MECHANICAL ENGINEERING

930* Selected Topics in Fluid Mechanics
Fall: 1 to 3 credits. May re enroll for a maximum of 6 credits.
P: ME 320
Current topics in Fluid Mechanics will be presented.
QA: ME 841 QA: NONE

940* Advanced Topics in Thermal Science
Spring: 3(3-0) May re enroll for a maximum of 12 credits.
P: ME 813, ME 814 or ME 817, or approval of department: R: Mechanical Engineering
Advanced topics in thermal sciences, eg., conduction, convection, radiation, phase change and interactive combined modes of heat transfer; mass transfer, irreversible thermodynamics.
QA: ME 813 ME 814 ME 817 QA: ME 880

952* Advanced Control Systems
Fall: 3(3-0) R: Graduate
Investigate areas of current interest in control theory that hold promise for improving the design of mechanical systems.
QA: ME 852

953* Nonlinear Dynamical Systems and Chaos
Fall of even-numbered years. 3(3-0)
P: ME 863 or equivalent R: Graduate
Students
Qualitative theory of dynamical systems applied to physical system models. Bifurcation theory for continuous and discrete time systems, chaos, the simple horseshoe, and Melnikov's method.
QA: ME 825 EE 827 QA: ME 883

960* Selected Topics in Vibrations
Fall: 1 to 3 credits. May re enroll for a maximum of 6 credits.
P: ME 860
Current topics of interest to the student and faculty.
QA: ME 863

963* Wave Phenomena
Spring of even-numbered years. 3(3-0)
P: Approval of instructor.
QA: ME 870 QA: ME 870

971* Intelligent Materials and Smart Structures: Applications
Fall of odd-numbered years. 3(3-0)
P: ME 873 R: Graduate
Design for Manufacture issues in smart materials: Biomimetics, nanotechnology, electro-rheological fluids, shape memory alloys, piezoelectric materials, fiberreinforced structures.
QA: NONE QA: NONE

990* Special Problems in Mechanical Engineering
Fall, Spring, Summer. 1 to 3 credits. May re enroll for a maximum of 6 credits.
R: Graduate
Individualized study of a current problem in mechanical engineering.
QA: ME 985

999* Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 12 credits. May re enroll for a maximum of 9 credits.
R: Graduate Ph.D.
Doctoral dissertation research.
QA: ME 998

MEDICAL TECHNOLOGY MT

212* Fundamentals of Laboratory Analysis
Spring: 3(3-0)
P: CEM 142; MT 116 or MT 120; C:
MT 213
Chemical, biological and instrument laboratory analyses: method evaluation, quality assurance, and predictive value theories.
QA: MT 109 ORMT 111 AND CEM 142 QA: MT 210

213* Application of Clinical Laboratory Principles
Spring: (1/3)
C: MT 212
Microscopy, pipetting. Specimen collection, and processing. Laboratory safety, quality control, and method evaluation.
QA: MT 211

411* Clinical Chemistry and Body Fluids Laboratory
Spring: (4/0)
P: BCH 401, MT 212, PSL 250
Analytical methods in clinical chemistry and urinanalysis. Correlation of laboratory test results with physiology and diseases of normal, hepatic and cardiac systems.
QA: PSL 241 AND MT 210 AND BCH 401 QA: MT 412 MT 410 MT 330 MT 440

415* Clinical Chemistry and Body Fluid Analysis Laboratory
Spring: (1/0-2)
P: MT 213; C: MT 414 R: Open only to Clinical Laboratory Science majors.
Quantitative analysis of blood and body fluids. Spectrophotometry, electrophoresis, chromato­graphy, enzymatic assays, and immunoassays.
QA: MT 401 MT 441

416* Clinical Chemistry
Fall: (4/0-0)
P: MT 213.
Analytical methods in clinical chemistry. Correlation of laboratory test results with physiology and diseases of the endocrine system, pregnancy, and cancer. Therapeutic drug monitoring and automation.
QA: MT 412 MT 330 MT 410

422* Hematology and Hemosnosis
Fall: 4(4-0)
P: MT 212.
Structure and function of normal blood cells with changes seen in benign and malignant diseases, and in acquired and hereditary diseases.
QA: MT 210 QA: MT 420 MT 440

423* Hematology and Hemosnosis Laboratory
Fall: 1(0-2)
P: MT 213; C: MT 422 R: Open only to Clinical Laboratory Science majors.
Diagnostic assessment of blood cells and hemor­rhagic function.
QA: MT 421 MT 441

425* Clinical Immunology and Immunohematology
Fall: 3(3-0)
P: MT 212.
Cellular and humoral immunity, diseases of immuni­tity. Clinical serology and immunology, blood group serology, and transplantation.
QA: MT 210 QA: MT 430 MPH 427

