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UT SOUTHWESTERN MEDICAL SCHOOL

Since 1974, UT Southwestern Medical School has enrolled more than 200 first-year students annually. Current class size annually is from 235 to 240 students. In addition to the approximately 950 students in the four-year undergraduate medical curriculum, more than 1,800 clinical residents and postdoctoral fellows receive training at the School and its affiliated hospitals each year.

The educational programs are conducted in attractive modern buildings on the campus and in the clinical facilities of the affiliated hospitals. The School is dedicated to the education of physicians who are thoroughly grounded in the scientific basis of modern medicine, who are inspired to maintain lifelong medical scholarship and who will care for patients in a responsible and compassionate manner. The faculty and staff are committed to serve society not only by educating future medical practitioners but also by contributing to future medical developments

through research. The majority of graduates eventually practice medicine, and the general curriculum is oriented toward this goal. Many graduates will combine the practice of medicine with careers in teaching and research. For students who wish to pursue careers in research, experience, 12-week Scholarly Activity, fourth-year electives, year-round research experience or formal training leading to combined M.D. and Ph.D. degrees.

Medical Faculty

The excellence of any educational institution is determined by the caliber of its faculty. The faculty at UT Southwestern Medical School has many distinguished members, including six who have won Nobel Prizes since 1985; 22 members of the National Academy of Sciences; 16 members of the American Academy of Arts and Sciences; and 17 members of the National Academy of Medicine.

Faculty members of the Medical School have reached positions of prominence in American and international medicine. Many of the more than 2,400 full-time faculty members have been elected to the presidencies of national or international professional societies, have chaired major national and international medical committees, have been members of study sections for the National Institutes of Health, or are editors or members of editorial boards of medical and scientific journals.

The number of UT Southwestern students placing at the top in national competitive examinations and earning residency positions in outstanding postgraduate programs demonstrates a high degree of teaching effectiveness.

• Accreditation

The University of Texas Southwestern Medical Center at Dallas is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (1866 Southern Lane, Decatur, GA 30033-4097; telephone number 404-679-4501) to award master's (M.A./M.S./M.P.T./M.P.A.S.), doctoral (Ph.D./D.P.T.) and medical professional (M.D.) degrees.

The University of Texas Southwestern Medical School is fully accredited by the Liaison Committee on Medical Education of the Association of American Medical Colleges and the American Medical Association.

MEDICAL SCHOOL ACADEMIC ADMINISTRATION

UT Southwestern Medical School is led by a team of accomplished physicians, educators, and administrators committed to maintaining a supportive atmosphere of healing, discovery, and

learning. Led by [Dwain Thiele, M.D.](#), Interim Executive Vice President for Academic Affairs and Provost, Dean, UT Southwestern Medical School, [UT Southwestern leaders](#) bring a wide variety of backgrounds and experiences to bear on directing one of the nation's top academic medical centers. Leadership across all levels – Schools, Departments, Divisions, Centers, Clinics, and Hospitals – share an ambitious mission: to push the frontiers of medicine while bringing the latest advances to patient care.

<http://www.utsouthwestern.edu/education/medical-school/about-the-school/administration.html>

FACILITIES AND SERVICES

Most facilities and services are described within the “General Information” site. Medical students should also be aware of:

The Office of Medical Education provides academic support for the Medical School. OME professionals collaborate with faculty to design and develop curricula, courses and instructional materials; incorporate interactive learning techniques; and integrate technology into the curriculum. The Medical School has planned for curricular reform since 2013 and implemented a new curriculum with the matriculation of the Class of 2019, who arrived in August 2015. This class has completed the Pre-Clinical phase of education and entered the Clerkship phase in January 2017. The final phase of education, Post-Clerkship, will begin in July 2018.

<http://www.utsouthwestern.edu/education/medical-school/academics/curriculum/index.html>

AFFILIATED HEALTH CARE INSTITUTIONS

The clinical faculty at UT Southwestern offers patient care at a number of affiliated hospitals and clinics in Dallas and Fort Worth, including UT Southwestern University Hospitals & Clinics.

UT Southwestern Medical Center has two hospital facilities – William P. Clements Jr. University Hospital and Zale Lipshy University Hospital – that offer patients superior care and outstanding service provided by a highly trained staff. The hospitals are a crucial component of UT Southwestern's ongoing development as an academic medical center that delivers world-class patient care, while supporting clinical and translational research, as well as education and training, making the University Hospitals sites that both reflect and integrate the Medical Center's three core missions.

Clements University Hospital – an \$800 million state-of-the-art clinical facility – opened in late 2014. The 12-floor, 460-bed hospital is named in honor of the legendary Texas governor, in recognition of his 2009 gift of \$100 million, which he made with only the stipulation that it be used for a transformative purpose related to UT Southwestern’s mission. Clements University Hospital offers patients and medical personnel world-class facilities and technologies. The facility offers practices in cardiology, emergency medicine, general internal medicine and subspecialties, general surgery, vascular surgery, oncologic surgery as well as hematologic malignancies, obstetrics and gynecology, and orthopaedics. It also houses all of the solid organ Transplant Programs, as well as a Level III neonatal intensive care unit. Because of increasing demand for service and a goal to unite hospital services at a single site, construction of an additional hospital tower with 256 beds began in September 2017 and will be completed in approximately two years.

Zale Lipshy University Hospital began a transition to become a nationally renowned freestanding neuroscience facility with the opening of Clements University Hospital. Its neuroangiography unit is a vitally important factor in the diagnosis and treatment of neurological disease, and physicians based at the 148-bed Zale Lipshy facility specialize in diagnosing and treating patients with neurovascular diseases, stroke, Parkinson’s and other neurologic diseases, as well as neurologic malignancies. Other specialties at Zale Lipshy include spine, psychiatry, and rehabilitation.

In Fort Worth, UT Southwestern provides care through the **Moncrief Cancer Institute** and a branch of the Simmons Cancer Center. In addition, UT Southwestern has established the **UT Southwestern Monty and Tex Moncrief Medical Center at Fort Worth**, made possible by a \$25 million commitment from W.A. “Tex” Moncrief Jr. The new ambulatory facility, in the heart of Fort Worth’s burgeoning medical district, opened in June 2017 and increases UT Southwestern’s capacity to serve residents of Fort Worth and surrounding areas, improving access to UT Southwestern’s medical care, research, and educational opportunities.

Outpatient services are offered in several clinical specialties throughout the campus. Community clinics in the Park Cities, Richardson, and Las Colinas also have opened, widening the access to UTSW primary care and specialty physicians.

Parkland Memorial Hospital, a component of Parkland Health & Hospital System operated by the Dallas County Hospital District, is a major teaching location for the Medical Center. More than half of the doctors practicing in Dallas County received some or all of their training at Parkland and UT Southwestern. Parkland’s Level I Trauma Center and Burn Center are internationally recognized. The new Parkland, a \$1.27 billion facility on the east side of Harry Hines Boulevard, opened in 2015 and is an 862-bed adult inpatient hospital that offers a variety of clinical services, ranging from outpatient clinics to an extremely active emergency service,

providing an abundance of clinical situations for teaching purposes. Parkland is adjacent to the Medical Center's South Campus and connected by a bridge-walkway, providing for a free flow of students and staff between the two institutions.

Children's Medical Center, part of Children's Health System of Texas, is one of the largest pediatric health care providers in the nation. With nearly 50 specialty clinics and programs, Children's is the primary pediatric teaching hospital for the University. UT Southwestern pediatric faculty comprise the hospital's medical staff. Children's is the only pediatric hospital in the Southwest with a designated Level I trauma center.

Dallas Veterans Affairs Medical Center, a part of the VA North Texas Health Care System, is another valuable health care facility affiliated with the Medical Center. It is a general hospital with 544 beds and a full range of clinical facilities used by the Medical School's undergraduates and residents. These facilities include medical and surgical services in all major specialty areas. All training is under the direction of the Dean's Committee and is supervised by a large full-time staff augmented by consultants.

Southwestern Institute of Forensic Sciences is located at 2355 North Stemmons Freeway (I-35E) and serves as the base for teaching forensic medicine. It comprises the Dallas County Criminal Investigation Laboratory and the Office of the County Medical Examiner. It also interacts closely with the Transplant Services Center.

