preventive Medicine and Community Health ...	61

Faculty

Full-Time	62
Adjunct	69
Clinical	70

ACADEMIC CALENDARS

FALL 1977

August 15 (Monday)	Orientation for First Year Students
August 16 (Tuesday)	Registration for First and Second Year Students
August 17 (Wednesday)	Orientation for First Year Students First Day of Fall Semester for First and Second Year Students
August 29 (Monday)	First Day of First Rotation for Third Year Students
September 5 (Monday)	Labor Day Holiday for First and Second Year Students
October 21 (Friday)	Last Day of First Rotation for Third Year Students
October 24 (Monday)	First Day of Second Rotation for Third Year Students
November 24 (Thursday)	Thanksgiving Holiday for All Students
November 25 (Friday)	
December 9 (Friday)	Last Day of Classes for First and Second Year Students
December 16 (Friday)	Last Day of Second Rotation for Third Year Students
December 17 (Saturday)	Last Day for Final Examinations for First and Second Year Students
December 19-23 (Mon-Fri.)	Yuletide Holiday for All Students
December 26-30 (Mon.-Fri.)	

SPRING 1978

January 2 (Monday)	First Day of Spring Semesters and Third Rotation for All Students
February 24 (Friday)	Last Day of Third Rotation for Third Year Students
February 27 (Monday)	First Day of Fourth Rotation for Third Year Students
March 20-24 (Mon-Fri)	Spring Holiday for First and Second Year Students
April 21 (Friday)	Last Day of Fourth Rotation for Third Year Students
April 24-28 (Mon-Fri)	Spring Holiday for Third Year Students
April 28 (Friday)	Last Day of Classes for First and Second Year Students
May 1 (Monday)	First Day of Fifth Rotation for Third Year Students
May 6 (Saturday)	Last Day for Final Examinations for First and Second Year Students
June 23 (Friday)	Last Day of Fifth Rotation for Third Year Students

GENERAL INFORMATION

HISTORY

Texas Tech University School of Medicine, created by the 61st Texas 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 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 is the first operational phase of the Texas Tech University Health Sciences Centers. The Health Sciences Centers concept is designed to facilitate coordination of the medical school's regional programs and development of schools of Nursing, Pharmacy, Allied Health and Veterinary Medicine. These future health professional schools 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 eleven specialties: pediatrics, orthopaedics,

dermatology, medicine, obstetrics / gynecology, surgery, ophthalmology, family practice, psychiatry, preventive medicine and community health, and physical medicine and rehabilitation.

Ground was broken in 1973 for the Health Sciences Centers Building, permanent home of the School of Medicine. The building will contain nearly 18 acres of floor space. One-third of the building was finished and dedicated in June 1977. The building and adjacent county teaching 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 37,000 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.

The School of Medicine graduated its fourth class in 1977. In addition to the doctor of medicine, the school was approved between 1973 and 1976 to offer Master of Science and Doctor of Philosophy degrees in five basic science fields and to offer residency programs in five medical specialties.

OBJECTIVES

The curriculum and educational emphasis is on providing medical students with the skills to become competent primary care physicians. There is a desperate need, in the nation as well as in Texas, for physicians who can provide comprehensive health care. Primary care encompasses the fields of general practice, family practice, general internal medicine, general pediatrics and general obstetrics-gynecology. Primary care is the provision of health services characterized by the delivery of first contact medicine, the assumption of long-term responsibility for the patient regardless of the presence or absence of disease, and the integration of the physical, psychological and social aspects of health care to the limits of the capability of the practitioner.

REGIONAL MEDICAL EDUCATION

Texas Tech University 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 University School of Medicine facilities and faculty are distributed throughout West Texas—an area encompassing approximately 135,000 square miles and 106 counties. The regional medical school concept complements the program in family practice training at TTUSM. In a large, urban medical center, primary and ambulant care may be only classroom concepts to

medical students. At TTUSM 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 a 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.

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 (RAHC) 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





Amarillo



El Paso



Lubbock

emphasized. Medical students rotate through the three centers at various stages of their medical education to benefit from a full spectrum of experiences.

Amarillo

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

A new 37,000 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 and auditorium, research and support services.

Clinical experiences are provided through affiliation with High Plains Baptist Hospital, Northwest Texas Hospital, Psychiatric Pavilion, St. Anthony's Hospital and Veterans Administration Hospital.

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 practice, with support provided by other clinical departments.

El Paso

A building for the Regional Academic Health Center at El Paso was dedicated in 1977. The facility includes academic space for clinical departments, auditorium, classroom and support space. Additional clinical departments currently housed in temporary facilities will be added in later phases of

construction.

All junior students are presently based in El Paso for training in the clinical areas of Surgery, Obstetrics and Gynecology, Psychiatry, Internal Medicine and Pediatrics. Family Practice, while not the primary thrust in El Paso, supports other clinical training programs. Some senior students and resident physicians in most clinical specialties are based in El Paso. The location of resident physician programs in El Paso is essential to the training of junior medical students in that center.

The center provides clinical experiences through affiliation with R. E. Thomason General Hospital and William Beaumont Army Medical Center.

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. Some seniors and resident physicians in Family Practice, Orthopaedic Surgery and Ophthalmology are currently located in Lubbock.

When the Health Sciences Center Hospital is open, a full spectrum of residency training programs will be developed in preparation for establishing education for juniors in Lubbock by 1980. 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, Posey Center, St. Mary of the Plains Hospital, University Hospital, West Texas Hospital and Veteran's Administration Outpatient Clinic. Additional affiliations include Central Plains Comprehensive Community Mental Health /Mental Retardation Center (Plainview) and Central Plains General Hospital (Plainview), Permian General Hospital (Andrews) and the Veterans Administration Hospital (Big Spring).

FACULTY

The full-time faculty and professional staff of the School of Medicine currently numbers 158. In addition, 525 West Texas area health care professionals and scientists have been appointed to the part-time faculty of the School of Medicine. As the School's educational programs grow and as the Regional Academic Health Centers develop, both the full-time faculty and the part-time faculty will grow with them.

LIBRARY OF THE HEALTH SCIENCES

At the core of the Health Sciences Information Center is the medical library, developed in the record time of eleven months. Current resources of the medical library total 53,000 items including books, serials, pamphlets, microfilms, microfiche, audio tapes, discs, slides, films and filmstrips. By 1978 it is expected that the number of books and serials will reach approximately 70,000. The medical library has been granted full status as a resource library in the National

Library of Medicine network and has access to NLM resources through such services as MEDLINE. Medical students also have access to the Texas Tech University Library, which contains approximately 1,360,000 items including 775,000 volumes and substantial holdings in the sciences.

TEXAS TECH UNIVERSITY MEDICAL SCHOOL FOUNDATION

The Texas Tech University Medical School Foundation was formed in August, 1970, exclusively for charitable, education 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 School of Medicine. In addition, the Foundation helps provide support for training facilities, research, and financial assistance for students.

Officers currently serving the Texas Tech University Medical School Foundation are:
James G. Morris, M.D., President
Harris Underwood, Vice President
Harry Jung, Secretary
Ken Thompson, Treasurer
S. C. Arnett, Jr., M.D., Immediate Past-President

Admission

GENERAL REQUIREMENTS

Admission to the Texas Tech University 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 School of Medicine include at least 90 credit hours of college level study in an accredited institution; however, since the traditionally high standard of medical practice requires a broad concept of human relations, maturity of judgment and a constantly increasing amount of scientific knowledge, the receipt of the baccalaureate degree is strongly recommended. The undergraduate student planning a career in medicine is advised to complete the minimum required courses prior to his senior year so that his college transcript reflects a more accurate ability in the sciences when evaluated by the Admissions Council. 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.

Required pre-medical courses are:

Courses	Semesters
General Chemistry (with lab)	2
Organic Chemistry (with lab)	2
General Biology (with lab)	2
Physics (with lab)	2

In addition, a reasonable working knowledge of conversational Spanish is recommended. Students lacking Spanish language training will be encouraged to achieve first year college Spanish proficiency prior to the required Medical Spanish course given in the second year. Calculus also is highly recommended but not required. All required pre-medical courses must be completed prior to matriculation.

The new MCAT for 1977 is required for all applicants to the 1978 entering class. The MCAT will be valid for only a two year period of time and thereafter must be retaken. It is strongly recommended that the New 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 for the upcoming class. 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.

RESIDENCY REQUIREMENTS

Texas Tech University School of Medicine follows the non-resident 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 the Texas Coordinating Board, Texas College and University System, L.B.J. Building, P.O. Box 12788, Austin, Texas 78711.

APPLICATION PROCEDURES

Texas Tech University School of Medicine is a participant in the centralized application service provided by the Association of American Medical Colleges (AAMC). Applicants need to complete one standardized application when applying to any of the medical schools participating in the American Medical College Application Service (AMCAS), and supply only one set of transcripts to AMCAS. The application will be reproduced and the transcripts standardized prior to distribution to medical schools designated by the applicant.

An individual using AMCAS must be applying for the first year of study leading to the M.D. degree. Students applying for transfer or advanced standing must request application information and material directly from the Office of the Registrar at Texas Tech University School of Medicine.

AMCAS applications may be obtained from the Association of American Medical College

Application Service, Suite 301, 1776 Massachusetts Ave., N.W., Washington, D.C. 20036, or from the Office of the Registrar at this school. The completed forms are returned directly to the AAMC by the applicant. Early application is advisable, but may not be initiated before June 15. The deadline for receipt of applications at Texas Tech University School of Medicine is October 31.

Immediately upon receipt of the AMCAS application, a supplementary packet will be sent from the Admission Office of this school requesting additional information. The packet should be completed as soon as possible and returned to the Office of the Registrar, Texas Tech University School of Medicine, P.O. Box 4569, Lubbock, Texas 79409, along with an application fee of \$10.

Applicants are carefully evaluated by the Admission Council with regard to their potential for pursuing a curriculum leading to the Doctor of Medicine degree. Academic achievement, MCAT scores and a personal interview constitute the major factors for applicant evaluation before a final decision is made. There is no discrimination because of race, creed, sex, or national origin.

TIMETABLE OF APPLICATION AND ACCEPTANCE

Filing of formal application by applicant

Earliest date: July 1

Latest date: November 1

Early Decision deadline date: August 1

Application fee: \$10 due with application

Notification of acceptance by School

Earliest date: October 1

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 on tuition): \$100, due upon acceptance

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	\$ 267.00	\$ 800.00
Building Use	100.00	100.00
University Center	20.00	20.00
Student Services	52.00	52.00
Laboratory and Course Fee	32.00	32.00
General Property Deposit	7.00	7.00
Student Health	21.00	21.00
Microscope	75.00	75.00
Liability Insurance	25.00	25.00
	<u>\$ 599.00</u>	\$ 1132.00

For further information about Admissions contact: Dr. M. H. Teague, Registrar and Director of Admissions Office, TTUSM, P.O. Box 4569, Lubbock, Texas 79409.

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 registered until his fees are paid in full.

Texas Resident	\$267.00
Nonresident	\$800.00

Laboratory Fee

Laboratory fees will vary from \$32.00 to \$49.00 per year depending upon the character of the courses.

Student Use Fee

A Student Use Fee of \$150.00 a year is required by state law to be paid by all students at the time of registration.

