

MEDICAL TECHNOLOGY COURSE OFFERINGS

(Open only to Medical Technology majors and to be taken in the sequence indicated)

MDTC 100 INTRODUCTION TO MEDICAL LABORATORY SCIENCE— 1 credit.

This is an introductory course to the clinical profession. Topics include clinical organization, personnel and regulatory agencies and issues. Professional interactions with practicing Medical laboratory professionals are required. Basic clinical procedures will be performed. **(SPRING)**

MDTC 280 HUMAN ANATOMY AND PHYSIOLOGY— 4 credits.

This lecture and laboratory course will present the names and locations, functions and major organs of the integumentary, skeletal, muscular, nervous, cardiovascular, lymphatic, digestive, endocrine, respiratory, urinary and reproductive systems. Human models will be used in the laboratory exercises to accomplish the anatomy component of the course. Basic physiological experiments such as membrane transport, muscle contraction and blood pressure measurements will also be done in the laboratory setting. **Prerequisite: CHEM 201. (SPRING)**

MDTC 300 PRINCIPLES OF MEDICAL TECHNOLOGY — 3 credits.

This is an integrated lecture and laboratory course to introduce concepts and techniques in the clinical laboratories. Topics include laboratory safety and mathematics, glassware, pipets, principles of instrumentation and quality assurance. Students will develop basic laboratory techniques and skills in the laboratory sessions. **Prerequisites: MDTC 280 and CHEM 201. (FALL)**

MDTC 305 CLINICAL CHEMISTRY I — 3 credits.

An introductory lecture/laboratory course to the basic principles of clinical chemistry. Topics include carbohydrates, proteins and lipid metabolism, pathophysiology and testing of body fluids to evaluate the metabolic processes. Manual and automated methods of measurement of the clinically significant analytes will be performed in the laboratory sessions. **Prerequisite: MDTC 300. (SPRING)**

MDTC 335 PATHOGENIC BACTERIOLOGY — 4 credits.

This course is Part I of Clinical Microbiology. The purpose of this course is to introduce the fundamental principles of Microbiology. The emphasis is on the understanding of the pathogenic bacteria and their role in the pathogenesis of human disease. The focus of this course will be primarily on the sample handling, culturing and identifying some of the clinically relevant pathogenic bacteria. Information on the types of diseases, epidemiology and transmissions, and the prophylactic and therapeutic methods of dealing with these organisms will be presented. **Prerequisite: BIOL 405 (SPRING)**

MDTC 410 CLINICAL CHEMISTRY II — 4 credits.

This course is a continuation of Clinical Chemistry I. Students will be presented the role, clinical significance and method of measurement for clinically significant electrolytes, enzymes, hormones and non-protein nitrogenous substances. Concepts on blood gases, therapeutic drugs and drugs of abuse will be presented. Operational and methodology principles, maintenance and trouble shooting of the instrumentation used in the measurement will be performed in the laboratory sessions.

Prerequisites: MDTC 300 and MDTC 305 (SUMMER).

MDTC 411 CLINICAL PRACTICE: CHEMISTRY— 3 credits.

This course consists of applied experience in the clinical chemistry section of the hospital or clinical laboratory. Students will perform all routine procedures under the direction of a qualified laboratory medical technologist/clinical laboratory scientist. Correlation of laboratory results with pathological conditions will be done by the students. **(SPRING).**

MDTC 419 CLINICAL HEMATOLOGY I — 3 credits.

An introductory course to the basic principles of hematology and the study of anemias. Topics include hematopoiesis, erythropoiesis, anemias, hemoglobinopathies. Students will learn to evaluate normal and abnormal cellular morphology through a systematic evaluation of the peripheral smear and all of its components. Additionally, students will learn to integrate these findings into the clinical picture. Reference intervals (Normal values), the laboratory evaluation of hematological diseases and treatment plans will be presented in detail. Manual and automated procedures for components of the blood will be performed in the laboratory session. Laboratory exercises, case studies, and integrated discussions will compliment the course. **(SPRING)**

MDTC 420 CLINICAL HEMATOLOGY II — 3 credits.

This course introduces the student to advanced concepts of hematology and hemostasis (coagulation). Reference intervals (Normal values) and basic hematologic testing will be stressed and principles of myeloproliferative disorders, the leukemias and the lymphoproliferative disorders will be explained. Students will be introduced to the principle of electronic counting and will learn to interpret scatterplots or other graphical material. The concepts of hemostasis (basic and advanced) will be developed through laboratory exercises, case studies and classroom discussions. **(FALL)**

MDTC 421 CLINICAL MICROSCOPY — 2 credits.

