



MEDICAL LABORATORY SCIENCES

■ **DEGREE AND CERTIFICATES OFFERED**

Bachelor of Science Degree
 Medical Laboratory Sciences
 Post-Baccalaureate Certificates
 Medical Laboratory Sciences
 Blood Bank Technology

■ **PROGRAM DIRECTOR**

LeAnne M. Hutson, M.A., MLS(ASCP)

FACULTY AND ACADEMIC INTERESTS

Patricia M. Jones, Associate Professor

Ph.D., Texas Woman’s University, 1986
 Biochemistry.

Laurie J. Sutor, Associate Professor

M.D., Emory University School of Medicine, 1985
 Transfusion medicine; apheresis; stem-cell harvesting and processing; viral serology.

Rebecca DesPlas, Assistant Professor

M.S., University of North Texas Health Science Center, 2003
 Clinical microbiology and immunology.

Franke Gill, Assistant Professor

M.S., New Mexico State University, 1971
 Clinical chemistry.

LeAnne M. Hutson, Assistant Professor

M.A., Texas Tech University, 2001
 Clinical hematology.

Eric S. Hoy, Clinical Associate Professor

Ph.D., University of Illinois at Chicago, 1987
 Clinical immunology.

Lesley Lee, Clinical Assistant Professor

B.S., Oklahoma State University, 1994
 Immunohematology.

Stacie Hill, Clinical Instructor

B.S., UT Southwestern Medical Center, 2008
 Medical laboratory sciences

OBJECTIVES

The Medical Laboratory Sciences program offers preparation for careers in medical (clinical) laboratory science. Students enrolled in the program are offered training in all major areas of the clinical laboratory through classroom instruction and practical experiences. Students may pursue either a bachelor of science degree or, for those who already hold a bachelor's degree, a post-baccalaureate certificate.

The Blood Bank Technology program is a post-baccalaureate program for medical laboratory scientists who wish to specialize in immunohematology technology.

MEDICAL LABORATORY SCIENCES PROGRAM

A career in medical laboratory sciences combines an aptitude for science with the desire to help others. Medical laboratory scientists are highly skilled professionals who perform analytical tests on blood and body fluids to provide laboratory information for the detection, diagnosis and treatment of human diseases. There also is a growing trend for medical laboratory scientists to perform wellness laboratory testing aimed at preventing disease.

Medical laboratory scientists are in demand in hospital laboratories, reference clinical laboratories, physician office laboratories, public-health agencies, university research laboratories, and in industry in laboratory, sales and customer-support positions.

The primary goal of the Medical Laboratory Sciences program is to provide the community with medical laboratory scientists who are prepared to enter the health care work force as qualified clinical laboratory practitioners and who meet the requirements for certification in their profession. The curriculum also provides a foundation for graduate study in clinical or health-related basic sciences, laboratory management, education, medicine and dentistry.

■ ACCREDITATION

The Medical Laboratory Sciences program is accredited by the National Accrediting Agency for Cli-

nical Laboratory Sciences. Graduates of the program are eligible to take the national certifying examination in medical laboratory science.

REQUIREMENTS FOR ADMISSION

Factors considered in the selection of applicants include cumulative grade-point average, science and mathematics grade-point averages, communication skills, health status, personal qualities such as maturity and career goals, letters of recommendation, and personal interview.

Students without a baccalaureate degree who are admitted to the Medical Laboratory Sciences program are candidates for the baccalaureate degree conferred by UT Southwestern Medical Center. Students who enter the program from another institution in the UT System may be eligible to receive a joint degree conferred by both institutions.