Student Service

Each student is required to pay a Student Services Fee of \$50.00 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 the Texas Tech University complex, including the School of Medicine. The Student Health Service Fee is \$21.00 per nine-month period.

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.

Property Deposit

Each student enrolled must make a general property deposit of \$7.00. This deposit is subject to charges for property loss, damages, breakages, or violation of rules in the library or laboratories.

Student Hospitalization Coverage

Cost of the plan to a single medical student is \$49.75 per year.

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. Estimated living costs for room and board range upward from \$115.00 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 \$18.00 per year.

REFUND OF TUITION AND FEES*

The medical student who officially withdraws from the Texas Tech University 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 date of registration for the academic year 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 School of Medicine.

Expiration of Calendar Days from the Official Date of Registration

Official Date of Registration

through 59 Calendar Days

60 through 78 Calendar Days

79 through 97 Calendar Days

98 through 116 Calendar Days

After 116 Calendar Days

Benefits for Which the Student Is Entitled

80% Tuition and Allowable Fees

60% Tuition and Allowable Fees

40% Tuition and Allowable Fees

20% Tuition and Allowable Fees

0%

*Board of Regents Minutes, TTUSM, October 17, 1975.

FINANCIAL AID

The objective of the Financial Aid staff at Texas Tech University 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 TTUSM and the amount of money available to the student from all sources. A need analysis is required of applicants for most financial aid programs.

Although qualifications for each financial aid fund might differ, and aid at TTUSM 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.

Students seeking financial aid or information about financial aid should contact: Director of Financial Aid, Texas Tech University School of Medicine, P.O. Box 4569, Lubbock, Texas 79409.

Student Life

STUDENT HOSPITALIZATION COVERAGE

ORGANIZATIONS

The student body of Texas Tech University School of Medicine currently holds memberships in the American Medical Student Association, the Student National Medical Association, the Texas Academy of Family Practice, the Organization of Student Representatives and the American Medical Women's Association. Also, medical students serve on state committees in conjunction with the Texas Medical Association—Student Business Section. In addition, the Texas Tech Medical Student Association coordinates informal programs on medically related topics and various community service projects.

HOUSING

Texas Tech University maintains 20 residence halls, which house approximately 8,000 students. Medical students are eligible for University housing if they desire it, and assignments will be made according to student preference if space is available. Students interested in University housing should contact the Texas Tech Housing Office, P.O. Box 4629, Texas Tech University, Lubbock, Texas 79409, for further information.

In addition, there are numerous off-campus apartments and housing facilities available near the campus. Students are expected to make their own arrangements concerning off-campus housing.

At the time of registration each student will complete a health insurance enrollment card 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 School of Medicine, or a similar policy providing equivalent coverage.

For additional information or specific questions concerning health insurance coverage, students should contact the Assistant Dean for Student Services.

STUDENT HEALTH SERVICE

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

The Student Health Service provides treatment through the ambulatory clinic. Physicians and health care personnel are available 24 hours a day. Treatment is confined to the clinic; student health service physicians do not make routine dormitory or house calls. Transportation for the transfer of ill students is available through the University Police Service.

Regular clinic hours are 8 a.m. to 5 p.m. Monday through Friday in the Student Health Clinic, 2nd Floor, South Wing of Thompson Hall. At other hours, services may be secured by telephoning or visiting the After Hours Clinic, 1st Floor, West Wing of Thompson Hall. A nurse is on duty and a physician on

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call at all times.

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 and 5 Monday through Friday pharmacy service is available.

Student requiring in-patient 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 a local hospital for additional treatment.

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 to give special care to students who need it and who 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.



THE COURSE OF STUDY

UNDERGRADUATE MEDICAL EDUCATION

The primary 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 secondary 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, a tertiary 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 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 secondary and tertiary care specialties.

CURRICULUM

The curriculum consists of a four year (140 week) program of study in the basic and clinical sciences leading to the Doctor of Medicine degree.

Texas Tech University School of Medicine recognizes the need for integrating both the basic and the clinical sciences. Towards this end, clinical topics are introduced in the first semester. Approximately twenty per cent of the time in the first two years is devoted to clinical courses. In addition, the basic science courses include correlation by clinicians. During the last two clinical years, basic scientists participate in clinical teaching.

In order to enable medical students to direct their own education, the curriculum includes elective courses in the first and fourth year.

Recognizing the impact of the large Spanish-speaking population in West Texas on both medical training and practice, Texas Tech University School of Medicine includes a unique course in Medical Spanish in its curriculum.

CURRICULUM REVISION

In the interest of improving medical education, the curriculum undergoes continuous review. Any part, or all of the curriculum may be changed at any time, without prior notice, by Texas Tech University School of Medicine.

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 10 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 in to three broad categories: (1) academic and personal counseling; (2) educational experiences not provided by the curriculum; (3) opportunities for social and leisure time activities.

The mentors not only function as members of the group but also serve as a student advocate as needed, assist with student academic advisement and provide a role model 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 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 control, has not been completed. It is not given in lieu of an 'F' (failing). 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 will be changed to 'F' automatically at the end of the second semester following receipt of the 'I'. Grades of 'I' received as a result of illness will be dealt with on an individual basis.

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. The weighted average for a semester is determined by dividing the total number of quality points acquired during that 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 overall weighted grade average is obtained by dividing the total number of quality points earned in all courses taken at this school by 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 '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.

Work completed at another school may be transferred 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. Transfer of credits toward the Doctor of Medicine degree is never automatic but rather shall be made at the discretion of the dean upon recommendation of the appropriate advisory faculty bodies.

Extra credit electives taken during free time periods may be recorded on the official transcript if the student is properly registered for the program. However, these extra credit electives will not be used to determine student grade averages for promotion or graduation.

In addition to meeting course

requirements and institutional grading standards, all students must pass Part I, National Board of Medical Examiners before they are promoted to junior standing and allowed to begin the junior year. All students must also pass Part II, NBME before being certified for graduation. Part I will be administered in June following completion of the sophomore year. Part II will be administered in September following completion of the junior year.

Academic advancement (promotion) of medical students from the first year to the second year, from the second year to the third year, from the third year to the fourth year, is governed by the dean, upon recommendation of the faculty promotion council, which considers all facets of a student's endeavor (evidence of academic achievement, evidence of professional development and evidence of ethical and responsible standards of conduct).

It is implicit in the requirements for the Doctor of Medicine and all other degrees conferred by Texas Tech University School of Medicine that the faculty recommends each candidate for graduation. This requirement is the final requirement for all degrees and is in addition to any and all specific degree requirements. In considering candidates for graduation, the faculty will consider not only academic achievement, but the ethical, professional and personal standards of conduct as a potential physician evidenced by each candidate.

Questions concerning academic regulations should be directed to the Associate Dean for Academic and Student Affairs.

FIRST YEAR CURRICULUM

The first year curriculum initiates the medical students' training in the basic medical sciences. In addition, the students are also introduced to clinical topics. The first year curriculum allows some freedom to choose among elective courses.

SEMESTER I

Course	Hours
Anatomy	256
Biochemistry	144
Emergency Care	16
Electives	16
Clinical Anatomy	8
Biostatistics	8
TOTAL:	448

SEMESTER II

Course	Hours
Physiology	216
Neuroanatomy	128
Clinical Biochemistry	40
Biochemical Genetics	32
Orthopaedic Surgery	16
Electives	16
TOTAL:	448

SECOND YEAR CURRICULUM

The second year curriculum includes more clinically related basic science courses as well as more clinical science courses.

SEMESTER III

Course	Hours
Pathology	160
Microbiology	112
Introductory Psychiatry	64
Physical Diagnosis	48
Preventive Medicine & Community Health	32
Parasitology	16
Forensic Medicine	16
TOTAL:	448

SEMESTER IV

Course	Hours
Pathology	160
Pharmacology	112
Physical Diagnosis	52
Medical Spanish	48
Psychiatric Interviewing	28
Dermatology	16
Ophthalmology	16
Otolaryngology	16
TOTAL:	448

THIRD YEAR CURRICULUM

The third year curriculum introduces the medical students to the major disciplines of medicine through a series of clinical clerkships.

Clerkship	Weeks
Medicine	8
Surgery	8
Psychiatry	8
Pediatrics	8
Obstetrics and Gynecology	8
TOTAL	40

FOURTH YEAR CURRICULUM

The fourth year curriculum completes the introduction to the major medical disciplines and provides an opportunity for the medical students to seek additional exposure to these and the subspecialty areas of medicine.

Clerkship	Weeks
Family Practice Clerkship	8
Family Practice Rural Preceptorship	4
Medicine	4
Electives (usually 5)	20
TOTAL	36



DOCTOR OF MEDICINE PROGRAM

ANATOMY

*Professor William G. Seliger, Ph.D.,
D.D.S., Chairperson*

Professors: Berlin, Sproat, Wolcott

*Associate Professors: Markwald,
Richards, Rylander*

*Assistant Professors: Bolender,
Casady, Dalley, Hutson, Karkos,
Yee*

The core courses of anatomy are designed specifically as the first anatomy teaching episode for the training of physicians, not for the training of professional anatomists. When unlimited time is available to teach anatomy, the traditional methods are excellent, but today new clinical materials and techniques have seriously curtailed the available time for anatomy. The obvious solution, then, is to find more efficient and effective methods of teaching anatomy and to screen out all material from the basic courses that is not needed to train the general physician.

To accomplish this, the Department of Anatomy has restructured its courses and teaching methods to fit the needs of today's physician. The faculty uses a minimum number of hours for formal lectures and emphasizes the laboratory time. The course material is trimmed down to what directly applies to the training and practice of a physician. The students are taught to find material in source books rather than to commit large amounts of material to memory. New teaching methods using audiovisual aids, notes and

microscopic demonstrations increase the efficiency of the microanatomy 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 greater depth and in a more meaningful manner despite the reduced amount of time.

Required Courses

MAN 50411—ANATOMY I m: Human microanatomy and embryology. An integrated course of Anatomy starting with the ultrastructural and light microscopic study of cells and continuing through developmental and microscopic anatomy. This course must be taken in conjunction with MAN 50811 Anatomy I g.



William G. Seliger, Ph.D., D.D.S.

MAN 50811—ANATOMY I g: 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 50411 Anatomy I m.

MAN 50812—ANATOMY II; Neuroscience—A detailed course of neuroscience, passing from the study of ultrastructural cytology, through the light of microscopic, gross and neuroanatomical aspects of the nervous system. This course includes strong emphasis on the functional and clinical aspects of neuroscience.

Undergraduate Courses for Allied Health Students

ANM 261—HUMAN ANATOMY AND PHYSIOLOGY: This course is designed to acquaint the student with the principles and substance of human biology. It is intended for students who have little or no background in the physical and biological sciences, but who require a knowledge of the structure and function of the human body as part of their education for careers in health professions. It is not intended to be a part of the sequence of general science courses; but is rather meant to orient the student toward human structure and function. It will include the structure and function of the following organs or systems: skin, musculoskeletal, cardiovascular, respiratory, renal, reproductive, endocrine, gastrointestinal, neurological, eye, ear, nose and throat of man. Emphasis is placed on presenting these materials from the standpoint of preparing allied health students to assume their roles on the health care team. This course will consist of lectures, demonstrations, prosections, the study of human prosected material and a wide variety of special human anatomical models.