Methodist Hospitals of Dallas has several hospitals in the Dallas area. Methodist Dallas Medical Center, a 420-bed hospital, is the hub of the system, providing teaching connections with the Medical Center. Methodist Charlton Medical Center, which has 301 beds, offers a family medicine residency co-sponsored by the Medical School's Department of Family and Community Medicine.

John Peter Smith Hospital in Fort Worth, with 400 beds, is a component of the JPS Health Network and serves as a clinical site for the Family Medicine Clerkship.

UT Southwestern and Texas Health Resources have collaborated to develop **Southwestern Health Resources**, a clinically integrated health care network that leverages the strengths of the two largest local health care systems. The network builds on more than 50 years of collaborations between the two institutions and is comprised of 31 hospitals, an expansive network of physicians, and spans a 16-county service area with more than 7 million residents. The joint effort establishes an organization with the scale and scope to provide leading-edge technology, research, and education, ensuring broader access to exceptional, high quality care.

Texas Health Presbyterian Hospital Dallas, with 866 beds, is a teaching hospital of UT Southwestern. Several clinical services of Presbyterian Hospital are closely related to the

corresponding departments of the Medical School through affiliated residency programs and rotations for medical students and physician assistant students. Several full-time faculty members are based there.

Texas Scottish Rite Hospital for Children, a charitable institution operated by the Scottish Rite Bodies of Texas, provides inpatient and outpatient care at no charge to children with orthopaedic or neurological challenges, as well as dyslexia and other learning disorders. UT Southwestern Medical School performs teaching and clinical services in several fields, including orthopaedics, neurology, pediatrics, prosthetics-orthotics, anesthesiology and radiology.

STUDENT INFORMATION

Admission to the Medical Curriculum

Admission to UT Southwestern Medical School is determined by the Admissions Committee. The chair of the Admissions Committee is appointed by the Dean of the Medical School. The Admissions Committee is composed of appointed and elected faculty members from both basic science and clinical departments.

- **Application Procedure**

Applications for admission to the first-year class beginning in August of any year must be submitted between May 1 and Oct. 1 preceding the year of desired entrance. Application to UT Southwestern requires submission of both the application to the Texas Medical and Dental Schools Application Service (TMDSAS) and submission of a secondary application through the UT Southwestern MyGateway site, which may be found at:

<http://www.tmdsas.com/medical/homepage.html>

and

<https://studentaffairs.swmed.org/mygateway/login.aspx>.

- **Academic Prerequisites**

Obtaining a baccalaureate degree is strongly recommended for applicants to UT Southwestern; however, applicants may be admitted after completing 90 semester hours (exclusive of physical education requirements).

For applicants attending non-U.S. colleges and universities, it is recommended that undergraduate course work be completed at or credited through a regionally accredited U.S. or

Canadian college or university. At least 45 semester hours, including all prerequisites, should have a grade assigned by a U.S. college or university.

It is the responsibility of the applicant to complete all prerequisites prior to matriculating into Medical School. Questions regarding prerequisites should be directed initially to the premedical adviser at the applicant's college or university and secondarily to the Texas Medical and Dental Schools Application Service. If necessary, clarification should be obtained from the Admissions Office, with which final acceptance of courses for prerequisite credit rests.

The required course work is as follows:

English: One year of college English. A minimum of six semester credit hours is required with a grade of C or better. English courses must be approved by the English department for fulfillment of the general education English requirement for the baccalaureate degree. Remedial, developmental and "English as a Second Language" courses are not accepted.

Biology: Two years as required for science majors. One year must include a formal laboratory experience. A minimum of 14 semester credit hours is required with grades of C or better, eight for year one with lab and six for the remainder, or 12 lecture hours and two lab hours. If two semesters of biochemistry are completed, one semester in biochemistry, as offered for science majors, will be accepted toward fulfilling one-half year of this biology requirement. Courses for non-science majors and courses taught for health-career majors (nursing, pharmacy or health professions sciences) are not accepted.

Physics: One year including laboratory as offered for science majors. A minimum of eight semester credit hours is required with grades of C or better. Any courses for non-science majors or health-career majors (nursing, pharmacy or health professions sciences) are not accepted.

Chemistry: One half-year of general (inorganic) chemistry including a corresponding laboratory experience for science majors, one year of organic chemistry for science majors including corresponding laboratory experience in both semesters, and one half year of biochemistry is required. A minimum of 15 semester credit hours is required with grades of C or better (four inorganic, eight organic, and three biochemistry). It should include experience in the laboratory and familiarity with analytic and volumetric techniques. Any courses for non-science majors or health-career majors (nursing, pharmacy or health professions sciences) are not accepted.

Mathematics: One-half year of college calculus or statistics. A minimum of three semester credit hours is required with a grade of C or better. The calculus course may be taught by the math or physics department. Business calculus and pre-calculus are not accepted. The

statistics course must be math-based and preferably taught in the math department. Business statistics and statistics taught in social sciences or education departments are not accepted.

• **Evaluation of Applicants**

The Admissions Committee considers all of the following in evaluating each applicant's acceptability:

- 1) Academic performance in college as reflected in the undergraduate grade-point average;
- 2) The rigor of the undergraduate curriculum;
- 3) Scores from the Medical College Admission Test;
- 4) Recommendation letters from the college premedical committee or faculty;
- 5) Extracurricular activities;
- 6) Research experience;
- 7) Socioeconomic background;
- 8) Any time spent in outside employment;
- 9) Personal integrity and compassion for others;
- 10) The ability to communicate in English;
- 11) Race and/or ethnicity;
- 12) Other personal qualities and individual factors, such as leadership, self-appraisal, determination, social/family support and maturity/coping capabilities;
- 13) The applicant's motivation for a career in medicine, including prior health care exposure.

In addition, applicants are evaluated with regard to the mission of UT Southwestern Medical School, which emphasizes the importance of training primary-care physicians, educating doctors who will practice in medically underserved areas of Texas, and preparing physician-scientists who seek careers in academic medicine and research.

A personal interview is required and is initiated by invitation from the Admissions Committee. The committee invites applicants to interview who have excellent academic qualifications or who demonstrate convincing evidence of commitment to an area of medicine

emphasized in the mission of the Medical School and who have academic backgrounds that indicate the potential for success in achieving the M.D. degree.

- **Medical College Admission Test**

Each applicant must take the Medical College Admission Test prepared by the American College Testing Program, and the test scores must be available before the Admissions Committee will take action on the application. MCAT scores are valid for five application seasons immediately subsequent to the date taken. The MCAT must be taken in or before the year in which application is made. The test is offered multiple times between January and September each year at premedical college centers. The advantage of taking the test in the spring rests in the applicant's ability to retake it (if necessary) prior to the application deadline.

Registration for the MCAT can be accomplished at the website www.aamc.org.

- **Essential Functions**

All individuals, including people with disabilities, who apply for admission to UT Southwestern Medical School must be able to perform specific essential functions. Essential functions are the basic activities that a student must be able to perform to complete the generalist Medical School curriculum. No applicant who can perform the Medical School's essential functions – either with or without reasonable accommodations – will be denied consideration for admission. A candidate for the M.D. degree at UT Southwestern must be able to perform these essential functions:

Observation: Candidates must be able to accurately observe demonstrations and patients close up and at a distance to learn skills and to gather patient data (e.g., observe a patient's gait, appearance, posture, etc.). Candidates also must possess functional use of the sense of vision and somatic sensation. Observation is enhanced by the functional use of the sense of smell.

Communication: Candidates must be able to communicate orally and in writing with patients and members of the health care team. Candidates also must be able to read and comprehend written material.

Psychomotor Skills: Candidates must have sufficient motor function to obtain data from patients using tactile, auditory and visual maneuvers. Candidates must be able to execute motor movements to provide the general care and emergency treatment reasonably required of physicians.

Intellectual and Cognitive Abilities: Candidates must be able to measure, calculate, reason, analyze, synthesize, integrate and apply information. Problem solving, a clinical skill

required of physicians, requires all these intellectual abilities. In addition, candidates must be able to comprehend three-dimensional relationships and to understand the spatial relationships of structures.