■ ESSENTIAL FUNCTIONS

In addition to essential functions for all students (see Entrance Requirements in the Student Information section), each student in the Medical Laboratory Sciences or Blood Bank Technology program must be able to:

- 1) Observe laboratory demonstrations in which lab procedures are performed on biological specimens (i.e., body fluids, culture materials, tissue sections and cellular specimens.
- 2) Functionally use the senses of smell, vision and somatic sensation to characterize and describe orally and in writing the color, consistency, and clarity of biological specimens and reagents.
- 3) Use a clinical-grade binocular microscope to discriminate among fine differences in structure and color (hue, shading and intensity) in microscopic specimens.
- 4) Perform moderately taxing, continuous physical work, often requiring prolonged sitting and/or standing, over several hours.
- 5) Grasp, hold, transport and utilize specimens, reagents, hazardous chemicals and equipment of varying sizes in a safe manner as needed to perform laboratory testing.
- 6) Use laboratory equipment (e.g., pipettes, inoculating loops, test tubes) and instruments

to perform laboratory procedures according to established laboratory guidelines.

- 7) Demonstrate critical-thinking and judgment skills appropriate to a given situation.
- 8) Demonstrate professional demeanor and behavior and perform activities in an ethical manner in all dealings with peers, faculty, staff and clients. A student must treat all clients equally without regard to ethnicity, race, gender, religion or any other attribute.
- 9) Demonstrate the emotional health required to use fully his or her intellectual ability, such as exercising good judgment, promptly completing all responsibilities required by the program, and being able to develop mature, sensitive and effective relationships. A student must be able to tolerate demanding workloads and to function effectively under stress. He or she must be able to adapt to changing environments, display flexibility, accept appropriate criticism and alter performance if necessary.
- 10) Demonstrate the professional demeanor and behaviors required to uphold standards of ethics, compassion, honesty and responsibility. This applies to the student's responsibility, as well as others', to be forthright concerning possible errors, to evaluate behaviors, and to improve or help others to improve.

■ **BACHELOR OF SCIENCE DEGREE**

The Admissions Committee of the Medical Laboratory Sciences program determines the admissibility of an applicant into the program in accordance with the quality of his or her credentials. An interview is required. In addition to the general admission requirements specified in the Student Information section of this catalog, applicants to the Bachelor of Science in Medical Laboratory Sciences degree program must satisfy the following requirements:

- 1) Minimum of 64 semester hours of college credit, not including physical education or military science courses;
- 2) Minimum cumulative grade-point average of 2.5 on a 4.0 scale;

- 3) Minimum cumulative GPA of 2.5 on a scale of 4.0 in natural sciences and mathematics courses (Science courses must be courses offered for science majors.);
- 4) Organic chemistry, microbiology, and anatomy and physiology completed within seven years before admission;
- 5) Medical Laboratory Sciences program prerequisite courses as specified in the chart on the following page.

The curriculum in medical laboratory sciences is equivalent to the junior and senior years of college and comprises 19 months (five semesters) of intensive study.

■ **TEXAS CORE CURRICULUM POLICY**

The state of Texas requires students to complete a core curriculum in order to receive a bachelor's degree from a public college or university. Using guidelines provided by the state, each institution designates its own core curriculum. The UT Southwestern School of Health Professions Core Curriculum consists of 42 semester credit hours in specified component areas. The core curriculum requirements and courses that may be used to satisfy them are listed in the Student Information chapter under Core Curriculum and are included in the admission requirements tables shown in this chapter. Bachelor's degree applicants who have completed the core curriculum of another Texas public college or university are not required to complete the UT Southwestern core curriculum.

Applicants who attended non-public or out-of-state institutions of higher education or applicants who attended Texas public institutions without completing that institution's core curriculum must complete the UT Southwestern School of Health Professions Core Curriculum prior to enrolling here. Core curriculum courses are not offered at UT Southwestern.

College Level Examination Program (CLEP) and Advanced Placement (AP) credit may be accepted for core curriculum requirements as long as such credit has previously been accepted and indicated on the applicant's transcript by a previously attended college or university.