ANM 212—APPLIED ENDOCRINOLOGY: A lecture and laboratory course reviewing the endocrine system and its effect on body, organ, tissue and cellular function in health and disease.

ANM 223—HUMAN BIOLOGY AND MICROSCOPIC TECHNIQUES: This lecture and laboratory course is designed to orient the student in tissue structure, development and function. Special emphasis is given to those anatomic areas where cytologic specimens may be obtained.

ANESTHESIOLOGY

*Professor Gabor B. Racz, M.B.,
Chairperson*

The Department of Anesthesiology offers a unique opportunity to the medical student to apply his basic science knowledge in the actual patient setting.

The primary goal of the department will be to teach future physicians the various forms and up-to-date methods of life support. Under close supervision the students will have opportunity to gain first hand experience in the art and science of anesthesiology. Clinical pharmacology and medicine will be observed in the sick, the old and the young that need to undergo anesthesia in order to carry out the required surgery. Electives will be offered to clinical medical students to learn to take care of the airway, respiratory and cardiovascular systems.

The department will also have input into the preclinical training in subjects where clinical expertise is called for to make the basic science information more applicable and understandable for the student. Basic and clinical research projects will be open to interested students.

Skills and information learned through the Anesthesiology Department will permit the future young physician to approach with confidence the unconscious patient, the trauma victim or a child that has an obstructed airway from croup.

Management of respiratory problems, acid-base and fluid balance, mechanical ventilation and the use of ventilators will be instructed in the operating room, intensive care unit and classroom setting.

BIOCHEMISTRY

Professor Francis J. Behal, Ph.D.,

Chairperson

Professor: Shetlar

Associate Professors: Everse,

Morrow

Assistant Professors: Garner, Haller,

Little, Pelley, Perez, Stocco

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.

Medical School Program: The Department of Biochemistry provides a required comprehensive course in medical biochemistry for first year medical students. The course is divided into lectures, laboratory-demonstrations and clinical correlation conferences. These largely clinical conferences afford students the opportunity to ask questions and to participate in discussions regarding lecture material. They establish a close relationship between the students, the faculty and the department. Finally, the clinical correlation sessions help demonstrate to the students the relevance of biochemistry in modern medicine. The laboratory-demonstrations provide foundational material for developing the concept of laboratory assisted diagnosis of disease. Recent advances in understanding disease are presented with illustrative cases from the medical literature. If the biochemical basis of the disease has been determined, the rationale for diagnosis and therapy will be examined. The Department of

Biochemistry provides a required course in clinical biochemistry to second year medical students.

These required courses are described below.

Required Courses

MBC 50821—Biochemistry I: Medical Biochemistry. A study of life processes at the molecular level with emphasis on the biochemistry of man in health and disease.

MBC 50223—Biochemistry II: Human Biochemical Genetics. A study of the chromosomal molecular basis of genetically related disease processes with emphasis on the concepts of human genetic disorders and their consequences.

MBC 50324—Biochemistry III: Clinical Biochemistry. A study of clinical biochemistry with emphasis on the interpretation of clinical laboratory data and the concepts of laboratory-assisted diagnosis of human disease.



Francis J. Behal, Ph.D.

BIOMEDICAL ENGINEERING AND COMPUTER MEDICINE

*Associate Professor Blair A. Rowley,
Ph.D., Chairperson*

Professors: Ayoub, Portnoy, Ramsey

Associate Professor: Jarzembski

*Assistant Professors: Anderson,
Cameron*

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

The department offers a special interdisciplinary masters study program, administered by the Texas Tech University Graduate School, by which a medical student may earn a masters degree while attending medical school. The department also offers senior 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 masters or Ph.D. level through the Masters 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 are available and

other areas of bioengineering, clinical engineering, and medical engineering.

Efforts are also directed towards the appropriate use of computers in the medical setting and the development of biomathematical expertise in medical research. In particular, the application of the computer technology to medically remote populations is an on-going 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,



Blair A. Rowley, Ph.D.

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.

DERMATOLOGY

Associate Professor: Barbara H. Way, M.D., Chairperson

The Department of Dermatology provides educational and research programs in Dermatology for (1) undergraduate medical students, (2) residents, (3) and other students requiring instruction in Dermatology. In addition to the required sophomore course, the department offers elective preceptorship training to senior 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.



Thomas A. Nicholas, M.D.

FAMILY PRACTICE

Professor Thomas Nicholas, M.D., Chairperson

Professors: Gordon, Wainscott

Associate Professors: Chinn, Culvahouse, Hartman, Mathewson, Mohaupt, Scott, Squyres, Saxton

Assistant Professors:

Balasurebramaniam, Fordyce, Freeman, Johnson, Patzkowsky, Yates

Assistant Clinical Professors: Autrey, Bass, Gaddis, Johnson

Instructors: Chauncey, Klover, McLeroy

The Family Practice Department has the responsibility for training medical students and their supportive personnel in the diagnosis and treatment of prevalent illnesses, recognition of rare diseases and in utilization of referral techniques for problem cases. The program demonstrates health maintenance methods

through early recognition of change from the norm, through anticipation of such change, recognition of environmental problems and through the natural history of disease.

Family Practice is a clinical department that functions, not only to teach and train primary care physicians, but to serve as a model for organizing the medical health care team. The department's research is searching for more effective methods of delivery of medical care; its laboratories are clinical settings that include emergency rooms, ambulatory care centers, nursing homes, physicians' offices and community health care clinics of various types.

The Family Practice curriculum is a blend of classroom study and active participation in the rendering of patient care in clinics. Senior students spend 12 weeks in Family Practice Clinic, including a four-week preceptorship program.

Required Courses

MFP 50101—Emergency Medical Care: Techniques of emergency care are taught in the freshman year with a multiple 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 80018—Family Practice: For senior students. Family-oriented health care, both in the office and hospital, are combined with seminars concerned with clinical skills, family dynamics and social-cultural relationships. The team approach to health care is emphasized along with community and psychological medicine. Includes a four-week preceptorship in a family practitioner's office, and four weeks in a rural clinic operated by the department.

Elective Courses

MFP 50100—Principles of Non-Urban Care: For freshman students. Non-urban care is described in didactic presentation, audio visual demonstration and provision of basic clinical experience by observation of actual care in a rural setting. Such descriptions and instruction are provided by faculty in the Departments of Family Practice, Radiology, Medicine, Preventive Medicine and Community Health, and Pediatrics.

MFP 80028—Family Practice Rural Preceptorship: Students are assigned to a variety of practices within the Regional Academic Health Center areas 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 in a rural area. This preceptorship is normally for a period of four weeks, but can be extended in certain circumstances.

MFP 50102—Emergency Medicine: Students participate in delivery of emergency medical services in an emergency room setting. The students are a part of an emergency room team which is the first contact for patients and follows the total care of the patient under the supervision of an emergency room physician especially skilled in this aspect of medical care delivery. The student has ample opportunity to become acquainted with emergency medical care in trauma, medical emergencies, surgical emergencies, pediatric and obstetrical emergencies. The student is able to follow all patients admitted to the Family Practice Service as an integral part of the team and is able to experience the responsibility of the delivery of emergency care.

MEDICINE

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

Chairperson

Professor: Bartholomew

*Associate Professors: Beceiro,
Blackwood, Ekery, Mills,
Periman, Schulze, Secrest,
Smith, Wolf*

*Assistant Professors: Paragas,
Stanbaugh, Szeyko*

The prime objective of the Department of Medicine is to develop in the 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 is carried on in an in-patient type of setting. 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 71217—Junior Clerkship: Internal Medicine: This 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.

MIM 80618—Senior Medicine Clerkship: Students will spend one month on an in-patient medical service. Their clinical responsibilities will vary commensurate with the abilities they have developed during the previous experience in medicine.



Albert W. Holmes, M.D.

MICROBIOLOGY

**Professor John M. McKenna, Ph.D.,
Chairperson**

Associate Professors: Lefkowitz, Joys

**Assistant Professors: Baskett,
Diedrich, Fralick, Gooch, Jones**

**Adjunct Assistant Professors: Hayes,
Pence**

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

Medical School Program: The Department of Microbiology offers a required comprehensive course spanning two trimesters in Medical Microbiology for second year medical students. The course is divided into lectures, laboratory-demonstrations, and clinical correlation conferences. The clinical correlative conferences, offered by members of the various clinical departments in the School of Medicine, can afford the students an opportunity to inquire into the relevance of Microbiology in modern medicine, especially in infectious diseases. The laboratory-demonstrations provide clinical material for helping to establish the diagnosis of disease by standard laboratory diagnostic methods. Wherever possible, recent advances in understanding infectious diseases are presented from the recent medical literature.

The interplay of the parasite (bacterial, mycotic, and viral) and host in the development and subsequent outcome of infectious

diseases is the central theme of this course. A study of the biochemical, biological aspects of immune mechanisms and disorders of the immune system also is integrated into the course.

The required course is described below.

Required Course

MMB 60631—Medical Microbiology: A study of the role and place of bacteria, fungi and viruses in human infectious disease processes, with emphasis on 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.



John M. McKenna, Ph.D.



Wayne Heine, M.D.

OBSTETRICS AND GYNECOLOGY

*Professor Wayne Heine, M.D.,
Chairperson*

*Professors: Misenhimer, Scragg
Assistant Professors: Bergquist,
Freeman, Varma*

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, in the conduct of delivery, as well as management of complications.

Gynecology instruction focuses on presenting the basic principles of gynecologic examination and the diagnosis and therapy of disease 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.



OPHTHALMOLOGY AND VISUAL SCIENCES

*Professor James Price, M.D., Ph.D.,
Chairperson*

Professors: Buessler, Tyner

Associate Professor: Pratt

*Assistant Professors: Halpern,
Naegele, Speros*

Our 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 are used to structure the series and enhancement lectures 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.

Electives are available. These include a clinical rotation and the possibility of a research period. Information about these electives can be obtained by contacting the department chairperson.

ORTHOPAEDIC SURGERY

*Professor J. Ted Hartman, M.D.,
Chairperson*

Associate Professor:

Ananthakrishnan

Assistant Professor: Fordyce

The primary goals of the department are to teach medical students, train physicians in the speciality 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 orthopaedic research. The principles of orthopaedic surgery are coordinated with the teaching of the basic sciences as applicable.

Required Course

MOR 50101—Introduction to Orthopaedic Surgery. This course is designed to provide the student with an introduction to orthopaedic surgery. Its correlation with the basic sciences, especially anatomy, will be emphasized. The early part of the course will provide a review and interpretation of material necessary to provide an adequate background for discussion of the clinical aspects of traumatic and reconstructive orthopaedic surgery. This course is truly an introduction to the principle of musculoskeletal diseases and trauma.



J. Ted Hartman, M.D.



Harry F. Sproat, M.D.

PATHOLOGY

*Professor Harry F. Sproat, M.D.,
Chairperson*

*Professors: Schultz, Lautsch,
Gordon, Jr.*

*Associate Professors: MacNair,
Alexander, Buddingh, Messiha*

Assistant Professor: Pence

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 four divisions: Anatomical Pathology; Clinical Pathology; Forensic Pathology; and Comparative Pathology.

In addition, the pathology

department is involved in inter-departmental teaching and participation whenever indicated.