Behavioral and Social Attributes: Candidates must possess the emotional health required to use their intellectual abilities fully, such as exercising good judgment, promptly completing all responsibilities attendant to the diagnosis and care of patients, and developing mature, sensitive and effective relationships with patients. Candidates must be able to tolerate physically taxing workloads and to function effectively under stress. They must be able to adapt to changing environments, to display flexibility, and to learn to function in the face of uncertainties and ambiguities inherent in the clinical problems of many patients. Compassion, integrity, concern for others, interpersonal skills, interest and motivation are personal qualities that should be assessed during the admissions and education process.

Ethical Standards: A candidate must demonstrate professional demeanor and behavior and must perform in an ethical manner in all dealings with peers, faculty, staff and patients. Candidates must treat all patients equally without regard to ethnicity, race, gender, religion or any other attribute. Questions of breach of ethical conduct will be referred to the Associate Deans for Student Affairs.

Appropriate Treatment of Students

The teacher-learner relationship must be based on a foundation of mutual respect. Respect, in this context, is reflected in honesty, professionalism and the prudent handling of the teacher's power over the student. Moreover, the teacher-learner relationship is defined and limited by the educational mission and learning objectives of the School. A teacher may be a faculty member, a resident, an intern, hospital staff or a fellow student.

Students who believe they have been mistreated have access to reasonable, fairly administered, and well-publicized policies and procedures for bringing a complaint and reaching a resolution. UT Southwestern employs various complaint and resolution procedures, depending on the substance and nature of the complaint. Students who believe they have been mistreated should contact the Associate Deans for Student Affairs within their particular School for guidance on the policies and procedures available for resolution, as well as available educational and support resources. Some complaints may be resolved informally, while others may require a more formal process. Student complaints about mistreatment in the teacher-learner relationship that are not covered by another UT Southwestern policy will be handled in accordance with the complaint resolution procedure in the Mistreatment of Students in Medicine Policy. The Mistreatment of Students in Medicine Policy is available from the Associate Deans of Student Affairs.

Promotion, Probation, and Dismissal

When a student completes the course requirements of an academic session satisfactorily, he or she is promoted to the next year's class provided there are no reasons that make the procedure unwise.

When an academic deficiency is incurred, the student is referred to a Student Promotions Committee, which is composed of representatives from each teaching Department of the School along with elected members. Its function is to review all important aspects of each student case referred to it and to make appropriate recommendations to the Dean.

The Committee, working within established guidelines, will determine a remediation plan, which may include repeating the work or the specific courses in which deficiencies exist or removal of the deficiency by whatever means the committee may propose. Serious or multiple deficiencies may result in dismissal.

Generally, a student who is required to remediate course or deficiencies not requiring the repeat of an academic year shall be placed on "academic warning" and remain as such until all coursework is successfully remediated. Any failure during the period of academic warning will automatically prohibit the student from progressing to the next academic year and will result in an upgrade of action as determined by the Student Promotions Committee.

A student who is required to remediate course or deficiencies requiring the repeat of an academic year shall be placed on "academic probation" and remain as such until successful completion of the entire repeated academic year. Any failure on probation will result in upgrade of action contingent upon immediate review by the Student Promotions Committee. The committee and the academic departments concerned may require the student to retake courses previously completed with a passing grade.

In situations where a student satisfactorily completes courses previously taken, the transcript will record both grades. If a graded clerkship was completed with a passing grade on both attempts, the final grade will be the average of the two recorded grades. In the case of Medical School pre-clerkship grades with Pass/Fail status, the grade from the first attempt was a **Fail** and the course was completed with a passing grade on the second attempt, the final grade will be a **Pass** (regardless of what grade was earned on the second attempt).

Appeals

A student may appeal an academic decision of the Student Promotions Committee by submitting a written appeal to its Chair within 10 business days of the student's receipt of the notification of the Student Promotions Committee decision. The student's written appeal should contain the facts on which the appeal is based and any supporting documentation, the reason(s) the student believes the decision by the Student Promotions Committee should be changed, and the remedy sought.

The Chair will review the student's written appeal and determine if the Committee has discretion pursuant to the Student Promotions Committee Guidelines to reconsider and impose a lesser remedial action. If it is determined that the Committee can reconsider its previous decision, the Student Promotions Committee will review the written appeal and meet with the student to discuss the appeal. The Committee will forward a written decision to the student

within 10 business days after receiving the appeal. If the student is not satisfied with the Student Promotions Committee's decision, the student may appeal in writing to the School's Dean within 10 business days after receipt of the Student Promotions Committee's decision. The Chair of the Student Promotions Committee will submit to the Dean all materials relevant to the appeal that were considered by the Committee.

The Dean of the School shall have the discretion either to determine the appeal personally or to appoint an ad hoc Committee or designee to consider the appeal and to make a recommendation to the dean.

If the Dean personally considers the appeal, he will review the written appeal and may meet with the student to discuss the appeal. The Dean will forward a written decision to the student within 10 business days after receiving the appeal.

If the Dean appoints an ad hoc Committee or a designee, the Committee or designee will review the written appeal and may meet with the student to discuss the appeal. The ad hoc Committee or designee will forward a written recommendation to the Dean within 10 business days after receiving the appeal. The Dean will consider the ad hoc Committee's or the designee's written recommendation and will forward a written decision to the student within 10 business days after receiving the recommendation.

The decision of the Dean is final.

For prospective Medical School students, the "General Information" site of the catalog contains additional onboarding information, including:

- Background Check
- Policy Against Discrimination
- Residency Defined
- Active Military Service
- Required Immunizations
- AIDS, HIV and Hepatitis B Virus Policy
- Bacterial Meningitis

• **Transfers From Other Medical Schools**

If positions are available, transfer is permitted for students in good standing at a medical school accredited by the Liaison Committee on Medical Education. Transfer is most easily accommodated at the beginning of the Clerkship phase. Transfer into the fourth year is not possible. Typically, the availability of positions in the Clerkship phase will be known in the late fall of the second year.

Applications and information can be obtained from the Admissions Office. Applications for transfer will be considered by the Admissions Committee of the Medical School.

- **Advanced Standing**

UT Southwestern does not have an advanced standing program. Admission can be granted only through the usual process to the first-year class. Upon admission, a student is permitted to petition individual Departments if exemption from that course is desired. There is no formal process for this, and decisions are totally at the discretion of each Department.

TUITION AND FEES

All fees are subject to change without prior publication and become effective when enacted. The Texas Legislature does not set the specific amount for any particular student fee. The following student fees are authorized by the state statute; however, the specific fee amounts and the determination to increase fees are made by the University administration and The University of Texas System Board of Regents.

Tuition

Information concerning the current cost of a medical education at UT Southwestern can be viewed at:

<http://www.utsouthwestern.edu/education/medical-school/admissions/costs-tuition-and-aid.html>

Tuition for nonresidents is three times the resident tuition rate. Texas statutes also provide that a nonresident student is permitted to pay the same tuition and fees as a Texas resident if the student holds a competitive scholarship worth at least \$1,000 per year.

Students in doubt about their residency status for tuition purposes should consult the Residency Defined section in the “General Information” portion of the catalog.

The “General Information” site also describes the various fees and insurances needed by students at UT Southwestern. Contained within Student Information, these references include: Designated Tuition; Tuition Installment Payments; Computer Usage and Technology Fees; Graduation Fee; Health Insurance; Disability Insurance; Incidental Fees; Laboratory Fee; Late Registration Fee; Malpractice Insurance Fee; Medical Services Fee; Returned Check Fee; Student Services Fee; Books and Equipment; Parking; Microscopes; and Student Housing.

Financial Aid

The “General Information” section of the catalog addresses the process of applying for and receiving financial aid. Information also can be viewed at:

<http://www.utsouthwestern.edu/about-us/administrative-offices/financial-aid/index.html>

Degree of Doctor of Medicine

The degree of Doctor of Medicine is granted by UT Southwestern Medical School upon satisfactory completion of the instructional courses and licensing detailed in this catalog. The completion of these courses is ordinarily accomplished in four academic years ranging in length from 32 to 44 weeks each.

Candidates must 1) be at least 21 years of age at the time the degree is awarded, 2) be of good moral character, 3) fulfill all academic requirements, and 4) comply with all necessary legal and financial requirements.