454* Problem Solving Across Clinical Laboratory Disciplines
Spring: 3(3-0)
P: MT 415, MT 416, MT 423, MT 432, MT 433, MPH 463.
R: Open only to Clinical Laboratory Science majors.
Problem-oriented approach integrates topics from previous courses in clinical laboratory sciences, social sciences, and humanities. Emphasis on published primary research literature and its critical appraisal.
QA: MT 451 MT 452

471* Advanced Clinical Chemistry Laboratory
Fall, Spring, Summer. 3(1)
C: MT 472 R: Open only to seniors in Clinical Laboratory Science majors. Approval of Medical Technology Program.
Application and integration of theory and technical skills of chemistry and biochemistry.
QA: MT 481

472* Advanced Clinical Chemistry
Fall, Spring, Summer. 1(1)
C: MT 471 R: Open only to seniors in Clinical Laboratory Science. Approval of Medical Technology Program.
Theoretical aspect of clinical chemistry. Chemical and biochemical reactivity. Statistical analysis, pathophysiologic relationships, and methodologies.
QA: MT 481

473* Advanced Clinical Hematology and Body Fluids Laboratory
Fall, Spring, Summer. 4(3)
C: MT 474 R: Open only to seniors in Clinical Laboratory Science. Approval of Medical Technology Program.
Application of the theory of hematology, hemostasis, and body fluid analysis.
QA: MT 482 MT 486 MT 487

474* Advanced Clinical Hematology and Body Fluids
Fall, Spring, Summer. 4(3)
C: MT 473 R: Open only to seniors in Clinical Laboratory Science. Approval of Medical Technology Program.
Theoretical aspects of advanced hematology, hemostasis and body fluid analysis. Integration of cognitive material with test results.
QA: MT 462 MT 486 MT 487

475* Advanced Clinical Immunology and Immunohematology Laboratory
Fall, Spring, Summer. 3(1)
C: MT 475 R: Open only to seniors in Clinical Laboratory Science. Approval of Medical Technology Program.
Application of immunology and immunohematology principles.
QA: MT 483 MT 485

476* Advanced Clinical Immunology and Immunohematology
Fall, Spring, Summer. 3(1)
C: MT 476 R: Open only to seniors in Clinical Laboratory Science. Approval of Medical Technology Program.
Theory of immunology and immunohematology. Integration of cognitive material with test results.
QA: MT 483 MT 485

477* Advanced Clinical Microbiology Laboratory
Fall, Spring, Summer. 3(1)
C: MT 478 R: Open only to seniors in Clinical Laboratory Science. Approval of Medical Technology Program.
Application of clinical microbiology.
QA: MT 484

Courses with an asterisk (*) have not been approved by the University Committee on Curriculum.
MEDICAL TECHNOLOGY

Courses are subject to revision and final approval.

470. Advanced Clinical Microbiology
Fall, Spring, Summer. 1(1)
C: MT 477 R: Open only to seniors in Clinical Laboratory Science. Approval of Medical Technology Program.
Theory of clinical microbiology. Integration of cognitive material with laboratory results.
QA: MT 484

495. Directed Study
Fall, Spring, Summer. 1 to 3 credits.
May reenroll for a maximum of 6 credits.
R: Open only to Clinical Laboratory Science and Medical Technology majors.
Faculty directed study including assigned readings, reviews of appropriate scientific periodicals, and research laboratory experience.
QA: MT 495

801. Medical Technology Seminar
Spring: 1(-0)
R: Open only to graduate students in Clinical Laboratory Science
Current research topics in the clinical laboratory sciences.
QA: MT 800

810. Research Planning in the Clinical Laboratory Sciences
Fall of odd-numbered years. 2(-0)
R: Open only to graduate students in Clinical Laboratory Science
Directed reading and discussions related to research methodology, proposal presentations both written and oral, and research funding.
QA: MT 810

820. Advanced Clinical Chemistry
Spring of even-numbered years. 2(-0)
Interdepartmental with the Department(s) of Pathology.
P: BCH 462, MT 414, MT 416 R: 6
Biochemical basis of selected pathologic conditions including inborn errors of metabolism, endocrine and other genetic disorders. Emphasis on current diagnostic techniques.
QP: MT 420 QA: MT 820

830. Concepts in Molecular Biology
Spring. 2(-0) Interdepartmental with the Department(s) of Pathology.
P: Current course in Biochemistry C:
Current course in Biochemistry R: 6
Inform students of techniques and theories of molecular biology, nucleic acid synthesis & isolation, enzymatic digestion & modification, electrophoresis, hybridization, amplification, library construction & closing; covered in lectures & student forum
QP: MT 440 QA: MT 840