Required Courses

MPA 60843—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 60844—Pathology II: Organ System Pathology. A study of specific disease states by organ systems. During both semesters, teams of three or four students also rotate on autopsy call at local hospitals where they observe autopsy examinations under the supervision of local pathologists who are members of the clinical staff. Use of laboratory procedures in differential diagnosis is further demonstrated and correlated with systems being studied.

MPA 60110—Parasitology: Medical Zoology. A study of the protozoan, helminth and arthropod parasites of man, vectors and animal reservoirs of human disease, and venomous and poisonous animals.

MPA 60101—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.

PEDIATRICS

*Professor Mary Ann South, M.D.,
Chairperson*

*Associate Professors: Blackburn,
Byrne*

*Assistant Professors: Handel,
Maurer, Menchaca, Park,
Parrino, Sridaromont, Varma*

The course of study in the Department of Pediatrics provides each student with an adequate, closely supervised and progressively responsible learning experience in the care of infants and children, either sick or well. To this end, primary emphasis is placed on practical application of basic science knowledge to the solution of clinical problems. Students observe and participate in diagnostic and care programs concerned with the premature and the newborn, growth and developmental processes, endocrinology, allergy, cardiology, psychiatry, communicable diseases and in the problems of a nutritional or metabolic nature. There will be emphasis on preventive as well as therapeutic medicine. Both the ambulatory and hospitalized patients, along with well-baby care, offer the student interested in family practice or in pediatrics as a specialty, the necessary broad range of experience.

Electives for senior students are available in nephrology, endocrinology, cardiology, infectious disease and general pediatrics (at Lubbock) and hematology, infectious disease, and general pediatrics (at El Paso).

An elective course is available to freshman students in introduction to well-baby care at Lubbock. This gives an introduction to the care of infants as well as a broad overview

of preventive pediatrics.

Required Course

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

Elective Course

MPD 50100—Introduction to Well-Baby Care.



Mary Ann South, M.D.

PHARMACOLOGY AND THERAPEUTICS

*Professor Alexander D. Kenny, Ph.D.,
Chairperson*

*Associate Professors: Lombardini
Pang, Pirch, Potter*

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. Clinical relevance is stressed both in the lecture material and in a complementary series of clinical conferences.

Required Course

MPH 60613—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.

environment for the students' clinical experience as well as a service to the community and the region. This clinical experience is supplemented by educational materials for independent study, conferences and seminars related to structural and functional characteristics of human organisms related to health, mobility, self care and other normal human activities. Electro-diagnostic techniques and therapeutic use of physical agents also are demonstrated. Basic and clinical research activities related to physical medicine and rehabilitation are pursued.



Alexander D. Kenny, Ph.D.

PHYSICAL MEDICINE AND REHABILITATION

*Professor Lester E. Wolcott, M.D.,
Chairperson*

Associate Professor: Richards

Assistant Professor: Heinrich

Instructor: Yairi



Lester E. Wolcott, M.D.

The Department of Physical Medicine and Rehabilitation participates in educational, service and research activities. A comprehensive restorative patient care program offers the

PHYSIOLOGY

*Professor Charles A. Barnes, Ph.D.,
Chairperson*

*Professors: Frigyesi, Kopetzky
Associate Professors: Crass, Hughes
Assistant Professors: Davies,
Holloway, Lutherer, Nathan,
Orem
Instructor: Roberts*

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

Required Course

MPY 51222—A study of human physiology with major emphasis on body controlling systems and their interrelations. Pathophysiological mechanisms also are stressed.

Elective Courses

MPY 50301—Neurophysiology—Physiology of nerve cells and their processes with emphasis on excitability, conduction, synaptic transmission. Major portion of course devoted to physiology of neuronal systems including mechanisms of sensory and motor system function, neurobiological rhythms, integration, and role of the central nervous system.

MPY 50401—General Physiology—A general course in mammalian physiology designed to teach the basic principles of physiology. The subject matter will include cellular physiology, neuro, cardiovascular, respiratory, renal, water and electrolytes, gastrointestinal and endocrine as an introduction to physiology of the organ systems, with emphasis on the human.

MPY 60330—Clinical Physiology of Respiration—Mechanical, distributive, alveolar, transport, and integrative respiratory functions as applied to human pathology.

MPY 60334—Gas Exchange and the Regulation of Respiration—An in-depth study of the regulation of respiration and gas exchange in humans and in a variety of related species. Some emphasis will be

placed on the comparative aspects of respiratory physiology. The course will consist of discussions and oral presentations of original papers by the class. A written report dealing with some aspect of respiratory physiology will be required.

MPY 60335—Membrane Biophysics—Current topics and techniques in the physiology of excitable membranes. Discussion of Hodgkin-Huxley papers and more recent theoretical approaches to excitation and conduction in nerve, skeletal muscle, and cardiac muscle. Introduction to current biophysical techniques such as the voltage clamp, membrane noise analysis, lipid bilayers, and optical fluorescence.

MPY 60401—Advanced Physiology I: Neurophysiology—An in-depth study of the nervous system from the molecular to the behavioral level, with special emphasis on electro-physiology and reflexes.

MPY 60402—Advanced Physiology II: Circulation, Respiration, and Fluid Balance—A detailed study of respiration and the composition, circulation, and excretion of body fluids, including acid-base balance.

MPY 60403—Advanced Physiology III: Gastrointestinal System, Metabolism, and Endocrines—A study of gastro-intestinal function and the endocrine regulation of metabolic pathways, utilizing the classical and contemporary literature.



Charles D. Barnes, Ph.D.

PREVENTIVE MEDICINE AND COMMUNITY HEALTH

*Professor Robert H. Kokernot,
D.V.M., M.D., Dr. P.H.,
Chairperson*

Professor: Tyner

*Associate Professors: Gruber, Way
Assistant Professor: Hayes*

The principal goal of this department is directed toward prevention and health maintenance. A new national health strategy has emerged with emphasis on disease avoidance as the best way of assuring higher levels of health and a higher quality of living. It also has become abundantly clear that disease avoidance is by far the most economical approach in terms of money, manpower and effort.

The teaching objectives of this department are to introduce principles and methods of general preventive medicine and to show their applicability to other medical specialities. The service objectives involve participation in public health and neighborhood clinics as well as other health related

community activities. Research activities are focused on health care delivery and health of the aged.

Required Course

MPM 60210—Preventive Medicine and Community Health: This course introduces principles and methods of general preventive medicine as it involves both the individual and his community.



*Robert H. Kokernot, D.V.M., M.D.,
Dr. P.H.*



PSYCHIATRY

Associate Professor Harold M. Erickson Jr., M.D., Acting Chairperson

Professor: Tyner

Associate Professors: Flemenbaum, Haidinyak, Messiha, Peddicord, Scott

Assistant Professors: Arredondo, Briones, Goggin, Weddige, Yung

The major purpose of the educational program is to provide comprehensive understanding of the field of psychiatry. The curriculum emphasizes the integration of broadly based knowledge and supervised clinical experience. The students are expected to obtain a basic understanding of the behavioral and emotional disturbances typically presented by psychiatric patients. A major theoretical tenet is that normal growth and development within the life cycle and the biological roots of psychiatry are essential features for a contemporary mastery of psychopathology.

The instructional approach uses a wide variety of innovative techniques within different clinical settings, providing both small group and individualized learning experiences together with traditional lectures to implement the objectives of the program. Cooperative teaching programs, using specialists from other departments, as well as specialists from the Texas Tech University Complex, insure a broadly based choice of elective courses for the student during his final trimester.

Required Courses

MPS 50552—Normal Growth and Development and Psychopathological Deviations: The primary emphasis of the

course is to understand the "normal" life cycle and the human deviations that are considered psychopathological. During the first half of the course, the life cycle from infancy to senescence is studied with an emphasis on the family's role in the socialization process. The second half of the course describes the development of traditional psychiatric syndromes. The students' interview skills are improved in the manner described in the introduction.

MPS 60273—The Psychiatric Interview as Process and Diagnostic Technique: The emphasis in this introductory course is the psychiatric interview, its value as information gathering and therapeutic technique. In small group settings, a faculty member supervises each student interview of a patient. A discussion follows which focuses primarily on the psychopathological implications derived.

MPS 71257—Junior Clerkship: The clerkship provides an intensive and comprehensive experience in the field of psychiatry. The students obtain a supervised clinical experience in interviewing, diagnosis and treatment of patients. The students have supervised experience in both inpatient and outpatient facilities, including adult and child psychiatry services. An integral part of the clerkship is the students presentation at a case conference of a diagnostic formulation and treatment plan for a psychiatric patient. A seminar series augments the supervised clinical experience.



Harold M. Erickson, M.D.

RADIOLOGY

Professor William A. Dunnagan,

M.D., Chairperson

Professor: Sackler

Assistant Professor: Blackwell

The Department of Radiology is involved in teaching the applications of electromagnetic spectrum energies to the understanding of biological phenomena, the detection of disease and the maintenance of health.

The diagnostic radiologist is involved in every branch of clinical medicine, using x-rays to study physiology and pathologic processes in vivo. Ultrasound has and is being rapidly developed as a new mode in the diagnosis and treatment of human illnesses. The recordings in x-ray and ultrasound may be observed in a variety of ways including fluoroscopic images, video recordings or as images on x-ray film, or Polaroid film.

The therapeutic radiologist is concerned with the use of ionizing radiation in the treatment of diseases involving abnormal tissue formation. Radiation and/or drugs may be utilized by the therapeutic radiologist for the destruction of tumor cells.

The field of radiology also encompasses the use of medical isotopes in the diagnostic testing and treatment of disease. In addition, radiology involves medical physics, which is the study of the biological effects of interaction of electromagnetic energy and living tissues.



William A. Dunnagan, M.D.



Francis C. Jackson, M.D.

SURGERY

Full Time

- Professor Francis C. Jackson, M.D.,**
Chairperson
- Professor Richard L. Lawton, M.D.**
Vice Chairperson
- Professor Mario Feola, M.D.,**
Associate Chairperson
(Amarillo)
- Professor (Adjunct) David G. Eisner,**
M.D., Associate Chairperson
(El Paso)
- Associate Professors: Austermann**
(El Paso), Baker

Part Time

- Clinical Professors: Bricker,**
Bronwell, Dalton, Hall, Salem,
Watkins (Amarillo), Woolam
- Associate Clinical Professors:**
Spaulding (Big Spring), Wegleitner
(El Paso)
- Assistant Clinical Professors: Tjia,**
Tsai, Rao (Big Spring)
- Clinical Instructor: Quintero (El**
Paso)

Division of General Surgery

- Clinical Professor: Robert J. Salem,**
Chief
- Professors: Eisner (El Paso),**
Jackson, Lawton
- Associate Professor: Baker**
- Clinical Professors: Bronwell,**
Woolam

Instruction provided by the Division of General Surgery currently includes a correlative course in Clinical Sciences (Clinical Anatomy 50100, 16 hours, Semester I) and a clerkship in the Junior year (Surgery 70, MGS 71227, 8 weeks).

Electives (one month each) are offered in the Senior year.

All programs are designed to acquaint the student with the clinical discipline of surgery and introduce him to the principles and techniques used in the operative

management of surgical disease and injury.

Basic science prerequisites include anatomy, pathology, physiology, pharmacology, and microbiology. The major clinical prerequisite is Introduction to Medicine 60433 (Physical Diagnosis).