Curriculum

UT Southwestern Medical School has a four-year curriculum based on departmental as well as interdisciplinary teaching. The first 18 months offer the student an opportunity to develop a strong background in the basic sciences and to receive an introduction to clinical medicine.

The first-year curriculum begins with a study of the normal human body and its processes at the molecular and cellular levels. Material is integrated into three parallel tracks during the first six months: Fundamentals of Biomedical Sciences, Body Structures Foundations, and Academic Colleges. Topics such as molecular biology, biochemistry, genetics, cell biology and cellular basis of physiology, neuroscience, neoplasia, principles of pathology, pharmacology, and microbiology, as well as fundamentals of immunology and host responses (inflammation) are integrated into the courses Human Structure, Microanatomy, Macromolecules, Cells, Tissues, Genetics, and Organisms and Host. Clinical correlations are included. For example, Human Anatomy integrates radiological anatomy into the course by correlating traditional anatomic studies with images. During the entire Pre-Clerkship phase of education, courses build concepts necessary for clinical medicine. These principles and concepts are reintroduced later through interdisciplinary courses to explain disease processes.

The Academic Colleges are small learning communities that bring together gifted faculty members with small groups of students (typically six) so the students can observe and mirror the professional clinical skills, behaviors, and attitudes of a highly experienced physician. Academic Colleges meet weekly during the Pre-Clinical phase of education and then continue monthly once the Clerkship phase begins. More details are available in the course descriptions below.

The next 12 months consist of Integrated Medicine courses organized by the body's many organ systems: hematopoietic; cardiovascular; pulmonary; gastrointestinal, liver, and nutrition; renal and genitourinary; endocrinology, reproduction, and metabolism; musculoskeletal and skin. During this phase the student has an opportunity to begin a study of disease processes and the manner in which physicians approach those processes therapeutically. The goal of these courses is to provide the core principles from each of the major disciplines needed to practice clinical medicine.

Strive: Personal and Professional Development for Careers in Medicine is a Pre-Clerkship required seminar course focused on professionalism, career development, cultural competency, leadership, wellness, and financial literacy.

The Pre-Clerkship phase ends with two new courses: Fundamentals of Clinical Reasoning, and Transitions to Clerkships. Certification in advanced cardiac life support is also presented during this time and is a requirement for graduation.

Clinical experiences begin early in the first six months where students are taught communication skills, history-taking and the physical exam in Colleges with their mentors. Contact with patients begins early with history taking, physical examination, and visits to the hospital wards and various outpatient clinics occurring repeatedly during College sessions. Students usually will take the U.S. Medical Licensing Examination Step 1 at the conclusion of the Pre-Clerkship phase of their education. The new curriculum includes dedicated time to prepare for the exam. The details of the USMLE Step 1, as it pertains to meeting academic requirements, are discussed later in this section of the catalog.

The third and fourth years offer intense clinical experiences involving the student in direct patient care. The Clerkship phase lasts 18-months and requires rotations in core clerkships including eight weeks each in surgery and internal medicine, six weeks each in ambulatory medicine, pediatrics, psychiatry and obstetrics and gynecology, four weeks each in family medicine and neurology. During this phase students are also required to perform 12-weeks of Scholarly Activity. Scholarly Activity projects may be performed in Basic Research, Clinical Research, Biomedical Engineering Innovations, Healthcare Systems Quality Improvement, Community Health, Global Health, and Medical Education. As mentioned, students will have six weeks dedicated to preparing for Step 1 exams. This leaves sufficient time for students to structure electives to develop a unique pathway designed to reach each of their career goals.

The current fourth year consists of two four-week clinical subinternships in (now called Selectives) and four-week electives chosen from an extensive list of options to fulfill the remaining course requirements. When the final phase of the curriculum is implemented in

2018-2019, the Post-Clerkship phase will include the new courses – Frontiers in Medicine, the Physician In Society, and Transitions To Clinical Care – all designed to prepare the student for graduate medical education and practice.

The curriculum is dynamic and responds to the changing requirements of medical education. Faculty and students review the curriculum regularly, and changes are introduced almost every year. For an updated list of courses and credits, students should contact the Office of Enrollment Services.

Summer Opportunities

Students have a 10-week summer break at the end of their first year. For those who wish, this time can be used for research experiences or for sponsored clinical exposure in a variety of specialties. Student research opportunities abound among the faculty in both basic and clinical departments. The results are presented at a University-wide forum in the spring semester. Community preceptorships are offered in internal medicine, family medicine and psychiatry, and also are available in more specialized settings such as anesthesia.

Medical Studies in Other Schools

Students are permitted to pursue some parts of their studies at other medical schools in the form of senior-year courses. Approval must be obtained from the equivalent UT Southwestern Department in which the course is based and then from an associate dean for student affairs. The following conditions must be met: 1) that the student enroll and pay fees at UT Southwestern Medical School and 2) that proof of satisfactory completion of studies in the institution is submitted to the UT Southwestern Office of Enrollment Services.

Visiting Students

UT Southwestern's capacity to accommodate students from other institutions who wish to undertake an elective rotation is very limited. UT Southwestern cannot reserve positions in advance for any students other than those enrolled in UT Southwestern's M.D. degree program. The burden placed on UT Southwestern's faculty in providing adequate supervision to UT Southwestern students leaves scant room even for students from schools accredited by the Liaison Committee on Medical Education, with whom UT Southwestern reciprocates on exchanging students for elective rotations. In the unlikely event that UT Southwestern has excess capacity on its clinical teaching services for well-trained elective students from non-LCME-accredited medical schools, UT Southwestern will consider an application from those students.

Core clerkships in the third year and courses provided in the first two years are available only to students enrolled at UT Southwestern. Approval of visiting students rests with the appropriate clinical Department. All students must be covered by malpractice insurance. Information concerning electives may be obtained from the Office of Enrollment Services or from the appropriate clinical Department.

Calendar

The calendar for UT Southwestern Medical School varies in detail from year to year. First- and second-year classes begin in early August and the first-year courses are completed in May. The various clinical disciplines are in session throughout the calendar year starting with the Clerkship phase. Graduation is held on the first Saturday in June. There is a winter break as well as a spring break for all classes.

Curriculum

Pre-Clerkship Phase

Course	Credits
Academic Colleges	3.0
Strive: Personal and Professional Development for Careers in Medicine	0.5
Body Structure Foundations	
Human Structure	2.5
Microanatomy	3.5
Fundamentals of Biomedical Sciences	
Macromolecules	0.5
Cells	1.0
Tissues	1.0
Genetics	1.0

Organisms and Host Responses	2.5
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Integrated Medicine

Musculoskeletal and Skin	2.0
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Hematopoietic	2.0
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Cardiovascular	2.0
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Pulmonary	2.0
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Renal and Genitourinary	2.0
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Gastrointestinal System and Nutrition	2.5
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Endocrinology, Energy Homeostasis, and Reproductive Health	2.0
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Brain and Behavior	3.0
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Foundations of Clinical Reasoning	1.0
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Transitions to Clerkship	0.5
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Medical Physiology	4.0
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Academic Colleges

Academic Colleges are six, small learning communities that bring together gifted faculty members with small groups of students (typically six) to observe and practice the professional clinical skills, behaviors, and attitudes of a highly experienced physician. During the Pre-Clerkship period, each College group meets once a week: three of the six Colleges meet on one day and the remaining three Colleges meet on another day. Thereafter, Colleges groups meet monthly. Topics are often linked to the basic and clinical science material being simultaneously learned, and include medical history and physical exam, medical ethics, case-based learning, medical professionalism, communication skills, clinical reasoning, and interprofessionalism.

- **Human Structure**

This integrated course of anatomy, embryology, and radiological imaging presents the development, structure, and function of the healthy human body as it relates to the practice of medicine. By using various approaches, a three-dimensional understanding of structural relationships in the living body is acquired. Students, working in groups of six, dissect major body structures in the cadaver laboratory. Complete skeletons, individual bones, skulls, dissections and other demonstration specimens amplify and clarify adult anatomy. The basics of medical imaging techniques are introduced, including plain film, CT, and MR. These images enhance understanding of bony structures, individual thoracic and abdominopelvic viscera, and the three-dimensional relationships between these viscera. Knowledge of the embryonic development of the human body facilitates the understanding of organ structures and anatomical relationships in the adult body. The basics of early embryonic development are addressed and the anatomy of the various organ systems is related to their embryology.