■ MEDICAL LABORATORY SCIENCES PROGRAM ADMISSION REQUIREMENTS

COMPONENT AREAS	COMMON COURSE NUMBERS	CREDIT HOURS
Communication		
English Composition*	ENGL 1301, 1302, 1311, 1312, 2311, 2314, 2315, or equivalent	6
Speech/Communication*	SPCH 1311, 1315, 1318, 1321; COMM 1307 or equivalent	3
Mathematics		
College Algebra* **	MATH 1314 or higher level course	3
Natural Sciences		
General Chemistry with laboratory**	CHEM 1411 and 1412, or 1413 and 1414	8
Organic Chemistry with laboratory**	CHEM 2423 (It is strongly recommended, but not required, that applicants also take CHEM 2425.)	4
General Biology with laboratory**	BIOL 1406 and 1407, or equivalent	8
Microbiology with laboratory**	BIOL 2421 or equivalent	4
Anatomy and Physiology**	BIOL 2401 (It is strongly recommended, but not required, that applicants also take BIOL 2402.)	4
Humanities and Visual/Performing Arts		
Visual and Performing Arts*	Courses with prefixes: ARTS, DANC, MUAP, MUEN, MUSI, DRAM, or equivalent	3
Other Humanities*	Courses including literature, philosophy, religion, modern or classical languages or literature, and cultural studies	3
Social and Behavioral Sciences		
U.S. History* (may include 3 hours of Texas history)	HIST 1301 and 1302 or 1301 and 2301	6
Political Science* (must include study of Texas Constitution)	GOVT 2301 and 2302, or 2301 and 2305, or 2301 and 2306, or 2305 and 2306	6
Social/Behavioral Science*	Courses with prefixes: ANTH, ECON, CRIJ, GEOG, PSYC, SOCI, SOCW	6
Total Credit Hours		64

*If an applicant has completed a specified core curriculum at a Texas public institution of higher education, this course is not required for admission to the Medical Technology Program.

** These courses must be completed with a grade of C or better.

Texas Common Course numbers are provided for guidance. Information is available online at www.tccns.org. Click on "The Academic Course Guide Manual." Applicants should contact academic advisers at their college or university to determine course equivalencies prevailing on their home campus. Applicants are encouraged to contact the UT Southwestern Admissions Office or the academic program about other courses that may satisfy core curriculum requirements.

■ POST-BACCALAUREATE CERTIFICATE

Course work in the Medical Laboratory Sciences program is the same for baccalaureate and post-baccalaureate students. Upon successful completion of the 19-month curriculum of professional study, the graduate is awarded the post-baccalaureate certificate in regular commencement ceremonies.

The Admissions Committee of the Medical Laboratory Sciences program determines the admissibility of an applicant into the program in accordance with the quality of his or her credentials. An interview is required. In addition to the general admission requirements specified in the Student Information chapter of this catalog, applicants to the Post-Baccalaureate Certificate in

Medical Laboratory Sciences program must satisfy the following requirements:

- 1) Bachelor’s degree from a regionally accredited college or university;
- 2) Minimum cumulative grade-point average of 2.5 on a 4.0 scale;
- 3) Minimum GPA of 2.5 on a scale of 4.0 in natural sciences and mathematics courses (Science courses must be those offered for science majors.);
- 4) Organic chemistry, microbiology, and anatomy and physiology completed within seven years before admission;
- 5) Medical Laboratory Sciences program prerequisite courses specified in the chart below.

CURRICULUM

Medical laboratory sciences instruction begins in May and is composed of a didactic phase (first summer, fall and spring semesters) followed by directed clinical training at affiliated hospitals and blood centers (second summer and second

fall semesters) During the didactic phase, formal lectures are presented on the principles of blood banking (immunohematology), clinical chemistry, hematology, immunology, microbiology and body-fluid analysis in relation to normal and disease states. Laboratory sessions coordinated to lectures and covering the fundamentals of diagnostic laboratory procedures are included in the didactic phase.

During the clinical phase of instruction, training and supervision are provided in affiliated clinical laboratories and blood centers, including those at Baylor University Medical Center, Children’s Medical Center Dallas, Dallas VA Medical Center, Medical Center of Plano, Medical City Dallas, Methodist Dallas Medical Center, Parkland Memorial Hospital, University Hospital - St. Paul and others. Clinical experiences in these institutions offer students the opportunity to achieve competence and confidence in performing a wide variety of laboratory procedures on patients’ specimens.