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 at one of the primary teaching centers affiliated with the Medical School. In this role, he masters the technique of taking a surgical history, performs a physical examination, learns certain basic diagnostic and therapeutic techniques, and attends operations and autopsies. Teaching sessions include ward rounds, a lecture series, case reviews, and conferences. His performance is continuously supervised by faculty and resident surgeons.

The **Senior Clerkships** are provided in all surgical specialties as elective preceptorial assignments to West Texas and other surgical centers. The purpose is to acquaint the student with the special management of patients in anesthesiology, neurosurgery, urology, otorhinolaryngology, plastic and reconstructive surgery, pediatric surgery, oncology, organ transplantation, and trauma. The student usually functions at a more advanced level as a team member.

Grand Surgical Rounds for faculty, practicing physicians, residents, and students are held

weekly in the new Medical School building.

Required Courses

MGS 50100 (Clinical Anatomy):

(Semester I): This course correlates gross anatomy with clinical management of disease and injury for the beginning medical student. The importance to the practicing physician of an anatomical knowledge of location, structure, function, nerve and blood supply of vital systems is emphasized.

MGS 71227 (General Surgery):

(Semester V-VI): 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.

Division of Cardiovascular Surgery

Clinical Professor: Donald L.

Bricker, M.D., Chief

Clinical Professor: Dalton

The division provides a series of lectures on the fundamentals of cardiovascular disease and management during Semester I (Clinical Anatomy, MGS 50100), the Junior Surgical Clerkship (MGS 71227) and an elective surgical clerkship. During the Senior year elective, the student acts as a preceptor to members of the division and learns the techniques of the diagnosis and surgical management of congenital and acquired disease. The student is exposed to a large number and variety of cardiovascular problems at one of the affiliated teaching hospitals. Instruction is also provided for residents in general surgery and family practice.

Division of Thoracic Surgery

Clinical Professor: Martin L. Dalton,

Jr., Chief

Clinical Professor: Bricker

The Division of Thoracic Surgery is concerned with instruction in the broad management. The teaching program is similar in format and design to that in the Division of Cardiovascular Surgery. A Senior elective includes care responsibilities in a preceptorial setting and includes ward round seminars, operating room experience, and pre and post operative care.

Division of Organ Transplantation

**Professor Richard L. Lawton, M.D.,
Chief**

Experience in the surgical management of end stage renal disease is offered as an elective in the Senior year. The student will be exposed to the practical and theoretical aspects of transplantation, immunology, the use of artificial organ and man-machine interface as a life support system. Experience will include participation in the selection and management of the transplant patient, and the follow-up process through weekly conferences. In addition, the student will be instructed in long term storage of vital organs under a variety of conditions. Unique and standard techniques for prolonged vascular access will be included. Finally, the experience will bring the student in contact with a variety of specialties including social science, dietetics, nursing, nephrology, and the entire spectrum of medical specialties. In addition to the senior elective, a series of introductory lectures is offered during the Junior Clerkship (MGS 71227).

Division of Urology

Chief: (Open)

This division provides two series of lectures on the genitourinary tract: one during semester I of Clinical Anatomy (MGS 50100) and the second during the Junior Surgical Clerkship (MGS 71227) as well as offering a one month, preceptorial elective in the Senior year at one of the medical centers affiliated with TTUSM. The student is instructed in the urological diagnostic steps, the management of common urological disorders and the basic pathological and abnormal physiological changes which occur with these abnormalities.

Division of Oncology

*Professor Richard L. Lawton, M.D.,
Chief (Acting)*

A senior elective is offered in surgical oncology. Experience includes participation in the management of the patient with cancer using a multimodal, multi-disciplinary approach to the treatment of the disease. Because of the many 'faces' of cancer, it is essential that students be exposed to a broad patient population presenting a wide variety of associated problems (i.e., paraneoplastic). The multimodal approach is divided, or combined into surgical, radio, chemo, and immunotherapeutic techniques. Special surgical therapeutic modes will be discussed such as isolation perfusion of extremities, "de-bulking" techniques, prolonged continuous infusion of anatomic areas, immunotherapy, and a variety of combinations.

Discussions and lectures will relate to the natural history, viral

etiology, and immunologic approach to the understanding of cancer. A combined Oncology and Breast Clinic will be held on a weekly basis. The student can participate in the day-to-day management of patients with malignant disease, and observe the role that others play in the control of this disease.

Division of Pediatric Surgery

Chief: (Open)

This division, in cooperation with the Department of Pediatrics, provides a series of lectures to Junior surgical clerks, (MGS 71227), residents, and faculty on the surgical management of congenital defects, neonatal, and children's diseases. A Senior elective clerkship of one month is also offered. Pre and post operative care of young infants is particularly emphasized.

Division of Trauma and Burns

*Associate Professor: C. R. F. Baker,
Jr., M.D., Chief*

The Division of Trauma and Burns is concerned with the physiologic and metabolic response of the body to severe injury. The division offers a Senior elective on resuscitation, evaluation, triage, and initial management of injured patients. The supportive management of injured patients. The supportive management of the severely traumatized patient includes particular attention to the fluid and electrolyte, renal, pulmonary, gastrointestinal, and nutritional problems during the most acute phase of care. The teaching mechanisms employed are introductory clinical material during basic science years, lectures within a

core surgical curriculum (MGS 71227), clinical exposure during clerkships, including emergency department rotations, conferences, and rounds on the trauma service and unit.

Division of Otorhinolaryngology

Clinical Professor: James T. Hall, M.D., Chief

Associate Clinical Professor: Wegleitner (El Paso)

This division provides instruction to Freshmen (Clinical Anatomy 50100), Sophomores (MGS 60101), Juniors (MGS 71227) and an elective for seniors. The courses introduce the student to the methodology of examining the ear, nose, throat, and oral cavity, using otolaryngological diagnostic instruments. Lectures, demonstrations, and surgical clinics are provided on diseases common to the upper respiratory tract, oral cavity, and ear including allergies, infections, tumors, and trauma. The senior elective is a preceptorial assignment to one of the clinical or full time faculty.

Required Course

MGS 60170 (Introduction to Otorhinolaryngology): This course is given in conjunction with the 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.

Division of Plastic and Reconstructive Surgery

Chief: (open)

This division presents the principles of plastic and reconstructive surgery to the Freshmen (Clinical Anatomy 50100)

and Juniors (MGS 71227) and offers electives for Seniors. Included in these courses are instruction in the principles of wound healing; restoration of musculo-skeletal function, repair of maxillo facial injuries and correction of certain congenital defects and reconstruction. Seniors may elect to spend their rotation with faculty preceptors or at other medical centers associated with TTUSM.

Division of Neurological Surgery

Clinical Professor: J. Dunn, M.D. Chief

This division provides a series of lectures during the neuroscience correlation period of Semester II and the Junior Surgical Clerkship.



POSTGRADUATE MEDICAL EDUCATION

INTERNSHIP AND RESIDENCY PROGRAMS

As a regional medical school with three clinical campuses being developed in Amarillo, El Paso, and Lubbock, emphases in primary-care programs with appropriate specialty and sub-specialty residencies are in various stages of development at Texas Tech University School of Medicine (TTUSM). Primary teaching hospitals are available in El Paso (R. E. Thomason General Hospital) and Lubbock (Health Sciences Centers Hospital is scheduled for opening in February, 1978) with a complement of federally supported and community affiliated facilities available for teaching. In Amarillo, a consortium of affiliated hospitals has been organized as a "teaching hospital" to support the developing post-graduate education programs. Existing internships and residencies are approved by the Council on Medical Education of the American Medical Association, as well as by the respective medical specialty boards.

TTUSM participates in the National Intern and Residency Matching Program (N.I.R.M.P.) and follows the policies as established by this program. Information relative to the N.I.R.M.P. may be obtained by writing to: The National Intern and Residency Matching Program, 1603 Orrington Avenue, Evanston, Illinois 60201.

GENERAL REQUIREMENTS FOR APPOINTMENT

All applicants are required to be graduates of a medical school approved by the Council on Medical Education of the American Medical Association or from a medical school listed by the World Health Organization. Graduates of foreign medical schools must be certified by the Educational Council for Foreign Medical Graduates, or have fulfilled AMA requirements under the "fifth pathway", or be licensed to practice medicine in a state or territory of the United States. Interns and residents, in general, do not need to hold a license to practice in Texas, but those who do not must apply for an institutional permit and annual registration from the Texas State Board of Medical Examiners. This may be done through the Office of the Associate Dean for Clinical Affairs at the time of beginning service and thereafter on or before each July 1.

APPLICATION

Application and/or information requests should be directed to: James N. Burkeholder, M.D., Associate Dean for Clinical Affairs, Texas Tech University School of Medicine, P.O. Box 4569, Lubbock, Texas 79409.

ANATOMY

Professor William G. Seliger, Ph.D.,

D.D.S., Chairperson

Associate Professor: Markwald

Assistant Professors: Bolender,

Casady, Dalley, Hutson, Karkos,

Yee

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 histocytochemistry and ultrastructural morphology, including analysis of clinical specimens, mineralized tissue study, and instrumentation. Every effort is made to use the most modern concepts of teaching, stressing the relationships between structure and function.

Graduate Courses

ANM 5411—Anatomy I m: Human micro-anatomy and embryology. An integrated course of Anatomy starting with the ultrastructural and light microscopic study of cells and continuing through

developmental and microscopic anatomy. This course must be taken in conjunction with ANM 5811 Anatomy I g.

ANM 5811—Anatomy I g: 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 ANM 5411 Anatomy I m.

ANM 5612—Anatomy II: Neuroscience—A detailed course of neuroscience, passing from the study of ultrastructural cytology, through the light microscopic, gross and neuroanatomical aspects of the nervous system. This course includes strong emphasis on the functional and clinical aspects of neuroscience.

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 5302—Histochemistry: Techniques and applications of histochemical techniques for light and electron microscopy.

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

ANM 5304—Advanced Cytochemistry: Discussions and applications of current cytochemical theory and techniques.

ANM 5305—Medical Cell Biology: An interdepartmental course for graduate students in the biomedical sciences. Emphasis will be placed 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: This course will analyze 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, in relation to functional and pathological states, will be stressed. Social aspects will be considered as they relate to current reproductive problems, i.e., abortion and contraception. The course will draw upon experts in the field from anatomy, medicine, and physiology.

ANM 5310—Microscopy and Microscopic Technique: Prerequisite: BIOL 431, Biological Techniques, or its equivalent.

The first half of the course will be concerned with the theory, design, and use of the many various forms of light microscopes. The course will include lectures, demonstrations, and use of these instruments as well as an Abbe diffraction demonstration microscope explaining his theory and principles of image formation. The second half of the course will be concerned with the theory, techniques, and practices of general histological and cytological preparations. The various microtomes, fixatives, embedding materials and stains will be discussed and a number of them will be used in the laboratory.

ANM 5311—Advanced Musculoskeletal System: Detailed study of the skeleton and muscles with the aid of models and gross dissection. The purpose of this course is to present a detailed view of the skeleton and muscles and their interrelations to produce movement. A detailed study of the joints will be presented, as well as a study of the functions of muscles and their innervations.