- **Microanatomy**

The Microanatomy course introduces the fine structures and functions of the cells and tissues of the human body as observed at both light and electron microscopy resolution. Emphasis is placed on structure-function relationships between different cell types, as well as foundational discussions on how alterations in cell architecture and cell behavior lead to disease. The course consists of lectures, video presentations, and coordinated laboratory instruction.

- **Macromolecules**

The Macromolecules course introduces the fundamentals of modern biochemistry and molecular biology from the perspective of macromolecules. Topics include the fundamentals of protein structure, ligand binding and enzyme kinetics, basic DNA and RNA structure and function, DNA replication and repair, transcriptional regulation, mRNA processing, and translation. Throughout, the emphasis is on aspects of biochemistry and molecular biology relevant to medical practice.

- **Cells**

The Cells course introduces the basic principles by which cells function and interact. Topics include bioenergetics, cytoskeleton, proliferation, membrane trafficking, signaling, and motility. Emphasis is placed on the relationships between the structures and functions of cells and how dysfunction in these relationships leads to human disease.

- **Tissues**

As the building blocks of biology transition from molecules, genetics, and cells, tissues become the next primary focus. In this course topics are explored on how cells organize, coalesce, and provide critical infrastructure for the human body. After understanding the fundamentals of human tissues, topics transition into how these functions go awry, and how such pathologic conditions underlie human disease. This knowledge provides a foundational understanding for the medical issues experienced by the body as a whole.

- **Genetics**

This course addresses the fundamentals of medical genetics with a focus on the genetic technologies and concepts utilized to diagnose, manage, and treat patients with genetic disorders. The course is taught primarily in a Group Problem-based format with additional interspersed didactic lectures. Topics covered include the major types of genetic disorders (including chromosomal, Mendelian, and complex multigenic disorders, as well as single gene disorders with atypical inheritance patterns), genetic testing and diagnosis (including indications for testing and technologies), basic concepts of population genetics, calculating genetic risk and recurrence risk prediction, cancer genetics (including inherited and sporadic forms), genetic screening and test parameters, types of genetic services, and medical ethics.

- **Organisms and Host Responses**

Principles of microbiology, immunology, and pharmacology are introduced and integrated in this course. Topics include basic virology, bacteriology, mycology, and parasitology (microbiology); innate and adaptive immune function, immunodeficiencies, and autoimmunity (immunology); pharmacodynamics, pharmacokinetics, toxicology, and principles of antimicrobial mechanisms (pharmacology). An overview of autonomic physiology and pharmacology provides perspectives on host responses related to organ systems. Microbiology topics are closely aligned with immunology and pharmacology to integrate principles of interactions between microbial organisms and the human immune system. Pathologic correlates and pharmacological treatments of inflammation are also presented.

- **Musculoskeletal and Skin**

This course focuses on normal and abnormal structure and function of musculoskeletal and skin tissues, encompassing the epidemiology and pathogenesis of common rheumatologic, orthopaedic, muscle, and dermatologic diseases and injuries. Clinical manifestations, diagnosis, and treatment strategies, including medical and surgical management, are included. Emphasis is placed on evidence-based practices related to specific diseases, injuries, and preventative interventions.

- **Hematopoietic**

This course introduces bone marrow and blood cells. It begins with the normal hematopoiesis, leading into non-malignant disorders of the leukocytes and erythrocyte, followed by malignant disorders of the hematolymphoid system. The course finishes with discussions on hemostasis and thrombosis, including qualitative and quantitative disorders of the platelets. Content spans normal physiology, pathophysiology, and pathology, as well as microbiology. Clinical aspects of hematology are introduced in terms of drug therapy and evaluation of patients with commonly encountered hematological problems.

- **Cardiovascular**

The cardiovascular course provides a broad knowledge base about the cardiovascular system and involved diseases. It begins with an introduction to cardiac anatomy and physiology, followed by epidemiology of cardiovascular disease, and "tools" for physicians to use in the diagnosis of cardiac disease. Different forms of cardiovascular disease are then discussed linking normal physiology, pathology, pathophysiology, clinical medicine, and pharmacology in an integrated fashion for normal and abnormal development of the heart, the electrical system of the heart, the heart as a pump, the circulation of blood, and atherosclerosis as it affects the heart and blood vessels. Prevention of cardiovascular disease is addressed and case-based learning is used to emphasize the approach to patients with cardiovascular disease from birth to death.

- **Pulmonary**

This course introduces the respiratory system based on its structure and function, and how the two are related to the health and disease of the system. It begins with an overview of physiology and the mechanics of how humans breathe, as well of the principles of oxygenation and ventilation. A tour of the system begins with air entry into the human body to the end where gas exchange occurs at the alveoli. Diseases of the airway, lung parenchyma, and pulmonary vasculature are introduced in an integrated fashion from the perspectives of pathology, microbiology, pathophysiology, pharmacology, and clinical medicine. Extremes in pathophysiology requiring critical care are also discussed in a similar fashion. In case-based learning sessions, students learn how to navigate through these different disease states by applying the principles of physiology to the mechanisms of disease, and by learning how to integrate diagnostic modalities and imaging. Pharmacological and non-pharmacological intervention for the treatment, maintenance, and prevention of future disease culminates this process.

- **Renal and Genitourinary**

Renal and genitourinary disease is examined in relation to the function of kidneys, fluids and electrolytes, and the common derangements of renal physiology and disease

manifestations. Clinical syndromes and pathology commonly encountered in patients presenting with urologic disorders also include diseases of the prostate, genitourinary tumors, voiding dysfunction, pediatric urologic syndromes, urinary tract infection, erectile dysfunction and nephrolithiasis.

- **Gastrointestinal System and Nutrition**

The science and medicine of nutrient acquisition and utilization is covered in relation to the normal mechanisms by which the gastrointestinal system processes and absorbs nutrients from the environment for use by the body, the diseases associated with the malfunction of those processes, and the clinical medicine by which those diseases are diagnosed and treated. Broader topics of nutrition including factors that determine the quality and quantity of nutrient intake and the effect that such factors have in health and disease are also addressed. Emerging topics such as the role of the gut microbiome in health and disease and the function of the gastrointestinal system for immune tolerance and surveillance are introduced.

- **Endocrinology, Energy Homeostasis, and Reproductive Health**

The fundamentals of hormone production, secretion, and mechanisms of action are differentiated from normal to abnormal with a focus on appropriate diagnoses and treatment of diseases. Endocrine and reproductive organs are presented individually to encompass all aspects of physiology, pathology, histology, malfunction, and treatment. However, diabetes and obesity are integrated in a multi-organ approach.

- **Brain and Behavior**

This interdisciplinary course examines normal structure and function of the nervous system and the broad spectrum of neurological and psychiatric diseases encountered in clinical practice. The unit begins with a discussion of the characteristics of the neuron and other cellular components of the nervous system, the nature of neuronal circuits and the concept of the mind, followed by a comprehensive presentation of the gross anatomy of the nervous system. Building on these fundamentals, the course then examines dynamic/functional domains of the normal nervous system – development, sensory and motor systems and cognition – and the disorders affecting these areas. Course material is presented via a combination of lectures, team-based learning activities, and small group conferences and laboratory sessions.

- **Foundations of Clinical Reasoning**

This course is placed at the junction of the pre-clerkship and clerkship periods to forge connections between existing knowledge and skills with new, important lines of thought. In the

pre-clerkship period, clinical reasoning skills through team-based learning and Colleges case-based learning sessions and clinical site visits is linked to courses in the Integrated Medicine block. In Foundations of Clinical Reasoning, a more holistic approach to patient care is presented through a symptom-based approach to diagnosis. Disciplines like epidemiology, biostatistics, patient safety, quality improvement, and evidence-based medicine serve as effective tools to improve clinical reasoning skills.

- **Transitions to Clerkship**

Through a series of didactics, small group breakout discussions, team-based learning exercises, and hands-on skills training in the simulation center and Southwestern Center for Minimally Invasive Surgery (SCIMIS), knowledge and skills necessary to effectively transition to the clinical clerkships are developed. After a general orientation to roles and expectations on the clerkships, students work through exercises to develop skills in effective feedback, case presentations, clinical documentation in the electronic health record, inter-professional teamwork, and effective time management. This course includes training and certification in Advanced Cardiac Life Support. In addition, small groups are taught and assessed in various procedural skills including knot tying, suturing, sterile gown and gloving, and Foley catheter placement. Necessary credentialing and training modules required by our affiliated hospitals are also completed. Competency in each of the required skills must be demonstrated.