■ MEDICAL LABORATORY SCIENCES POST-BACCALAUREATE ADMISSION REQUIREMENTS

COMPONENT AREAS	COMMON COURSE NUMBERS	CREDIT HOURS
Mathematics		
College Algebra*	MATH 1314 or higher level course	3
Natural Sciences		
General Chemistry with laboratory*	CHEM 1411 and 1412, or 1413 and 1414	8
Organic Chemistry with laboratory*	CHEM 2423 (It is strongly recommended, but not required, that applicants also take CHEM 2425.)	4
General Biology with laboratory*	BIOL 1406 and 1407, or equivalent	8
Microbiology with laboratory*	BIOL 2421 or equivalent	4
Anatomy and Physiology*	BIOL 2401 (It is strongly recommended, but not required, that applicants also take BIOL 2402.)	4
Total Credit Hours		31

* These courses must be completed with a grade of C or better.

Texas Common Course numbers are provided for guidance. Information is available online at www.tccns.org. Click on “The Academic Course Guide Manual.” Applicants should contact academic advisers at their college or university to determine course equivalencies prevailing on their home campus. Applicants are encouraged to contact the UT Southwestern Admission Office or the academic program about other courses that may satisfy core curriculum requirements.

PROGRAM OF INSTRUCTION
Junior Year

SUMMER		HOURS
MT 3301	Introduction to Medical Laboratory Sciences	3
MT 3303	Immunology	3
MT 3310	Biochemistry of Human Metabolism	3
FALL		
MT 3302	Clinical Chemistry I	3
MT 3304	Hematology I	3
MT 3403	Clinical Immunology	4
MT 3405	Clinical Microbiology I	4
HCS 5106	Professional Development	1
SPRING		
MT 3404	Clinical Immunohematology	4
MT 4301	Clinical Chemistry II	3
MT 4406	Hematology II	4
MT 4407	Clinical Microbiology II	4

Senior Year

SUMMER		HOURS
MT 4308	Urinalysis	3
MT 4116	Phlebotomy Practicum	1
	Clinical rotations	7
FALL		
MT 4210	Professional Issues in Medical Laboratory Sciences	2
	Clinical rotations	11
<i>Total</i>		63
<i>Total clinical rotations</i>		18

SPECIAL REQUIREMENTS

Students are expected to maintain high academic performance and display appropriate professional and ethical behavior during all phases of their education and training. The Medical Laboratory Sciences program's academic policies are consistent with those of UT Southwestern School of Health Professions as stated in this catalog.

COURSE DESCRIPTIONS

For courses that do not start with MT, please refer to other sections of the catalog.

**MT 3301 INTRODUCTION TO MEDICAL LABORATORY SCIENCES
3 SEMESTER HOURS**

This course focuses on basic laboratory skills, including pipetting, preparing dilutions, laboratory mathematics, microscopy, microbiological isolation, instrumentation, quantitative methods, centrifugation and water quality. Safe laboratory practice and confidentiality of patient information and laboratory data are emphasized.

**MT 3302 CLINICAL CHEMISTRY I (LECTURE AND LABORATORY)
3 SEMESTER HOURS**

This course offers an introduction to the principles of biochemical physiology, including a metabolic study of chemical substances during normal and pathological processes of the human body. The relationship between disease states and chemical variations from normal is emphasized. Topics included are basic principles and practice of clinical chemistry; analytical techniques and instrumentation; quality control and statistics; carbo-



hydrates; lipids and lipoproteins; enzymes; cardiac function; gastrointestinal and pancreatic function; amino acids and proteins; electrolytes; blood gases; pH; and buffer systems. Laboratory sessions include selected chemical procedures that demonstrate the principles of analytical methods used in clinical chemistry laboratories.

MT 3303 IMMUNOLOGY

3 SEMESTER HOURS

This course provides a foundation in the theoretical basis of immunology. The course covers the components and mechanisms of non-specific immunity, specific immunity, humoral immunity and cell-mediated immunity. The processes of the immune system are examined in detail, and the interrelationships of those processes are analyzed. Immunologic interactions at the organism level, the cellular level and the molecular level are compared.