ANM 5316—Autonomic Nervous System: Prerequisite: Anatomy II or its equivalent. A study of the autonomic nervous system with major emphasis on the morphological, functional and developmental aspects. Clinical applications are also stressed.

ANM 5318—Structure and Function of the Nervous System I: A detailed study of the neural system. An examination of both gross and fine structure, as well as cell biology of both the peripheral and central portions of the nervous systems will be included. The basic structures that are immediately pertinent to the makeup and function of the nervous system (meninges, musculature, Schwann cells, microglia, neuroglia, ependyma, choroid plexus, neurons, neuropil, as well as special related structures, including pituitary gland, pineal body, other neuroendocrine structures, CSF, and

interstitial substances) will be studied. In reviewing these, it is necessary to touch upon the physiology, chemistry and physics, as well as the microanatomy (including ultrastructure) of those elements. Using this cellular approach, the naturally complex functions of this system will be simplified.

ANM 5319—Structure and Function of the Nervous System II: Prerequisite: Structure and Function of the Nervous System I. A variety of methods of investigation used for the functional study of the nervous system will be examined. Techniques and methods of measuring morphological, metabolic and electrical properties of nervous tissue will be discussed, demonstrated and used. These will be utilized to clarify the functional organization of the nervous system. Included will be applications and use of the cathode ray oscilloscope in the study of nerve impulses and nerve pathways (bioelectric study), cytochemistry, for interrelating some of the more important chemical systems with the functioning of the neural complex, as well as light and electron microscopy for the correlation of structure and function. This course will also include current controversies in neural research and will indicate some of the directions in which the neural sciences will move in the next decade.

ANM 631—Master's Thesis: Enrollment required at least twice.

ANM 711—Anatomy Seminar:

ANM 731—Anatomical Research:

ANM 831—Doctor's Dissertation: Enrollment required at least four times.

ANM 5312—Advanced Medical Embryology. The purpose of this course is to provide an in-depth study into the developmental processes necessary to transform a zygote into a term fetus. Basic concepts of medical genetics will be utilized in order to provide a better understanding of the mechanisms involved in congenital malformations. Among the topics to be discussed will be: gametogenesis, fertilization, placentation, embryogenesis, experimental embryology, medical genetics and dysfunction, and congenital malformations. A laboratory will provide experience in identifying embryonic and fetal structures. Mechanisms of teratology will be studied through participation in a simple research project.

ANM 5113, 5213, 5313—Selected Topics in Anatomy. Material may vary from semester to semester. May be repeated for credit if

different topics are covered.

ANM 5317—Neuroendocrinology (3:3:1). 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 5321—Advanced Gross Anatomy. In-depth study into the gross anatomy of the following specific regions of the human body:

Topographical Anatomy

Head and Neck

Thorax and Abdomen

Pelvis and Perineum

Extremities and Back

ANM 5333—Microscopic Anatomy of Human Tissues and Organs. A detailed course in microscopic anatomy designed primarily for non-anatomy graduate students, advanced undergraduates in the biological sciences and allied health students who desire additional training in microscopic anatomy.

ANM 5613—Advanced Microscopic Anatomy. The course supplements and extends the core microscopic material of Anatomy I by emphasizing ultrastructural, cell biological and histopathologic aspects of tissues and organs. Attention is focused on connective tissue macromolecules, calcification, ossification, bone remodeling, muscle contractions, platelet aggregation and blood clotting, nerve intracellular transport and communication, immunologically active connective tissue cells, micro-circulation and structural-functional correlates of the endocrine, renal and reproductive systems. Didactic material is presented through formal lectures or student seminars covering current journal articles. Laboratories consist of completing fourteen fully programmed 35mm slide lessons on human cells, tissues and organs. Additionally, each student is required to identify and record photomicrographically selected structures from a collection of prepared tissue sections.

BIOCHEMISTRY

*Professor Francis J. Behal, Ph.D.,
Chairperson*

Professor: Shetlar

*Associate Professors: Everse,
Morrow*

*Assistant Professors: Garner, Haller,
Little, Pelley, Perez, Stocco*

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.

Graduate Student Program: The Department of Biochemistry offers opportunities for study and research leading to the Master of Science and/or Doctor of Philosophy degrees in Medical Biochemistry.

Each student in this program must take a Preliminary Examination. This examination will include an assessment of the student's background in physical, organic, and either analytical or inorganic chemistry to ascertain his comprehension of these fields. The nature of the Preliminary Examination will be determined in part by the student's undergraduate curriculum. Satisfactory proficiency in one foreign language and in statistical methods are required for the Ph.D.

The written part of the Qualifying Examination (for admission to candidacy for the Ph.D. degree) consists of an integrated, five-day comprehensive examination after most of the course work has been completed. A thesis based on original biochemical research is required for the master's

degree and the Ph.D. degree. Credit for the master's thesis shall be for at least six hours credit, but not more than 9 hours credit. Credit for the doctoral thesis shall constitute not less than one-sixth nor more than one-third of the total work presented for the Ph.D. Completion of the master's degree is not an obligatory step leading to the Ph.D. degree.

The major areas of research in the Department of Biochemistry are:

1. physical biochemistry of enzyme complexes
2. disorders of mucopolysaccharide metabolism and metabolism of complex carbohydrates
3. genetics of somatic cell hybrids
4. chemical and kinetic mechanism of enzyme action
5. mechanism of action thyroid hormones in differentiating tissues
6. mitochondrial compartmentation of enzyme complex aggregates
the value of new grain varieties as improved sources of essential amino acids
8. studies on pancreatic enzyme secretion changes as early onset markers of pancreatic disease
9. biochemical aspects of wound healing and hypertrophic scar formation
10. immobilized enzymes in chemotherapy
11. interconversion of lipids and structure

and function of pancreatic lipase

12. development of new techniques of clinical analyses.

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

Chairperson, Department
of Biochemistry
Texas Tech University
School of Medicine
P.O. Box 4569
Lubbock, Texas 79409

Graduate Courses

BCH 5721—Biochemistry (7:5:2).

Prerequisite: CHEM 335, 336 or equivalent. Human life processes at the molecular level with emphasis on biochemical homeostasis and control mechanisms. This course consists of a series of closely related lectures, laboratories, and clinical correlation sessions.

BCH 631—Master's Thesis (3). Enrollment required at least twice.

BCH 6127—Seminar in Somatic Cell Genetics (1:1:0). 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, ageing.

BCH 6320—Clinical Biochemistry (3:3:0). Prerequisite: BCH 5721, 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 (3:3:0). Prerequisite: BCH 5721, CHEM 433, 436, 437 or equivalent. A study of the characterization of macromolecules with major emphasis on the analytical ultracentrifuge and related instrumentation, consisting of lectures and laboratory exercises and familiarity with the analytical ultracentrifuge and interpretation of data.

BCH 6322—Biomedical Radioisotope Techniques (3:3:0). Prerequisite: BCH 5721, CHEM 433, 436, 437, or equivalent. Basic radioisotope techniques as used in biomedical research with special emphasis on liquid scintillation counting techniques.

BCH 6324—Biochemical Basis for Inherited

Disease (3:3:0). Prerequisite: BCH 5721, CHEM 433, 436, 437 or equivalent. Biochemical and molecular basis of genetic disorders, genetic counseling, human population genetics, chromosomal defects, sex determination, and gene mapping in man.

BCH 6325—Advanced Genetics (3:3:0). Prerequisite: A course in genetics. Further development of concepts introduced in introductory course in genetics, molecular biology, gene mapping, extranuclear genetic systems, gene expression, population genetics.

BCH 6326—Advanced Human Genetics (3:3:0). Prerequisite: A course in genetics. Detailed consideration of population genetics, cytogenetics, molecular biology, and biochemistry as related to human heredity.

BCH 6328—Biochemistry of the Mitochondrion (3:3:0). Prerequisite: A course in general biochemistry. Subject areas involve structure-function relationships, ion and metabolite transport, enzyme and metabolite compartmentation, and enzyme regulation.

BCH 6329—Advanced Immunochemistry (3:3:0). A study of protein, carbohydrate, and complex antigens and the specificity of the immune response to them.

BCH 6330—Special Topics in Environmental Biochemistry (3:3:0). Prerequisite: Consent of instructor; organic chemistry recommended. May be repeated with change in content for a total of 6 hours. Reading, conferences, and/or laboratory work on selected chemicals which may exist in ambient air, water, or food—separation, identification, and physiological effects.

BCH 6331—Special Topics in Toxicological Biochemistry (3:3:0). Prerequisite: Consent of instructor; organic chemistry recommended. May be repeated with change in content for a total of 6 hours. A consideration of the uses, abuses, and potential biochemical effects of agricultural chemicals. Reading, conferences, and/or laboratory work.

BCH 6332—Advanced Clinical Biochemistry (3:3:0). Advanced study of the use of chemistry in laboratory medicine for diagnosing disease and evaluating therapy. Consideration of new methods in clinical chemistry, use of automated equipment, organ profiles, and other current developments in clinical biochemistry.

BCH 6333—Topics in Developmental Biochemistry (3:3:0). In-depth study of

biochemical mechanisms in embryonic and post-embryonic development including biochemistry of cellular differentiation, biochemical mechanisms in growth and morphogenesis, development of specific enzyme systems, and endocrine mechanisms in development.

BCH 6335—Topics in Biochemistry (3:3:0). Prerequisite: Consent of instructor. specific areas of biochemistry not normally included in other courses. May be repeated for credit with change in content.

BCH 6336—Neurochemistry (3:3:0). A study of the biochemistry and regulation of metabolic processes characteristic of neural tissues, the biosynthesis and metabolism of neurotransmitters, the biochemical basis of certain neurological disease states in man, and the structure and mechanism of function of neurohormones, in normal and pathological states.

BCH 6521—Human Intermediary Metabolism and Its Regulation (5:5:0). Prerequisite: BCH 5721, 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 711—Biochemistry Seminar (1:1:0).

BCH 731—Biochemical Research (3).

BCH 831—Doctor's Dissertation (3).

Enrollment required at least four times.

BCH 839—Postdoctoral Research (3). 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

Associate Professor Blair A. Rowley, Ph.D., Chairperson

Professors: Ayoub, Portnoy, Ramsey

Associate Professor: Jarzembksi

Assistant Professors: Anderson, Cameron

Study leading to the Master of Engineering (Biomedical option with special permission) and Doctor of Philosophy degrees is offered in cooperation with the College of Engineering of Texas Tech University through their interdisciplinary study

programs.

The courses listed below currently are offered by the School of Medicine faculty, but are subject to revision as the interdisciplinary program undergoes further development. In addition, study programs utilize courses offered in the various departments of the College of Engineering.

Graduate Courses

BME 5101, 5201, 5301—Selected Topics in Biomedical Engineering:—The material covered may vary from semester to semester. These courses may be repeated for credit if different topics are covered for each registration.

BME 5302—Function and Structure of the Human Body for Biomedical Engineers I: This course introduces the basic micro and macro units of the human body.

Biomedical Engineering principles, anatomy, and physiology of cells, tissues, skeletal system, muscular system and the nervous system are presented. Emphasis on the gross structure of the body and the nervous system including senses provides a background for continued study in statics and kinematics of the body and nervous system response and control.

BME 5303—Function and Structure of the Human Body for Biomedical Engineers II: Prerequisite: Function and Structure of the Human Body for Biomedical Engineers I.