- **Advanced Cardiac Life Support**

ACLS includes didactic information about the management of cardiac arrest, including rhythm recognition, drugs and protocols. Students practice skills for airway management, including intubation; management of bradycardia, tachycardias, ventricular fibrillation, asystole, pulseless electrical activity, and shock and heart failure; and use of defibrillators and automated external defibrillators. Students must master techniques for basic life support for health professionals, such as one- and two-rescuer cardiopulmonary resuscitation, infant CPR, child CPR, and management of obstructed airway for all ages, before practicing skills for advanced techniques. Examinations include a written examination and demonstration of proper technique for intubation and ability to serve as team captain for a cardiac-arrest scenario. The student must pass each section for certification.

- **USMLE Step 1**

UT Southwestern medical students are counseled to take the U.S. Medical Licensing Examination Step 1 at the end of their six-week Step 1 Preparation Course, which may be taken during the first semester of the Clerkship phase of their education. This course includes advice and support regarding study planning, weekly check-ins to ensure progress, and tutoring support if needed. Students must obtain a passing score on the USMLE Step 1 to progress in the curriculum.

Core Clerkships

Clerkships/courses	Credits
Ambulatory Medicine	6.0
Family Medicine	4.0
Internal Medicine	8.0
Neurology	4.0
Obstetrics and Gynecology	6.0
Pediatrics	6.0
Psychiatry	6.0
Surgery	8.0
Scholarly Activity	12.0

• Ambulatory Medicine Clerkship

The core clerkship in Ambulatory Care consists of four weeks of adult and two weeks of pediatric outpatient rotations designed to prepare student to expose students to preventive medicine and management of chronic diseases across the age spectrum in a longitudinal outpatient care setting. Students will learn to gather a problem-focused history and exam, to recognize acute exacerbation of chronic illness, generate a differential diagnosis for an acute illness, and to promote concepts of wellness and disease prevention. The preceptorship structure is also designed to teach students to build patient-doctor relationships, to foster professionalism, and to introduce students to ambulatory medicine office structure and clinical operations.

- **Family Medicine Clerkship**

The third-year clerkship in family medicine exposes students to primary-care role models and ambulatory clinical experiences in contemporary health care delivery away from the tertiary-care setting. This four-week clerkship has both didactic and clinical portions.

The clinical portion of the clerkship is based primarily at family medicine residency programs affiliated with UT Southwestern and the family medicine residency program located at UT Tyler, Baylor Medical Center at Garland, and John Peter Smith Hospital. Some students also are based at private practitioner offices in Arlington, Colleyville, and Bedford that are designated clerkship sites. The UT Southwestern-affiliated sites include Charlton Methodist Hospital, Dallas; UT Southwestern University Hospitals, Dallas; McLennan County Family Practice Center, Waco; and UT Southwestern-Parkland Family Medicine Residency Program, Dallas. Each of these sites is staffed by UT Southwestern faculty. Students see patients at the family medicine centers and in a variety of other practice sites, including private offices, under the supervision of adjunct clinical faculty.

The didactic portion of the clerkship consists of lectures and small-group activities that focus on clinical topics and patient and family issues commonly encountered in a family medicine environment. Clerks prepare and present a patient study to faculty at each site and participate in conferences.

- **Internal Medicine Clerkship**

The internal medicine clerkship consists of eight weeks of general medicine inpatient medicine. Each student spends four weeks at Parkland Memorial Hospital and four weeks at an affiliate institution. The student is assigned patients under the supervision of house staff and attending physicians. The clinical clerk is responsible for written admission work-ups, progress notes and oral presentations, as well as participation in the ongoing care of patients.

The objectives of the clerkship are to develop proficiency in approaching the diagnosis and therapy of serious medical illness, to foster an appreciation of disease as the expression of deranged physiology, to inculcate habits of critical inquiry and self-education, and to enhance an appreciation of the physician's responsibility to the patient.

Teaching is carried out on rounds with house staff and attending physicians and at conferences and lectures specifically organized for the clerks. Each student must undertake a systematic program of daily reading in standard texts and journals. Attendance at departmental events such as Grand Rounds, Clinical-Pathological Conference, the case presentations at noontime Potpourri and Residents' Conference completes this educational experience.

- **Neurology Clerkship**

A comprehensive and intensive neurology clerkship offers instruction in the diagnosis and management of neurologically ill patients. The students participate actively in the evaluation and care of inpatients on neurology services at Parkland Memorial Hospital, Dallas VA Medical Center and Children's Medical Center Dallas. Clinical conferences, tutorial seminars and didactic teaching sessions are important parts of the clerkship. The clerkship prepares the student to evaluate neurological disease and to apply knowledge of anatomy, physiology and pathology to the formulation of an appropriate differential diagnosis.

- **Obstetrics and Gynecology Clerkship**

Each third-year medical student spends six weeks on the obstetrics and gynecology service. The time is evenly divided between obstetrics and gynecology. Students are divided into small groups, and their clinical activities are supervised by house staff and faculty.

During obstetrics, students rotate through postpartum and antepartum care of medical complications of pregnancy. Students also provide care in the labor and delivery area and the triage area of Parkland and the prenatal clinic at Maple Plaza. Under supervision of house staff or certified nurse midwives, students deliver babies of uncomplicated pregnancies. Students also assist in the management of complicated pregnancies during the labor and delivery process and follow patients postpartum.

During gynecology, the students are divided into small groups and rotate through gynecology clinic and surgeries at Parkland and other hospitals. One afternoon is spent in the UT Southwestern Center for Minimally Invasive Surgery learning laparoscopic techniques.

In addition to ward and clinical activities, each student spends four to five hours each week in formal conferences with faculty. These conferences are devoted to discussion of patients or clarification of information that the student has encountered elsewhere. Faculty members give lectures on the principles of obstetrics and basic gynecology.

- **Pediatrics Clerkship**

The six-week pediatric rotation is divided into four weeks on the inpatient service at Children's Medical Center Dallas, one week in the Emergency Department, and one week in the newborn nursery at Parkland Memorial Hospital.

Inpatient Service: During the four-week inpatient rotation, students are placed on one of the general pediatric inpatient clinical services at Children's for two weeks and on one of the four subspecialty services for two weeks. Students are part of the clinical management team under the supervision of a full-time faculty attending physician and an upper-level pediatric

resident. The number of patients each student follows is determined by his or her individual educational requirements. Each student is expected to take initial histories, perform initial physical exams, write daily progress notes on his or her assigned patients and be prepared to present them on daily rounds.

Students spend one week in the Emergency Department, including a late night and weekend ED shift, and one week in the newborn nursery at Parkland. During the newborn nursery week, students examine healthy newborns and may attend complicated deliveries.

The course in pediatrics is designed to emphasize normal growth and development and the impact of disease and its treatment on the developing child. Additionally, the prevention of disease and injury, along with the role of the physician as child advocate, is stressed.

• **Psychiatry Clerkship**

An intensive six-week rotation in psychiatry actively involves the student in a variety of psychiatric services. Students are assigned to two three-week sites for their primary clerkship experiences. These sites include inpatient psychiatry, consultation/liaison psychiatry, community health care and emergency psychiatry in a variety of hospital settings, including Parkland, UT Southwestern University Hospitals, Dallas VA Medical Center, Children's, and Texas Health Presbyterian. These primary clerkship experiences are supplemented by mentored sessions in outpatient psychiatry and emergency psychiatry. Students also are able to see clinical care unique to psychiatry, such as electroconvulsive therapy.

In addition to diverse clinical exposure, students also spend one half-day a week in didactic teaching sessions focusing on the diagnosis and biopsychosocial treatment of psychiatric disorders. Students attend weekly departmental Grand Rounds and participate in teaching conferences on their primary service site.