MT 3304 HEMATOLOGY I (LECTURE AND LABORATORY)

3 SEMESTER HOURS

This course offers an introduction to the human hematopoietic system and its relationship to health and disease. It considers both normal and abnormal morphology and function of blood in regard to red blood cells, white blood cells and platelets. Mechanisms of hemostasis and coagulation disorders are included. Laboratory sessions emphasize the identification and enumeration of normal blood cells, calculation of blood cell-derived parameters, and evaluation of hemostatic functions.

MT 3310 BIOCHEMISTRY OF HUMAN METABOLISM

3 SEMESTER HOURS

This course covers the synthesis and metabolism of proteins, carbohydrates and lipids. Also studied are membranes, transport, enzymes and cellular energetics.

MT 3403 CLINICAL IMMUNOLOGY (LECTURE AND LABORATORY)

4 SEMESTER HOURS

This course includes lectures on immunologic theory and concepts in relation to normal and pathological states in humans. Specific topics include antigen-antibody reaction, complement

and complement fixation, immunoassays, immunofluorescence, microbial serology, autoimmune diseases, and molecular diagnostic theory. The course includes laboratory exercises emphasizing the principles and procedures used in the laboratory diagnosis of infectious and immunologic diseases. Specific laboratory topics include immunoassays, immunofluorescence, microbial serology and molecular diagnostic application.

Prerequisite: MT 3303

MT 3404 IMMUNOHEMATOLOGY (LECTURE AND LABORATORY)

4 SEMESTER HOURS

This course covers genetics, characteristics, and clinical significance of blood group antigens and antibodies; antibody detection and identification; prenatal testing; pretransfusion testing; and transfusion therapy. The collecting, processing, storage, and pretransfusion testing of whole blood, its components and derivatives are covered. Laboratory sessions cover the laboratory analysis of blood group antigens and antibodies, antibody detection and identification; prenatal testing; pretransfusion testing; and transfusion therapy.

MT 3405 CLINICAL MICROBIOLOGY I (LECTURE AND LABORATORY)

4 SEMESTER HOURS

This course covers the medically significant bacteria, including emerging pathogens. Discussions emphasize taxonomy, epidemiology and laboratory methods used in the isolation and identification of major pathogenic bacteria. Emphasis also is given to major antibiotic groups, susceptibility testing and mechanisms of resistance to antibiotics. Students examine morphologic and biochemical characteristics of the major clinical pathogens. Major emphasis is placed on performance and interpretation of Gram stains.

MT 4210 PROFESSIONAL ISSUES IN MEDICAL SCIENCES

2 SEMESTER HOURS

Clinical correlations are presented to aid students' application of laboratory information to the diagnostic process, including proper selection of tests for laboratory diagnosis and interpretation of laboratory data. The case-history format is used, and students participate in the diagnostic process.

Biomedical ethics, management and principles of educational methodology are emphasized.

Prerequisite: Consent of instructor

MT 4301 CLINICAL CHEMISTRY II (LECTURE AND LABORATORY)

3 SEMESTER HOURS

This course introduces the principles of biochemical physiology, including metabolism of chemical substances during normal and pathological processes of the human body. The relationship between disease states and chemical variations from normal is emphasized. Topics include analytical techniques and instrumentation; point-of-care testing; renal function; trace elements; porphyrins and hemoglobin; hormones and immunoassays; therapeutic drug monitoring; toxicology; vitamins; inherited metabolic disorders; and tumor markers. Laboratory sessions include selected chemical procedures that demonstrate the principles of analytical methods used in clinical chemistry laboratories.

Prerequisite: MT 3302

MT 4308 URINALYSIS (LECTURE AND LABORATORY)

3 SEMESTER HOURS

This course covers the anatomy and physiology of the urinary tract, renal function, and the chemical and cellular composition of urine. Body fluids other than blood or urine also are discussed. The course emphasizes the laboratory procedures used in the chemical, physical and microscopic examination of urine. The cellular examination of body fluids also is practiced.

MT 4406 HEMATOLOGY II (LECTURE AND LABORATORY)

4 SEMESTER HOURS

This course continues the study of the human hematopoietic system and its relationship to health and disease. It considers both normal and abnormal morphology and function of blood in regard to blood cells and platelets and in regard to body fluids. Laboratory sessions emphasize the human hematopoietic system and its relationship to health and disease and consider both normal and abnormal morphology in correlation to disease and disorders.