This lecture and laboratory course introduces the students to the concepts and principles in the analysis of urine and other body fluids. Routine biochemical and microscopic examination of body fluids and correlation of results will be done in the laboratory. Case studies are used to correlate the lecture and lab results. **(FALL).**

MDTC 422 CLINICAL PRACTICE: HEMATOLOGY/MICROSCOPY — 3 credits.

This course consists of applied experience in the hematology section of the hospital laboratory or clinical laboratory. Students will perform all routine procedures under the direction of a qualified laboratory technologist. This instruction will enable the students to develop confidence and proficiency in the performance of laboratory tests. **(SPRING).**

MDTC 429 IMMUNOHEMATOLOGY I — 3 credits.

This course is designed to introduce the student to basic concepts in transfusion medicine. Basic blood group serology will be stressed as well as immunologic techniques which apply to blood banking. Additionally, donor screening and component preparation and handling will be stressed. **(SPRING).**

MDTC 430 CLINICAL IMMUNOLOGY/SEROLOGY — 2 credits.

The purpose of this course is to introduce the strong clinical immunology concepts and the essential principles of serologic techniques that are commonly employed in the clinical laboratory. Concepts include a general overview of the components of the immune system, immune system diseases, testing methodologies for bacterial, viral, fungal, parasite diseases and basic immunological procedures. The laboratory component introduces practical applications of the serological testing for various immune clinical disorders. **Prerequisites: MDTC 300 and MDTC 335 (FALL).**

MDTC 431 IMMUNOHEMATOLOGY II — 2 credits.

This course is designed to introduce and build upon practical and theoretical concepts presented in Immunohematology I . Additional topics to be covered include investigations and management of hemolytic disease of the newborn (HDN), transfusion reactions and autoimmune hemolytic anemias. **(FALL).**

MDTC 432 CLINICAL PRACTICE: IMMUNOLOGY/BLOOD BANK — 3 credits.

This course consists of applied experience in the blood bank/transfusion medicine section of the hospital laboratory. Students will perform all routine procedures under the direction of a qualified medical technologist/clinical laboratory scientist. **(SPRING).**

MDTC 440 CLINICAL MICROBIOLOGY — 5 credits.

This course is Part II of Clinical Microbiology. This course will introduce the student to diagnostic methods of Bacteriology, Mycology, Virology and Parasitology. Clinical specimens will be cultured for the identification of normal flora and pathogenic organisms. A discussion of antimicrobial testing and therapy will be included. Pathogenic fungi, yeasts, and parasites will be incorporated.

Prerequisites: MDTC 335 and MDTC 430 (FALL).

MDTC 441 CLINICAL PRACTICE: MICROBIOLOGY — 3 credits.

This course consists of applied experience in the microbiology section of the hospital laboratory. Students will perform all routine procedures under the direction of a qualified medical technologist/clinical laboratory scientist. (SPRING).

MDTC 450 MEDICAL TECHNOLOGY SEMINAR— 1 credit.

This course consists of a laboratory management, education, and research design component. Basic principles and concepts for each of the components will be presented. Students will make several presentations from selected topics on the components.

Prerequisites: MDTC 410, 420, 430, 431, 440 (FALL).

MDTC 470 INTRODUCTION TO MOLECULAR DIAGNOSTICS - 2 credits.

This course is a three-week integrated lecture and laboratory course. The emphasis is on the understanding of the molecular methodologies that are employed in clinical applications which includes diagnosis of infectious diseases, inherited disorders, cancers, prenatal, paternity and forensics testing. **Prerequisites: MDTC 300, BIOL 405, BIOL406, MDTC 430 .(FALL).**

MDTC 480 CLINICAL LABORATORY SCIENCE REVIEW — 1 credit.

This course will provide an in- depth review of subject areas in Clinical Chemistry, Hematology, Immunohematology, Immunology, Urinalysis/Body Fluids and Microbiology. Assessment will be done for each of the six aforementioned disciplines after completion of the related clinical rotation practicums. The ultimate goal of this course is preparation for the senior comprehensive examination, which will be given near the end of the spring semester, and the certification examinations.

Prerequisites: MDTC 300, 305, 335, 410, 419, 420, 429, 430, 431, and 440. (SPRING).