• **Surgery Clerkship**

The junior surgical clerkship introduces students to the theoretical and practical aspects of surgical patient care. Emphasis is placed on the underlying pathophysiology rather than technical aspects. Students are fully involved in the daily care of surgical patients and participate in diagnostic and therapeutic decision-making. This eight-week experience also includes didactic teaching sessions, small-group interactions with full-time faculty and skills lab training.

Scholarly Activity

Scholarly Activity projects in Basic Research, Clinical Research, Healthcare Systems Quality Improvement, Community Health, Global Health, and Medical Education. Projects are performed under the direct supervision of a research mentor.

- **USMLE Step 2**

Students take the U.S. Medical Licensing Examination Step 2 - Clinical Knowledge and Step 2 - Clinical Skills after completion of the core clerkships in the third year. Passing scores on USMLE Step 1, Step 2 – CK, and Step 2 – CS are required for graduation.

Post-Clerkship Phase

Electives & Selectives	Credits
Two Selectives	4.0
Five Electives	10.0

- **Selectives**

These four-week clinical rotations require students to act as a rigorous sub intern on an inpatient service in a medical discipline in internal medicine, pediatrics, psychiatry, neurology, obstetrics and gynecology, or surgery including subspecialties in each of these areas. Students are expected to interview patients and obtain vital information for patient care, interpret data and discuss the treatment plan with the patient and family, promote general health maintenance and disease prevention, and consult with specialty services to coordinate care. Students should be able to provide the differential diagnosis of a chief complaint and a treatment plan to investigate the cause. Students also are expected to apply current clinical knowledge to arrive at a diagnosis with the health care team. Students should be able to assimilate scientific evidence to improve patient care and be able to communicate effectively with the health care team, patients and patients’ families. There is special emphasis on skills needed for internship, such as cross-over, transitions of care, writing discharge summaries, conducting family meetings and breaking bad news.

- **Electives**

The elective program has a twofold purpose: 1) to aid the student in a career choice and 2) to offer an opportunity to build strengths in related fields should a career choice have been

made by the senior year. Five or more months of the fourth year of Medical School are available for electives.

Students may take electives off campus if approved by the Chair of the relevant Medical School Department and then by an Associate Dean for Student Affairs. Some students may choose to spend their elective time on a research project.

An elective handbook listing the various offerings is published each year. Included are electives in the major clinical disciplines and in the medical and surgical subspecialties. Occasionally a student may, with faculty approval, design an elective to meet a special need. Selection of electives is guided by individual counseling from faculty when needed.

More than 100 elective courses are offered by many departments, including Anesthesiology and Pain Management, Cardiovascular and Thoracic Surgery, Clinical Sciences, Dermatology, Family and Community Medicine, Internal Medicine, Neurology, Neurological Surgery, Obstetrics and Gynecology, Ophthalmology, Orthopaedic Surgery, Otolaryngology - Head and Neck Surgery, Pathology, Pediatrics, Pharmacology, Physical Medicine and Rehabilitation, Plastic Surgery, Psychiatry, Radiology, Surgery, and Urology.

PROGRAMS

MEDICAL SCIENTIST TRAINING PROGRAM

The Medical Scientist Training Program (MSTP) at UT Southwestern integrates medical and research training for qualified women and men at the graduate level leading to both M.D. and Ph.D. degrees. The goal of the Program is to prepare individuals as physician-scientists. Graduates of this Program typically pursue careers in academic medicine and biomedical research at the nation's leading institutions.

This Program offers students an integrated curriculum in the scholarly setting of UT Southwestern Medical School and UT Southwestern Graduate School of Biomedical Sciences. The MSTP curriculum is flexible and individualized to suit the background and interest of each medical scientist fellow. The Program is designed to be completed in approximately seven to eight years. Additional time is allotted if needed to meet requirements for the Ph.D. degree.

• Prerequisites

A baccalaureate degree is required, and significant experience in laboratory research is essential for admission. It is desirable, but not mandatory, that the minimum prerequisites for admission to UT Southwestern Medical School be supplemented by one year of college calculus

and one year of physical chemistry. Potential applicants who have not had prior experience in a research laboratory should gain such experience before considering a career in academic medicine and medical research. For Medical School students, it is possible to acquire the necessary research experience after entering and to apply to the MSTP during the first or second year of Medical School.

- **Medical Scientist Fellowships**

The Medical Scientist Training Program is the recipient of a training grant from the National Institute of General Medical Sciences of the National Institutes of Health. Support for the Program also is provided by other sources. Students accepted into the Program receive stipend support and full funding for tuition and fees.

There is no priority assigned to an applicant's state of residency. MSTP fellows come from all over the United States, and a limited number of positions with full support are available to international applicants.

- **Organization of the Program**

Through the course of the Program, M.D./Ph.D. fellows are enrolled in UT Southwestern Medical School or UT Southwestern Graduate School. Students who complete the MSTP will have met all requirements for the Ph.D. degree in the Graduate School and for the M.D. degree in the Medical School. The Ph.D. may be earned in one of the basic science graduate training programs within the Division of Basic Sciences. Program faculty are derived from both basic science and clinical departments of the Medical School.

The MSTP affords the student flexibility in the selection and scheduling of courses. A typical schedule would include the first two years of Medical School with summer laboratory rotations prior to and following the first year and again following the second year. The summer laboratory rotations are research apprenticeships to aid the student in selecting a research area and a mentor for research training. These apprenticeships are established by discussion with each student, the MSTP committee and the potential preceptor. They are intended to expose the student to a variety of excellent laboratories in his or her area of interest.

- **Application Procedure**

The process for admission to the MSTP can be viewed at www.utsouthwestern.edu/mstp . Application to the MSTP is made via the American Medical College Application Service. Concurrent application to the Medical School alone is permissible via the Texas Medical and Dental Schools Application Service.

M.D./M.P.H. PROGRAM

UT Southwestern Medical School and UT Health-School of Public Health offer students interested in medicine and public health an opportunity to be awarded a degree in each field at the end of a four-year program. Students complete all coursework for both degrees on the UT Southwestern campus and receive the M.D. degree from UT Southwestern and the Master of Public Health from UT Health-School of Public Health. The activities leading to the M.D. degree are described earlier in this chapter. Curriculum and course descriptions for the M.P.H. are available from the Office of Enrollment Services, The University of Texas Health Science Center at Houston, P.O. Box 20036, Houston, TX 77225; 713-500-9032.

Students register at UT Southwestern for courses in the Medical School. Registration and tuition for courses for the M.P.H. are handled through UT Health-School of Public Health.

• Prerequisites

Applicants to the M.D./M.P.H. program must meet all the prerequisites for the Medical School as outlined in this chapter of the catalog. The School of Public Health does not have prerequisite course requirements, but a baccalaureate degree is necessary for an application. In addition, it is recommended that applicants have at least a 3.0 GPA from course work in higher education. Applicants who are citizens of countries where English is not the native language are required to submit scores from the Test of English as a Foreign Language.

• Application Procedure

The student must submit two applications: one each to the Medical School and the School of Public Health. School of Public Health applications may be obtained from the school's Office of Enrollment Services at the address listed previously. Medical School applications must follow the procedure outlined in the Application Procedure section of this chapter. Candidates who submit both applications simultaneously will receive notification from both Programs before the beginning of the academic year, though notifications may occur at different times.

Applicants should submit two letters of recommendation, a statement of purpose, and official transcripts covering enrollment in accredited institutions of higher education to the School of Public Health enrollment services' office. The same letters of recommendation submitted for the Medical School application also may be submitted for the School of Public Health application. Transcripts should be sent directly to the School of Public Health by the educational institution.

Medical students also may apply to the School of Public Health at any time during their Medical School tenure. Final acceptance to the M.P.H. program may be contingent upon satisfactory progress in the Medical School.

- **Curriculum**

The School of Public Health coursework typically begins the summer prior to matriculation in medical school. The curriculum includes courses in the five basic public-health areas (epidemiology, biostatistics, behavioral sciences, environmental health sciences, and health management and policy sciences) plus electives. Completion of the degree also requires a semester practicum of 180 hours in a public-health setting which is typically completed during the summer after the first year of Medical School and a master's thesis.

M.D./M.B.A. PROGRAM

The M.D./M.B.A. Program focuses on giving future physicians the skills to successfully integrate medicine and business. The combined degree program is a joint effort of UT Southwestern Medical School and the School of Management at UT Dallas. The five-year program offers interested students the benefits of a medical education and a strong business management curriculum.