Prerequisite: MT 3304

MT 4407 CLINICAL MICROBIOLOGY II (LECTURE AND LABORATORY)

4 SEMESTER HOURS

This course covers the medically significant fungi, parasites, viruses and mycobacteria. Discussions also include epidemiology and the pathogenic mechanisms of disease. Laboratory sessions emphasize methods and procedures used in isolating and identifying major pathogenic fungi and parasites.

Prerequisite: MT 3405

■ **CLINICAL ROTATIONS**

MT 4113 CLINICAL IMMUNOLOGY PRACTICUM

1 SEMESTER HOUR

Practical instruction and supervised experience are offered in the clinical immunology laboratory. Organization of work, interpretation of test results and quality control are included.

Prerequisite: MT 3303 and MT 3403

MT 4116 PHLEBOTOMY PRACTICUM

1 SEMESTER HOUR

In this course, students are offered the opportunity to acquire proficiency in phlebotomy (collection of blood from patients). Instruction takes place at an affiliated clinical institution following guidelines established by the Medical Laboratory Sciences program and the institution.

MT 4118 URINALYSIS PRACTICUM

1 SEMESTER HOUR

Practical instruction and supervised experience are offered in the clinical urinalysis laboratory. Interpretation of test results, organization of work, instrumentation and quality control are included.

Prerequisite: MT 4308

MT 4411 CLINICAL CHEMISTRY PRACTICUM

4 SEMESTER HOURS

Practical instruction and supervised experience are offered in the clinical chemistry laboratory. Organization of work, interpretation of test results, use and maintenance of instrumentation, and quality control are included.

Prerequisites: MT 3302 and MT 4301

**MT 4412 HEMATOLOGY PRACTICUM
4 SEMESTER HOURS**

Practical instruction and supervised experience are offered in the clinical hematology laboratory. Organization of work, interpretation of test results, instrumentation and quality control are included.

Prerequisites: MT 3304 and MT 4406

**MT 4414 IMMUNOHEMATOLOGY PRACTICUM
4 SEMESTER HOURS**

Practical instruction and supervised experience are offered in the clinical immunohematology laboratory. Performance of laboratory tests, interpretation of test results, instrumentation and quality control are included.

Prerequisite: MT 3404

**MT 4415 CLINICAL MICROBIOLOGY PRACTICUM
4 SEMESTER HOURS**

Practical instruction and supervised experience are offered in the clinical microbiology laboratory. Organization of work, interpretation of test results, instrumentation and quality control are included.

Prerequisites: MT 3405 and MT 4407

BLOOD BANK TECHNOLOGY PROGRAM

The primary objective of the Blood Bank Technology Program is to offer training to individuals who wish to pursue a career in immunohematology. Students are instructed through online courses and clinical practicums in subjects that include the theory of transfusion therapy, the principles of immunohematology and donor testing procedures, and the management strategies used in a transfusion service, immunohematology laboratory and donor center. The curriculum also includes a research component that offers the student experience in planning, conducting and presenting original research.

Graduates of the program are qualified as technical consultants, administrators, educators and clinical research scientists in immunohematology.

■ **ACCREDITATION**

The UT Southwestern Blood Bank Technology program is accredited by the Commission on



Accreditation of Allied Health Education Programs, (www.caahep.org), upon recommendation of the American Association of Blood Banks Committee on Accreditation of Specialist in Blood Bank Programs (Commission of Accreditation of Allied Health Programs, 1361 Park St., Clearwater, FL 33756, 727-210-2350). Graduates of the program are eligible to take the certification examination for specialist in blood bank technology administered by the Board of Registry of the American Society for Clinical Pathology.

