

COURSE DESCRIPTIONS

CLINICAL LABORATORY SCIENCE MAJOR

CYTOTECHNOLOGY OPTION

Chemistry 105 - Fundamental Chemistry (5 cr) - (Two semester basic course) Fundamental principles and theories of chemistry, including stoichiometry, atomic and molecular structure and bonding, nuclear chemistry, thermodynamics, descriptive chemistry of nonmetals and transition metals, chemical kinetics and equilibria, introduction to organic chemistry. 3 hrs lec, 1 hr disc, 3 hrs lab per wk. Prereq: Math 90 or placement in 100 or above.

Chemistry 106 - Fundamental Chemistry (5 cr) - Continuation of 105. 3 hrs lec, 1 hr disc, 3 hrs lab per wk. Prereq: 105, Math 100 or higher.

Biology 160 - Introduction to Animal Biology (5 cr) - Anatomy, physiology, adaptation, and classification of animals; morphology and anatomy of various types of animals. Three hours lecture, three hours lab per week. Additional two-hour test sections four times during the semester.

Biology 210 - Principles of Genetics (3 cr) - General principles of heredity and variation of plants and animals, including humans. Prereq: Sophomore standing.

Biology 285 - Human Physiology (4 cr) - Normal functions of organ systems in humans; fulfills the physiology requirements for biology, human development and nutritional sciences, physical education majors, and is recommended for students with preprofessional interests in medical or allied health fields. Three hours lecture, three hours lab per week. Prereq: 160; or 101 and Chemistry 101.

Biology 314 - Cell Biology (4 cr.) - Structure and function of cells and organelles, including membrane structure and transport; biogenetics of mitochondria and chloroplasts; cell motility; DNA replication; protein synthesis and transport; mitosis; meiosis; cytokinesis; laboratory techniques including gel electrophoresis; phase-contrast microscopy; spectrophotometry; respirometry; radioisotope analysis; cell culture; chromosome banding; bacterial DNA transformation. 3 hrs lec, 3 hrs lab per wk. Prereq: 130, 160; Chemistry 106 or 116.

Biology 326 - Electron Microscope Techniques (3 cr) - Fixing, embedding, microtomy, and staining biological tissues for transmission and scanning electron microscopy; electron microscope use and basic photographic darkroom techniques. 1 hr lec, 6 hrs lab per wk. Prereq: 130, 160, Chemistry 106 and cons instr.

Biology 333 - General Microbiology (4 cr) - Morphology, physiology classification, and cultivation of bacteria and viruses, with introduction to microbial genetics, pathogenesis, and immunology. Two hours lecture, four hours lab per week. Prereq: 101, 130, or 160; and Chemistry 106 or 116.

Biology 387 - Human Anatomy (4 cr) – Human Anatomy is examined using models, X-rays, charts, computer animations, and prosected cadaver demonstrations. Complements Biol. 285 to provide a general background in human structure and function. For students preparing for health care careers. Three hrs. lecture, three hrs. lab per week. Prereq.: 281 or 285 or con reg 281 or 285.

Mathematics 100 - College Algebra (3 cr) - Functions, solutions and graphs of linear and quadratic equations, inequalities and systems of equations; logarithmic and exponential functions. Prereq: 051 or suitable placement test score.

Mathematics 355 - Elementary Statistical Methods (4 cr) - Fundamental concepts and techniques which underlie applications to the various disciplines, including descriptive statistics; averages; dispersion; random sampling; binomial, normal, Student T, Chi-square, and F distributions; estimation and tests of hypothesis; linear regression and correlation; laboratory emphasis on sampling and applications. Prereq: 100 or a suitable placement test score.