- **Curriculum**

Students usually complete the first three years of the medical curriculum (all basic science courses and the majority of the clerkships) and then take a one-year leave of absence from the Medical School to complete the business education. Students then return to the Medical School to complete the medical curriculum in the required fourth-year clinical clerkships and electives. At the end of the five years, the M.D. degree will be awarded by UT Southwestern and the M.B.A. by UT Dallas.

The business curriculum starts with the traditional M.B.A. core (accounting, information technology, economics, statistics, marketing, finance and organizational behavior) and adds additional seminars that emphasize the “softer” skills needed to succeed in business. Students also may select from a large number of elective courses offered by the Management School to design their own specialization. Elective courses include corporate finance and policy, consumer behavior, database management systems, conflict and negotiation, money and capital markets, corporate taxation, and corporate financial reporting. The goal of the M.B.A. program is to prepare leaders who have mastered the fundamentals of business and learned how to innovate in a dynamic environment.

- **Application Procedure**

Students interested in the combined M.D./M.B.A. program should apply for admission to the Medical School following the procedure outlined in the Application Procedure section in this catalog. Once a student is admitted into the medical program, application for the M.B.A. program is completed in consultation with the UT Southwestern M.D./ M.B.A. adviser. The exact plan for applying to the business program, leave of absence from the Medical School, and completing the business curriculum will be developed individually with each student to meet each student's educational and professional objectives. The GMAT is not required for applicants to the M.B.A. program.

Clinical and Research Fellowships

The various clinical and basic science departments of the Medical School offer clinical and research fellowships at later stages of training. The fellowships in the clinical departments are designed to offer clinical and investigational training in preparation for subspecialty certifying boards or for other subspecialty expertise not subject to board examination but usually prerequisite for academic careers. Fellowships in the basic science departments provide advanced research training, usually to those with Ph.D. or M.D./ Ph.D. degrees.

Public Education/Continuing Medical Education

The Office of Public Education/Continuing Medical Education is responsible for coordinating continuing professional development of physicians. The CE office also conducts continuing education for UT Southwestern School of Health Professions and UT Southwestern Graduate School of Biomedical Sciences.

Under the direction of the Associate Dean for Medical Education, the full-time staff includes a director of public education, associate director of national programs, and CE coordinators who are experienced in meeting planning and instructional design. An advisory committee composed of UT Southwestern faculty assures the quality and relevance of the programming.

The Office of Continuing Education/Public Education serves as a valuable resource for medical and health professionals to keep abreast of scientific knowledge; to enhance and improve their care of patients; and to help maintain licensure and professional certification requirements. Students and resident physicians are encouraged to attend continuing medical education events with appropriate approvals.

The Accreditation Council for Continuing Medical Education nationally accredits the UT Southwestern Office of Continuing Education/Public Education. Educational offerings sponsored by the CE office provide AMA/PRA category one credit. Various other kinds of credit are obtained from professional associations and other specialty societies such as the American Academy of Family Physicians. Attendance records are retained in the CE office.

More information, as well as a calendar of continuing education events, is available at:

<http://www.utsouthwestern.edu/about-us/administrative-offices/continuing-medical-education/index.html>

Distance Learning

UT Southwestern offers distance learning courses to on-campus and off-campus students enrolled for academic credit in the health professions or for continuing education.

Undergraduate and postgraduate courses are under development by UT Southwestern's faculty. As courses are created, they will proceed through the usual phases of academic course review and approval. UT Southwestern does not offer, nor does it plan to offer at this time, full degree programs via distance education.

DEPARTMENTAL FACULTY

Anesthesiology and Pain Management

The Department is led by Charles Wesley Whitten, M.D., Professor and Chair. Information is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/anesthesiology/index.html>

Biochemistry

The Department is led by Margaret Phillips, Ph.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/biochemistry/faculty.html>

Cardiovascular and Thoracic Surgery

The Department is led by Michael E. Jessen, M.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/cardiovascular-thoracic-surgery/faculty.html>

Cell Biology

The Department is led by Sandra Schmid, Ph.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/cell-biology/faculty/index.html>

Clinical Sciences

The Department is led by Celette Sugg Skinner, Ph.D., Professor and Interim Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/clinical-sciences/faculty/index.html>

Dermatology

The Department is led by Kim Yancey, M.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/dermatology/faculty.html>

Emergency Medicine

The Department is led by Deborah B. Diercks, M.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/emergency/faculty/index.html>

Family and Community Medicine

The Department is led by Amer Shakil, M.D., Professor and Interim Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/family-community-medicine/faculty.html>

Immunology

The Department is led by Lora Hooper, Ph.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/immunology/faculty.html>

Internal Medicine

The Department is led by David H. Johnson, M.D., FACP, Professor and Chair. Information on faculty members from the various divisions is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/internal-medicine/faculty/index.html>

Microbiology

The Department is led by Michael V. Norgard, Ph.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/microbiology/faculty.html>

Molecular Biology

The Department is led by Eric N. Olson, Ph.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/molecular-biology/faculty-and-labs.html>

Molecular Genetics

The Department is led by Nobel Laureate Joseph Goldstein, Ph.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/molecular-genetics/faculty.html>

Neurological Surgery

The Department is led by Hunt Batjer, M.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/neurological-surgery/faculty.html>

Neurology and Neurotherapeutics

The Department is led by Mark Goldberg, M.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/neurology/faculty/index.html>

Neuroscience

The Department is led by Joseph Takahashi, Ph.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/neuroscience/faculty-research.html>

Obstetrics and Gynecology

The Department is led by Steve Bloom, M.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/obstetrics-gynecology/faculty.html>

Ophthalmology

The Department is led by James P. McCulley, M.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/ophthalmology/faculty.html>

Orthopaedic Surgery

The Department is led by Dane Wukich, M.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/orthopaedic-surgery/faculty.html>

Otolaryngology – Head and Neck Surgery

The Department is led by Bradley Marple, M.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/otolaryngology/faculty.html>

Pathology

The Department is led by James S. Malter, M.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/pathology/faculty/index.html>

Pediatrics

The Department is led by Julio Perez-Fontan, M.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/pediatrics/faculty.html>

Pharmacology

The Department is led by David Mangelsdorf, Ph.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/pediatrics/faculty.html>

Physical Medicine and Rehabilitation

The Department is led by Kathleen Bell, M.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/physical-medicine/faculty/index.html>

Physiology

The Department is led by Duoqia Pan, Ph.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/physiology/research/index.html>

Plastic Surgery

The Department is led by Jeffrey Kenkel, M.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/plastic-surgery/faculty.html>

Psychiatry

The Department is led by Carol Tamminga, M.D., Professor and Chair. Information is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/psychiatry/index.html>

Radiation Oncology

The Department is led by Hak Choy, M.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/radiation-oncology/faculty.html>

Radiology

The Department is led by Neil M. Rofsky, M.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/radiology/faculty.html>

Surgery

The Department is led by Herbert J. Zeh III, M.D., Professor and Chair. Information on faculty members within Burn/Trauma/Critical Care, General Surgery, Oral and Maxillofacial Surgery, Pediatric Surgery, Surgical Oncology, Surgical Transplantation, Vascular Surgery is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/surgery/faculty.html>

Urology

The Department is led by Claus Roehrborn, M.D., Professor and Chair. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/urology/faculty.html>

Advanced Imaging Research Center

The Center is directed by Dean Sherry, Ph.D., and its Medical Director is Craig Malloy, M.D. Information is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/airc/index.html>

Center for Genetics of Host Defense

The Center is led by Nobel Laureate Bruce Beutler, M.D., Professor and Director. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/genetics-host-defense/faculty/index.html>

Eugene McDermott Center for Human Growth and Development

The Center is led by Helen H. Hobbs, M.D., Professor and Director. Information on faculty members is located at:

<http://www.utsouthwestern.edu/education/medical-school/departments/mcdermott-center/faculty.html>

Harold C. Simmons Comprehensive Cancer Center

The Center is led by Carlos L. Arteaga, M.D., Director and Professor of Internal Medicine.
Information on faculty leadership is located at:
<http://www.utsouthwestern.edu/simmons/about/leadership.html>