REQUIREMENTS FOR ADMISSION

The Admissions Committee of the Medical Laboratory Sciences program determines the admissibility of an applicant into the program in accordance with the quality of his or her credentials. An interview is required. In addition to the general admission requirements specified in the Student Information chapter of this catalog, applicants to the Blood Bank Technology program must satisfy the following requirements:

- 1) Bachelor's degree from a regionally accredited college or university;

- 2) Certified medical laboratory scientist or one year of acceptable clinical laboratory experience;
- 3) Minimum of one year of acceptable experience in a blood center or transfusion service;
- 4) Minimum GPA of 2.5 on a scale of 4.0;
- 5) Required courses specified in the chart below.

MT 5331 Human Blood Groups	3
MT 5139 Advanced Case Studies	1
MT 5341 Donor Center Operations	3
MT 5393 Donor Center Practice	3
MT 5335 Transfusion Therapy	3
MT 5340 Transfusion Service Practice	3
MT 5442 Management	4
MT 5494 Education and Research	4
<i>Total</i>	<i>37</i>

CURRICULUM

The Blood Bank Technology program curriculum provides intensive professional study in both theoretical and applied educational areas. The theory portion includes online courses facilitated by faculty members. The clinical education experience is provided at a variety of institutions.

Upon successful completion of the program, graduates are awarded a post-baccalaureate certificate in blood bank technology.

■ **PROGRAM OF INSTRUCTION**

COURSE	HOURS
MT 5330 Immunology and Hematology	3
MT 5332 Serology	3
MT 5237 Serology Laboratory 1	2
MT 5538 Serology Laboratory 2	5

■ **PART-TIME PROGRAM**

The Blood Bank Technology program curriculum is designed to meet the needs of the working medical laboratory scientist.

SPECIAL REQUIREMENTS

Students are expected to maintain high academic performance and display appropriate professional and ethical behavior during all phases of their education and training. The academic policies of the Medical Laboratory Sciences program are consistent with those of UT Southwestern School of Health Professions as stated in this catalog.

■ **BLOOD BANK TECHNOLOGY PROGRAM ADMISSION REQUIREMENTS**

COMPONENT AREAS	COMMON COURSE NUMBERS	CREDIT HOURS
Mathematics		
College Algebra	MATH 1314 or higher level course	3
Natural Sciences		
General Chemistry with laboratory	CHEM 1411 and 1412, or 1413 and 1414	8
Organic Chemistry with laboratory	CHEM 2423 (It is strongly recommended, but not required, that applicants also take CHEM 2425.)	4
Biochemistry or other chemistry course	Upper division (junior/senior) course	4
General Biology with laboratory	BIOL 1406 and 1407, or equivalent	8
Microbiology with laboratory	BIOL 2421 or equivalent	4
Anatomy and Physiology	BIOL 2401 or other four-hour biology course	4
Total Credit Hours		35

TexasCom m on Course num bers are provided for guidance. Inform ation is available online at www.tccns.org. Click on "The Academ ic Course Guide M anual." Applicants should contact academ ic advisers at their college or university to determ ine course equivalencies prevailing on their hom e cam pus. Applicants are encouraged to contact the UT Southwestern Adm issions Office or the academ ic program about other courses that m ay satisfy core curriculum requirem ents.

COURSE DESCRIPTIONS

MT 5139 ADVANCED CASE STUDIES

1 SEMESTER HOUR

In this course the student demonstrates the application of theoretical knowledge to clinical situations in antibody and clinical case studies. The student presents solutions to unresolved problems. Additional testing is identified to contribute to the solution. Students also review serologic cases for thoroughness, accuracy and validity.

MT 5237 SEROLOGY LABORATORY 1

2 SEMESTER HOURS

Students perform routine and complex antibody identification and explore methods used to resolve ABO discrepancies. A variety of blood bank techniques are used that illustrate basic and advanced serologic skills. This course is taken in conjunction with or after MT 5332. This course is a prerequisite for MT 5538.

MT 5330 IMMUNOLOGY AND HEMATOLOGY

3 SEMESTER HOURS

The fundamental aspects of the immune system response and hematology are covered in this course. Topics include the cells and tissues of the immune system, the nature of antigens and antibodies and their interactions, complement, and transplantation. Also presented are the histocompatibility antigens, nomenclature, relationship to transfusion and transplantation. Hematology includes discussion of hemoglobin structure and function; abnormal hemoglobin and red cell membrane defects; hemostasis; and platelet and white blood cell structure, function and disorders. The principles of red cell destruction are introduced and related to hemolytic anemias. Emphasis is placed on application of immunologic concepts to immunohematology. This course is a prerequisite or co-requisite for all subsequent courses.