This course presents six major systems of the human body: Cardiovascular, Respiration, Regulation of Fluids, Digestion, Endocrines, and Reproduction. Biomedical Engineering principles, Anatomy and Physiology are presented. Methods of testing and modeling body systems along with physiological functions and anatomical structure provide a basis for application of engineering analysis in the study of body functions, instrumentation design, and application of supportive electro-mechanical devices.

BME 5304—Systems Analysis in Biomedicine: This course presents a number of analytical methods which are very useful in advanced study of living systems. No advanced mathematics are required. 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 5305—Concepts of Biomedical Engineering: An introduction to the basic concepts of biomedical engineering including bioengineering, clinical engineering, medical engineering. The following subjects are treated: research, product development, legal implications, documentation, an introduction to physiological systems, and clinical instruments in common use.

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

BME 5309—Modeling of Living Systems: An introduction to the theory and application of modeling techniques to living systems will be presented. 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 successfully complete a project using mathematical modeling to analyze a physiological system.

BME 6301—Bioelectric Phenomena: The objective of this course is 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. The material presented covers electrode theory; membrane structure and phenomena; propagated action potential and electrocardiography.

BME 731—Research (3): Prerequisite: Admission to doctoral study and consent of the instructor. May be repeated for credit.

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

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 micro-computer, and the use of packaged software in the clinical and basic sciences are covered.

CMB 5302—Intermediate Biostatistical Analysis for the Medical Sciences: Prerequisites: An introductory knowledge of calculus or statistics or consent of instructor. The purpose of this course is to provide graduate students in health related areas with a working knowledge of commonly used statistical techniques for analyzing biological data. Emphasis is placed on training the student to recognize the design of the experiment, what reasonable assumptions may be made, and to perform the necessary analysis. The student will be expected to exhibit the ability to analyze appropriate data sets from his own specialty area.

CMB 731—Research (3): Prerequisite: Admission to doctoral study and consent of the instructor. May be repeated for credit.

HEALTH COMMUNICATIONS

*Professor Charles W. Sargent, Ph.D.,
Chairperson*

Professor: Brenner

Associate Professor: Quesada

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 5401—Health Communications Practicum in Health Sciences II. As a basis for understanding and interpreting the work of health professionals and other health scientists, and also as a basis for understanding from the patients' viewpoint, correlated concepts from the physical, biological and health sciences will be presented. Emphasis will be placed upon the appreciation of the total person and his life processes in illness and in health.

HCOM 5310—Health Communications Seminar I. Introduction to the new

discipline of health communication. Application of human communication theory to health care and health service systems. Emphasis is placed upon health care provider-consumer intercommunication, and upon the communicational study of patienthood.

HCOM 5311—Health Communications Seminar II. Introduction to the new discipline of health communication.

Application of human communication theory to health care and health service systems. Emphasis is placed upon health care provider-consumer intercommunication, and upon the communicational study of patienthood.

Prerequisite: Seminar I (HCOM 5310).

HCOM 5312—Medical Writing and Reporting I. Application of reporting and news writing principles and techniques to the health field. Will include active criticism from medical and health professionals, including medical writers.

HCOM 5313—Medical Writing and Reporting II. Application of investigative reporting and newswriting principles and techniques to more complex material in the health field. Lab practice in preparing feature length materials and series. Criticism from health professionals.

Prerequisite: Medical Writing and Reporting I (HCOM 5312).

HCOM 5314—Application of Communication Theory to Health Communications. Application of diffusion



Charles W. Sargent, Ph.D.

theory, persuasion and learning theory, motivation research to the information systems of health and medicine.

HCOM 5315—Health Communications Research. Critical examination and synthesis of past and ongoing research on the health communications process, focusing on mass communication research concerning health and medicine.

HCOM 530—Introduction to Information Science. Computer-oriented techniques for mechanized non-numeric information processes, with emphasis on medical bibliographic record systems. Automated information systems such as MEDLARS, MEDLINE, TOXICON and others, as well as the design of an information system, will be emphasized.

HCOM 537—Information Storage and Retrieval. This course is designed to introduce the student to information organization and retrieval of natural language data. Computer techniques will be emphasized. Topics typically covered would include: an introduction to automatic information systems, the contact operations, the retrieval process, auxiliary information services, and database retrieval systems. The course will emphasize mathematical and statistical methods of detailed analysis of system performance.

HCOM 5317—Information Retrieval Systems Design. This course is concerned with the design of retrieval systems based upon theories covered in Information Storage and Retrieval (Course II). Topics typically covered are: information dissemination process, information centers, the organization, search strategy, output operations, language design, and retrieval evaluation. Prerequisite: Information Storage and Retrieval.

HCOM 534—Seminar in Current Topics of Information Sciences. This will vary each semester emphasizing either information science topics or other topics in the health communications area.

HCOM 5320—Medical Photography. Advanced applications in medical environment including specialized equipment and procedures. Prerequisite: 6 hours of photography.

HCOM 5318—Medical Television. Advanced applications in medical television involving the patient and medical personnel, and unique problems involving the health sciences. Prerequisites: a beginning course in television direction.

HCOM 5324—Medical Illustration I. Advanced techniques involving illustration

in medical education; evaluation of learning effect. Prerequisite: 12 hours of art and/or illustration.

HCOM 5325—Medical Illustration II. Advanced techniques involving illustration in medical education; evaluation of learning effect. Prerequisite: Medical Illustration I.

HCOM 5326—Visual Techniques Practicum. Introductory course involving media in health sciences education, research, and service programs. Working with the medical faculty and staff and patients in preparing instructional packages and ways to improve them.

HCOM 5327—Advanced Visual Techniques Practicum. Summary and practical course involving media in health sciences education, research, and service programs. Working with the medical faculty and staff and patients in preparing instructional packages and ways to improve them. Prerequisite: At least two of the courses in Medical Photography, Television or Illustration.

HCOM 5115—Individual Problems in Health Communications. Individual research and reporting projects. A student may enroll in this course any number of times up to a maximum of 5 semester hours.

HCOM 5117—Health Terminology. Medical and health terminologies most important to health communicators, presented in the framework of general health and medical concepts. Includes both the specialized professional languages and vernacular of the health professions, the hospital, and other health care systems, and the idiomatic expressions of certain patient populations.

HCOM 560—Health Communications Internship. Students will perform communication functions for eight weeks at Texas Tech University School of Medicine Regional Health Education Centers, under joint supervision of the chairman of the student's advisory committee and a Texas Tech University School of Medicine faculty member at the Center, who will also determine content of the internship in consultation with the student, and evaluate a written and oral report of the experience. Students will normally do the internship at the end of their course work for the degree.

HCOM 5328—Analysis and Preparation of Scientific Papers. Designed to improve scientific writing, particularly directness, comprehensibility, logical organization and precision of expression. Requires a

short journal article or equivalent during course.

MICROBIOLOGY

*Professor John M. McKenna, Ph.D.,
Chairperson*

Associate Professors: Lefkowitz, Joys

*Assistant Professors: Baskett,
Diedrich, Fralick, Gooch, Jones*

*Adjunct Assistant Professors: Hayes,
Pence*

The faculty of the Department of Microbiology offers broadly based programs leading to the Master of Science and Doctor of Philosophy degrees in Medical Microbiology with sufficient flexibility and diversity of orientation to meet the needs of the School of Medicine and also of Texas Tech University.

The course work and information presented below describe those aspects of the program of particular interest to students choosing to study and conduct research in the areas of medical microbiology which are traditionally found in a medical center. The program is currently in an expanding state and courses will be added as appropriate.

Students seeking information concerning admission to the graduate program in medical microbiology, training and research opportunities, or teaching and research assistantships in the Department of Microbiology of the Texas Tech University School of Medicine should contact the chairman of the department.

- I. For admission to the department, the following subjects are considered prerequisites, but a limited number of them may be

taken as a graduate student.

- A. **Biology**
At least one year of botany and/or zoology plus at least one advanced course.
- B. **Chemistry**
Inorganic, qualitative, quantitative, and organic chemistry.
- C. **Physics**
A one year course with laboratory.
- D. **Mathematics**
One year including college algebra, analytical geometry and/or trigonometry.
- E. An acceptable score on the general aptitude section from the graduate record examination.

The Department of Microbiology has no general requirement for a foreign language for either the Master of Science or the Ph.D. degree. However, it may be necessary for a student to demonstrate a proficiency in a foreign language(s) in certain programs.

Incoming students are urged to seek a faculty advisor within the first semester after enrolling in the department. This should be done in consultation with the department chairman, and thus will facilitate the formation of student's committees as he progresses through the program of study.

II. The Master's Program.

Before being recommended for admission to a master's degree program, the student may be required to take an examination which includes the subject matter usually required of

undergraduates.

The master's degree will ordinarily require a minimum of 30 hours of graduate study. This does not include time required to complete any unfinished prerequisites or delays encountered on thesis problems. The graduate program requires that original research and a thesis be completed. Credit for the master's thesis shall be at least six credit hours, but not more than nine credit hours.

Doctor of Philosophy Degree.

The Doctor of Philosophy Degree indicates an ability to teach and train others in the field of specialization. A period of lecture and laboratory preparation in teaching is usually required of all candidates. In addition, the quality of research demanded at the Ph.D. level is such that mastery of basic principles and techniques in Microbiology must be clearly demonstrated by the dissertation.

The Ph.D. Degree is awarded on the basis of scientific maturity and not solely on the basis of completion of the prescribed course of study. It is, therefore, unreasonable to assume that the Ph.D. Degree can be earned in less than three calendar years beyond the Bachelor's Degree.

Credit for the doctoral dissertation shall constitute not less than 1/6 nor more than 1/3 of total work presented for the Ph.D. Degree. The completion of the master's degree is not a prerequisite step leading to the Ph.D. Degree.

IV. Major areas of research interest in the Department of Microbiology:

- A. Viral Oncology
- B. Tumor Immunology
- C. Microbial Ecology
- D. Microbial Genetics
- E. Infectious Diseases
- F. Molecular Biology
- G. Radiation Microbiology
- H. Clinical Microbiology.

Inquiries about the graduate program in Microbiology should be sent to the Chairperson, Department of Microbiology, Texas Tech University School of Medicine, Lubbock, Texas 79409.

Graduate Courses

MIB 6631—Medical Microbiology. A study of the role and place of bacteria, fungi and viruses in human infectious disease processes, with emphasis on 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 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 population; interactions of microbial populations with plants and animals; microbial ecology of aquatic and terrestrial environments.

MIB 6321—Tumor Immunology. Prerequisites: Introductory courses in Microbiology, Biochemistry, Pathology, and Immunology; or, permission of the instructor. The objectives of this course

will collate the various immunological, biochemical, and pathological parameters of tumor growth, both in animal model systems and man. Emphasis will be placed on investigations of current concepts of tumorimmunity, transplantation and auto-immunity; immunological tolerance, surveillance, and enhancement; as well as 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 prokaryotic cells. Courses in biochemistry and microbial genetics suggested, but not required.

MIB 711—Microbiology Seminar. May be repeated. Presentation of present research current topics by faculty and students in all areas of Microbiology.

MIB 712—Literature Reviews Seminar. Review of literature on special topics either assigned by instructor and/or selected by students. May be repeated.

MIB 631—Master's Thesis: Enrollment required at least twice.