COURSES IN CLINICAL LABORATORY SCIENCE (CLS)

- CLS 105** **Evolution of Health Care and Health Care Professions** (3 cr) - Study of the history of medicine and the evolution of health care professions in the context of philosophical and cultural influences; examination of various health care systems; analysis of current health care system and health professions in the United States. 3 hrs lecture per week.
- CLS 125** **Intro to Clinical Laboratory Science 1** (2 cr.) Overview of laboratory safety, phlebotomy, immunology, immunohematology, hematology, coagulation, clinical chemistry, body fluid analysis, diagnostic microbiology, and molecular pathology. Major topics are accompanied with introductory lab exercises. 1 hr lec, 2 hrs lab per wk.
- CLS 205** **Clinical Orientation** (1cr;pass/fail) - Hospital introduction to laboratory techniques. Open to students considering a major in Clinical Laboratory Science.
- CLS 295** **Medical Terminology** (2 cr) - Examination of bases of medical terms: prefixes, suffixes, roots, combined forms; terms that name the nine basic body systems and organs. 2 hrs lecture per week.
- CLS 365** **Body Fluid Analysis** (2 cr) - Theoretical and practical aspects of chemical and microscopic analysis of urine, cerebrospinal fluid, synovial fluid, and serous fluid. 2 hrs lecture per week. Independent lab. Prereq: Biology 285.
- CLS 375** **Quality Systems in the Clinical Laboratory** (1cr) - Study quality management in the clinical laboratory; discuss pre-analytical, analytical, and post analytical phases of testing, statistical methods of quality control, regulatory requirements, verification of instrument maintenance and functions, and risk assessment. Prereq: Admission to the professional program.
- CLS 385** **Professional Leadership Development** (3 cr) - Study professional roles, responsibilities, contemporary problems and conflicts as related to leadership and laboratory administration; discuss human resource management, financial management, and education methodologies appropriate for supervisors and managers. 2 hrs lecture, 2 hrs lab per week. Prereq: Junior standing.
- *399** **Special Work** (1-3 cr) - Special independent research projects. Credit based on scope of the project. Prereq: Junior standing and consent of chair.
- *400** **Cytologic Techniques I** (3 cr.) - Study common diagnostic techniques in Cytology.
- *401** **Cytologic Techniques II** (3 cr.) - Study advanced techniques and emerging methodologies in Cytology.

- CLS 415 Hematology** (4 cr) - Study of the hematopoietic system including the relationship of hematologic disease states to diagnostic characteristics; determine blood and bone marrow cellular morphology; discuss erythrocyte and leukocyte disorders; study techniques and correlate results to disease processes. 3 hrs lecture, 3 hrs lab per week. Prereq: Biology 285.
- CLS 425 Diagnostic Medical Microbiology** (5 cr) - Study bacterial, mycoplasmal, rickettsial, chlamydial, parasitic, and mycotic diseases of humans; identify clinical signs and symptoms of these diseases; explore collection, transportation, modes of transmission, and laboratory methods utilized to detect and identify the pathogens as well as appropriate antibiotic therapy. 3 hrs lecture, 6 hrs lab per week. Prereq: Biology 333.
- *468 Gynecologic Cytology** (6 cr.) - Study normal cell differentiation in the female reproductive system; identify and describe cellular changes and abnormalities in cells found in the female reproductive organs.
- *469 Pulmonary Cytology** (3 cr.) - Study normal cell differentiation in the lung; identify and describe cellular changes and abnormalities in cells found in pulmonary tissue.
- *470 GI Tract Cytology** (3 cr.) - Study normal cell differentiation; identify and describe cellular changes and abnormalities in cells found in the GI tract.
- *471 Urinary Tract Cytology** (2 cr.) - Study normal cell differentiation; identify and describe cellular changes and abnormalities in cells found in the urinary tract.
- *479 Body Fluid Cytology** (2 cr.) – Distinguish normal cells from cells undergoing changes and abnormal cells in various body fluids.
- *480 Aspiration Cytology** (2 cr.) - Classification and differentiation of cells obtained through aspiration techniques.
- *489 Methodologies in Cytology Education** (1 cr.) - Current approaches to education in the cytology laboratory.
- *490 Management in Cytology** (1 cr.) - Study of cytology laboratory management practices.
- *CLINICAL PRACTICUM:** These courses will be completed at the affiliated clinical laboratories.