MT 5331 HUMAN BLOOD GROUPS

3 SEMESTER HOURS

The conventional and International Society of Blood Transfusion nomenclature for the blood group antigens and other pertinent terminology is reviewed. The principles of genetics, biochem-

istry, immunology and serology as applied to blood group systems, collections and series are presented. The blood group antigens and their corresponding antibodies are addressed in relation to disease and transfusion therapy.

MT 5332 SEROLOGY

3 SEMESTER HOURS

This course presents methods used to resolve ABO discrepancies; to perform antibody detection, identification and crossmatch; and to perform antigen typing. The principle and use of potentiators, enzymes, thiol reagents and other special reagents are introduced. Patient history, initial serological findings, reticulocyte harvest, adsorption and elution techniques, as well as the solid phase and column methodologies, are applied to investigation of allo- and autoantibodies. This course is a prerequisite or co-requisite for MT 5237 and prerequisite for MT 5538.

MT 5335 TRANSFUSION THERAPY

3 SEMESTER HOURS

The regulations associated with practice and fundamental aspects of transfusion therapy are introduced in this course. The composition of blood and blood components and their infusion are discussed. Transfusion therapy for different clinical situations is presented, including the special-needs patient, neonatal/pediatric patient, and indications and use of special components. Transfusion complications are also addressed. This course is a prerequisite or co-requisite for MT 5340.

MT 5340 TRANSFUSION SERVICE PRACTICE

3 SEMESTER HOURS.

This clinical experience includes a rotation in one or more transfusion services. The student observes and/or participates in the application of the standards, regulations, and good manufacturing practices in patient identification, blood sample collection, component selection and preparation, pretransfusion testing, compatibility testing, inventory management, transfusion reaction work-ups, and prenatal and cord-blood testing. Automated testing, blood administration, therapeutic blood collection, donor look-back and transfusion-transmitted disease investigations are

discussed. Managerial and quality assurance aspects of a transfusion service are also addressed.

MT 5341 DONOR CENTER OPERATIONS
3 SEMESTER HOURS

The standards, regulations and fundamental aspects of good manufacturing practices associated with donor center operations are introduced. Topics include recruitment of blood donors and collection, preparation, processing, inventory management, storage and distribution of blood components. Donor deferrals and notification, donor reentry, donor look-back, and transfusion-transmitted disease investigations are discussed. The application of information management to document development, control and record management also is addressed. The course is a prerequisite or co-requisite for MT 5393.

MT 5393 DONOR CENTER PRACTICE
3 SEMESTER HOURS

This clinical experience includes rotations in a blood donor center as well as a processing laboratory. The student observes the application of the standards, regulations and good manufacturing practices in the recruitment of blood donors and the collection, preparation, processing, inventory management and storage of blood components. Managerial and quality assurance aspects of donor centers and processing laboratories are also addressed.

MT 5442 MANAGEMENT
4 SEMESTER HOURS

This course consists of didactic experience in management and laboratory information systems. Instruction is given in management theories, quality management and quality assurance techniques, administration, regulatory requirements, and accreditation requirements.

MT 5494 EDUCATION AND RESEARCH
4 SEMESTER HOURS

Application of the four domains of learning in preparation of objectives, teaching materials, audiovisual aids and evaluation tools for adult education is presented. The student also designs a research project in which data are collected and analyzed, based on guidance provided in the course. Significant results are presented in written and oral communication. Students are encouraged to submit their research findings for scholarship consideration and publication.

MT 5538 SEROLOGY LABORATORY 2
5 SEMESTER HOURS

Students are exposed to a variety of serologic situations in an effort to increase their problem-solving skills. Knowledge of blood group antigens and antibodies is reinforced. Students are given the opportunity to perform specialized testing that is unique to blood bank reference laboratories.