840. Advanced Hemostasis
Fall of odd-numbered years. 2(-0)
Interdepartmental with the Department(s) of Pathology.
P: BCH 462, MT 422 R: 6
Physiology, pathophysiology and laboratory evaluation of hematologic disorders.
QP: MT 440 QA: MT 840

860. Clinical Laboratory Diagnosis of Infectious Diseases
Spring of even-numbered years. 2(-0)
Interdepartmental with the Department(s) of Pathology.
P: MPH 451, MPH 463, MPH 464 R: 6
Current methods in laboratory investigation of infectious disease in humans. Emphasis on differential diagnosis and correlation of microbiological results with serology, histology and clinical chemistry.
QP: MPH 301 MPH 302 MPH 406

890. Directed Study in Clinical Laboratory Sciences
Fall, Spring, Summer. 1 to 6 credits.
R: Open only to graduate students in Clinical Laboratory Science
Recent advances in laboratory medicine. Special projects for students in non-thesis research, Plan B Masters.

899. Master's Thesis Research
Fall, Spring, Summer. 1 to 10 credits.
May reenroll for a maximum of 24 credits.
R: Open only to graduate students in Clinical Laboratory Science
Master's thesis research for Plan A Master's degree.
QA: MT 899

MEDICINE

512. Infectious Diseases
Spring. 4(-0) Interdepartmental with the Department(s) of Microbiology and Public Health.
P: MPH 511 or approval of department R: Grad Professional Students in College of Human Medicine Infectious diseases of humans, including biology of the causative microorganism, epidemiology, pathogenesis, host-parasite relationships, clinical and laboratory diagnosis, and clinical management

550. Special Problems in Medicine
Fall, Spring, Summer. 1 to 6 credits.
May reenroll for a maximum of 12 credits.
P: GHM Students or approval of department R: Grad Professional Students in College of Human Medicine Each student will work under direction of a staff member on an experimental, theoretical, or applied problem

607. Ambulatory Care Clerkship
Fall, Spring, Summer. 1 to 3 credits.
May reenroll for a maximum of 9 credits. Interdepartmental with the Department(s) of Family Practice, Pediatrics and Human Development.
P: FMP 602 R: Grad Professional Students in the College of Human Medicine Outpatient experience, lasting an equivalent of 34 half-days and extending over a minimum of 26 weeks. Continuous and comprehensive patient care under supervision of appropriate physicians

608. Internal Medicine Clerkship
Fall, Spring, Summer. 2 to 18 credits.
May reenroll for a maximum of 42 credits.
P: FMP 602 R: Grad Professional Students in the College of Human Medicine Based in community hospitals, this clerkship will stress interviewing history, physical examination, along with problem solving and therapy, and care of the whole patient leading to independence in patient management

609. Hematology Clerkship
Fall, Spring, Summer. 2 to 12 credits.
May reenroll for a maximum of 12 credits.
P: MED 608 R: Grad professional students in College of Human Medicine Development of skills in data collection, problem solving, and management related to common hematologic disorders of children and adults

610. Oncology Clerkship
Fall, Spring, Summer. 2 to 12 credits.
May reenroll for a maximum of 12 credits.
P: MED 608 R: Grad Professional Students in College of Human Medicine Development of skills in data collection, problem solving and management of the more prevalent cancers in children and adults

611. Cardiology Clerkship
Fall, Spring, Summer. 2 to 12 credits.
May reenroll for a maximum of 12 credits.
P: MED 608 R: Grad Professional Students in College of Human Medicine A clinical clerkship in which students evaluate in depth patients with cardiac diseases. This includes experiences with special diagnostic procedures including cardiac catheterization, phonocardiography, echocardiography, and electrocardiography

612. Nephrology Clerkship
Fall, Spring, Summer. 2 to 12 credits.
May reenroll for a maximum of 12 credits.

613. Dermatology Clerkship
Fall, Spring, Summer. 2 to 12 credits.
May reenroll for a maximum of 12 credits.
P: MED 608 R: Grad Professional students in College of Human Medicine Office based experience with a dermatologist to learn clinical skills in dermatology and develop observational and diagnostic skills in skin disease

614. Medical Chest Clerkship
Fall, Spring, Summer. 2 to 12 credits.
May reenroll for a maximum of 12 credits.
P: MED 608 R: Grad Professional Students in College of Human Medicine A clerkship covering four aspects of chest diseases: tuberculosis, diagnosis, pulmonary function, and physiology. The student works with medical residents, utilizing outpatient and hospital facilities

615. Gastroenterology Clerkship
Fall, Spring, Summer. 2 to 12 credits.
May reenroll for a maximum of 12 credits.
P: MED 608 R: Grad Professional Students in College of Human Medicine Referral patients with gastrointestinal problems are seen as either outpatients. Many long term problems are followed. Patients with psychosocial problems are seen conjointly with Social Service