MIB 731—Research. Prerequisite: Consent of instructor. May be repeated for credit.

MIB 831—Doctoral Dissertation. Enrollment required at least four times. Other courses available for the programs in microbiology are listed in the Graduate School Catalog.

MIB 5181, 5281, 5381—Special topics in Microbiology.

MIB 5380—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 6325—Biology of Animal Viruses. Lectures and laboratory work illustrating viral infection and replication within the affected cell. The 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 Prokaryotic Membrane. Prerequisite: Permission of instructor. The molecular organization of prokaryotic 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 the ionizing radiation in biological systems at the molecular, cellular, organ, and whole body level of organization. Introductory material on radiation chemistry and physics will be included.

PHARMACOLOGY

*Professor Alexander D. Kenny, Ph.D.,
Chairperson*
*Associate Professor James H. Pirch,
Ph.D., Director*
*Associate Professors: Lombardini,
Pang, Potter*

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 and Therapeutics are: endocrine, autonomic, renal, biochemical and comparative pharmacology; drug metabolism; neuropharmacology; and psychopharmacology. More specific areas include: pancreatic endocrine function; regulation of vitamin D endocrine system; evolutionary and endocrine aspects of osmoregulation in lower vertebrates; alcoholism; Parkinson's disease; pharmacology of brain electrical potentials; and taurine metabolism.

Inquiries about the Pharmacology Graduate Program should be sent to: Director of Graduate Studies, Department of Pharmacology and Therapeutics, Texas Tech University School of Medicine, Lubbock, Texas 79409 806/743-2425).

Graduate Courses

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

PHM 5218—Advanced Principles of Drug Action. An advanced course dealing with the mechanisms and dynamics of action of drugs on biological systems.

PHM 5321—Drug Metabolism and Biochemical Pharmacology. Enzyme kinetics and receptor occupancy theory. Metabolism of compounds in both experimental animals and man with emphasis on basic metabolic pathways, mechanism of drug actions, and pharmacodynamics.

PHM 5322—Advances in Psychopharmacology. Pharmacology of hallucinogens, stimulants and depressants; their mode of action and structure-activity relationship. Pharmacological basis of psychopharmacotherapy with emphasis on extrapyramidal disorders and affective states. Extrapyramidal action of psychoactive drugs and their adverse effects.

PHM 5101, 5201, 5301—Topics in Pharmacology. Specific areas in pharmacology not normally included in other courses.

PHM 631—Master's Thesis. Enrollment required at least twice.

PHM 711—Pharmacology Seminar.

PHM 731—Pharmacological Research.

PHM 831—Doctor's Dissertation. Enrollment required at least four times.

PHYSIOLOGY

*Professor Charles D. Barnes, Ph.D.,
Chairperson*

*Professors: Frigyesi, Kopetzky
Associate Professors: Crass, Davies,
Hughes*

*Assistant Professors: Holloway,
Lutherer, Nathan, Orem*

*Adjunct Assistant Professors: Chinn,
Minnich*

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

Graduate School Program: The Department of Physiology offers a graduate program 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 work is progressing in the department along each of these areas. The program is designed to train persons who will teach and conduct research in medical institutions.

Graduate Courses

PHY 5822—Physiology. A study of human physiology with major emphasis on body-controlling systems and their interrelations. Pathophysiological mechanisms are also stressed.

PHY 6321—Cardiodynamics. Prerequisite: Medicine clerkship. A consideration of cardiac physiology and pathophysiology and its clinical application.

PHY 6322—Fetal and Neonatal Physiology. Emphasis on physiological mechanisms unique to life in utero, at birth, and during the first thirty days after birth.

PHY 6323—Renal Physiology. Discussion and correlation of recent advances in the normal and pathophysiological mechanisms of the kidney.

PHY 6324—Endocrinology of Pregnancy. Topics related 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 6325—Physiology of Neuroeffector Systems. A consideration of adrenergic, cholinergic, histaminic, and serotonin receptor systems and physiological applications.

PHY 6326—Applied Environmental Physiology. Physiological mechanisms involved in heat prostration, dehydration fever, cold exposure, and hypoxia.

PHY 6327—Pathophysiology of Hypertension. A study of current concepts of etiological mechanisms of hypertension.

PHY 6328—Advanced Endocrinology. Various endocrinopathies will be 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 between hormones.

PHY 6329—Pulmonary Circulation in Health and Disease. The hemodynamics of the pulmonary circulation and the factors which control it will be presented, supplemented by an analysis of selected clinical cases. Lectures and student presentations of original papers.

PHY 6331—Physiology of Muscle in Health and Disease. The subject matter of this course should be of interest to graduate students in physiology and biochemistry, as well as to medical students and house officers. Important aspects of muscle function will be covered. Selected topics are: chemistry of contractile proteins, current aspects of excitation-contraction coupling and the role of calcium, mechanical-energetic relationships in cardiac and skeletal muscle, regulation of glucose transport and glycolysis, transport and metabolism of fatty acids and amino acids, and protein synthesis. In addition, the course will cover current information relating to the biochemistry of ischemic heart disease and hypertrophy, as well as to abnormalities of skeletal muscle metabolism.

PHY 6332—Topics in Physiology. To be arranged. One month.

PHY 631—Master's Thesis. Enrollment required at least twice.

PHY 711—Physiology Seminar.

PHY 731—Physiological Research.

PHY 831—Doctor's Dissertation. Enrollment required at least four times.

PHY 712—Readings in Physiology. Review of the research literature on special topics either assigned by instructor or selected by students. May be repeated for credit.

PHY 5310—Introduction to Physiological Research. Beginning graduate student to learn research approaches and techniques.

PHY 6335—Membrane Biophysics.

Current topics and techniques in the physiology of excitable membranes.

PHY 5302—Experimental Neuroscience. A study of the current techniques used in the neuroscience research laboratory.

PREVENTIVE MEDICINE AND COMMUNITY HEALTH

Professor Robert H. Kokernot,
D.V.M., M.D., Dr. P.H.,
Chairperson

Professor: Tyner

Associate Professors: Way, Gruber

Assistant Professor: Hayes

The Department of Preventive Medicine and Community Health offers a core of elective 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. Prerequisites: Permission of the instructor.

Elective Courses

PMM 6211—Principles of Epidemiology. This course is concerned largely with

epidemiologic methodology. Some of the ways in which properly conducted observations of the distribution and dynamic behavior of disease in the population can contribute to an understanding of etiologic factors, modes of transmission, and pathogenesis of disease are illustrated.

PMM 6212—Problems in Epidemiology. A course for students who wish to make an intensive study of some special problem in epidemiology.

PMM 6213—Epidemiology Seminar. Presentation of research in progress or recently completed by staff, students and visiting lecturers.

The Texas Tech University School of Medicine 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.



FACULTY

FULL-TIME

- ALEXANDER, Carter M.**, Associate Professor of Pathology; M.D., Columbia University College of Physicians and Surgeons, 1942.
- ALLEN, Reuben, M.**, Assistant Professor of Psychiatry; M.D., University of Texas at Dallas, 1970.
- ANANTHAKRISHNAN, C. V.**, Assistant Professor of Orthopaedic Surgery; M.D., Christian Medical Hospital College, India, 1967.
- ANDERSON, Dwane E.**, Assistant Professor of Biomedical Engineering and Computer Medicine; Ph.D., Southern Methodist University, 1968.
- ARREDONDO, Rudolfo M.**, Assistant Professor of Psychiatry; Ed.D., Texas Tech University, 1976.
- 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, Jr.**, Associate Professor of Surgery; M.D., Johns Hopkins University School of Medicine, 1961.
- BALASUBRAMANIAM, Subramaniam**, Associate Professor of Family Practice; M.D., Christian Medical College, Madras University, India, 1963.
- BARNES, Charles D.**, Professor and Chairperson of Physiology; Ph.D., State University of Iowa, 1962.
- BARTHOLOMEW, Bruce A.**, Professor of Medicine; M.D., University of Michigan Medical Center, 1958.
- BASKETT, Russell C.**, Assistant Professor of Microbiology; Associate Dean for Academic and Student Affairs; Ph.D., University of Missouri, 1971.
- BECEIRO, Jose R.**, Associate Professor of Medicine; M.D., University of Santiago, Spain, 1964.
- BEHAL, Francis J.**, Professor and Chairperson of Biochemistry; Coordinator of Research; Ph.D., University of Texas at Austin, 1958.
- BERGQUIST, Carol A.**, Assistant Professor Obstetrics and Gynecology; M.D., University of Alberta, Edmonton, Canada 1967.
- BLACKBURN, MICHAEL G.**, Associate Professor of Pediatrics; M.D., University of Heidelberg, West Germany Faculty of Medicine, 1965.
- BLACKWELL, David Eric**, Assistant Professor of Radiology; M.D., Bowman Gray School of Medicine, 1973.
- BLACKWOOD, William D.**, Associate Professor of Medicine; M.D., University of Texas Medical Branch at Galveston, 1965.
- BOLENDER, David L.**, Assistant Professor of Anatomy; Ph. D., West Virginia University, 1974.
- BRENNER, Donald J.**, Professor of Health Communications; Ph.D., University of Missouri, 1965.

- BRIONES, David F.**, Assistant Professor of Psychiatry; M.D., University of Texas Medical Branch at Galveston, 1971.
- BUDDINGH, Fred**, Associate 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.
- BURKEHOLDER, James N.**, Associate Professor of Pediatrics; Associate Dean for Clinical Affairs; M.D., University of Missouri, 1961.
- BYRNE, Basil**, Associate Professor of Pediatrics; M.D., Indiana University, 1940.
- CAMERON, James M., Jr.**, Assistant Professor of Biomedical Engineering and Computer Medicine; M.S., Louisiana Tech University, 1973.
- CASADY, Robert L.**, Assistant Professor of Anatomy; Ph.D., University of California at Los Angeles, 1972.
- CHINN, John A., Jr.**, Associate Professor of Family Practice; M.D., University of Texas Medical Branch at Galveston, 1953.
- CRASS, Maurice F., III**, Associate Professor of Physiology; Ph.D., Vanderbilt University School of Medicine, 1965.
- CULVAHOUSE, Bruce M.**, Associate Professor of Family Practice; M.D., University of Tennessee, 1951.
- DAHL, Elmer V.**, Professor of Pathology; M.D., University of Southern California, 1953.
- DALLEY, Bernell**, Assistant Professor of Anatomy; Ph.D., University of Nebraska, 1974.
- DAVIES, Donald G.**, Associate Professor of Physiology; Ph.D., Johns Hopkins University, 1970.
- DIEDRICH, Dana L.**, Assistant Professor of Microbiology; Ph.D., Pennsylvania State University, 1974.
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- ERICKSON, Harold M., Jr.**, Associate Professor & Acting Chairperson of Psychiatry; M.D., University of Oregon Medical School, 1964.
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- FORDYCE, A.J.W.**, Assistant Professor of Orthopaedic Surgery; M.D., University of Edinburgh College of Surgeons, Scotland, 1974.
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- GARNER, Charles W.**, Assistant Professor of Biochemistry; Ph.D., University of Texas at Austin, 1969.
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DERMATOLOGY

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FAMILY PRACTICE

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DAUGHERTY, Bill, M.D., Assistant Clinical Professor
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