415. Clinical Chemistry and Body Fluid Analysis Laboratory
Spring. 1(0-3)
P: MT 213; C: MT 414 R: Open only to Clinical Laboratory Sciences majors.
Quantitative analysis of blood and body fluids. Spectophotometry, electrophoresis, chromatography, enzymatic assays, and immunoassays.
QA: MT 401, MT 441

416. Clinical Chemistry
Fall. 4(4-0)
P: MT 212, BCH 401.
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 410

422. Hematology and Hemostasis
Fall. 4(4-0)
P: MT 212; BCH 401 or concurrently.
Structure and function of normal blood cells with changes seen in benign and malignant diseases, and in acquired and hereditary diseases.
QP: MT 210 QA: MT 420, MT 440

423. Hematology and Hemostasis Laboratory
Fall. 1(0-3)
P: MT 213; C: MT 422 R: Open only to Clinical Laboratory Sciences majors.
Diagnostic assessment of blood cells and hemostatic function.
QA: MT 421, MT 441

432. Clinical Immunology and Immunohematology
Spring. 5(5-0)
P: MT 212.
Cellular and humoral immunity, diseases of immunity. Clinical serology and immunology, blood group serology, and transfusion practices.
QP: MT 210 QA: MT 430, MPH 427

433. Clinical Immunology and Immunohematology Laboratory
Spring. 1(0-3)
P: MT 213; C: MT 432 R: Open only to majors in Clinical Laboratory Sciences.
Immunologic methods for disease detection. Methods of blood typing and pre-transfusion testing.
QP: MT 430 QA: MT 431

442. Education and Management in the Clinical Laboratory
Fall. 3(3-0)
R: Open only to majors in Clinical Laboratory Sciences.
Concepts of management in clinical laboratory practice. Program accreditation and certification. Government regulation. Personnel recruitment and selection. Performance evaluation. Financial management.
QA: MT 400, ACC 230, PSY 255

454. Problem Solving Across Clinical Laboratory Disciplines
Spring. 4(4-0)
P: MT 212, MT 213, MT 414, MT 415, MT 416, MT 422, MT 423, MT 432, MT 433, MPH 463, MPH 464. R: Open only to seniors in Clinical Laboratory Sciences.
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, MT 453

471. Advanced Clinical Chemistry Laboratory
Fall, Spring, Summer. 3 credits.
C: MT 472 R: Open only to seniors in Clinical Laboratory Sciences.
Application and integration of theory and technical skills of chemistry and biochemistry.
QA: MT 481

472. Advanced Clinical Chemistry
Fall, Spring, Summer. 1 credit.
C: MT 471 R: Open only to seniors in Clinical Laboratory Sciences.
Theoretical aspects of clinical chemistry. Chemical and biochemical reactions. Statistical analysis, pathophysiologic relationships, and methodologies.
QA: MT 481

473. Advanced Clinical Hematology and Body Fluids Laboratory
Fall, Spring, Summer. 4 credits.
C: MT 474 R: Open only to seniors in Clinical Laboratory Sciences.
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. 1 credit.
C: MT 473 R: Open only to seniors in Clinical Laboratory Sciences.
Theoretical aspects of advanced hematology, hemostasis and body fluid analysis. Integration of cognitive material with test results.
QA: MT 482, MT 486, MT 487

475. Advanced Clinical Immunology and Immunohematology Laboratory
Fall, Spring, Summer. 2 credit.
C: MT 476 R: Open only to seniors in Clinical Laboratory Sciences.
Application of immunology and immunohematology principles.
QA: MT 483, MT 485

476. Advanced Clinical Immunology and Immunohematology
Fall, Spring, Summer. 1 credit.
C: MT 475 R: Open only to seniors in Clinical Laboratory Sciences.
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 credits.
C: MT 478 R: Open only to seniors in Clinical Laboratory Sciences.
Application of clinical microbiology.
QA: MT 484

478. Advanced Clinical Microbiology
Fall, Spring, Summer. 1 credit.
C: MT 477 R: Open only to seniors in Clinical Laboratory Sciences.
Theory of clinical microbiology. Integration of cognitive material with laboratory results.
QA: MT 484

495. Directed Study
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
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(1-0) A student may earn a maximum of 2 credits in all enrollments for this course.
R: Open only to graduate students in Clinical Laboratory Sciences.
Current research topics in clinical laboratory sciences.
QA: MT 800

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

812. Advanced Clinical Chemistry
Spring of odd-numbered years. 2(2-0) Interdepartmental with Pathology.
P: BCH 462, MT 414, MT 416.
Biochemical basis of selected pathologic conditions including inborn errors of metabolism, endocrine and other genetic disorders. Emphasis on current diagnostic techniques.

830. Concepts in Molecular Biology
Spring of even-numbered years. 2(2-0) Interdepartmental with Pathology.
P: One course in Biochemistry or concurrently.
Techniques and theories of molecular biology, nucleic acid synthesis and isolation, enzymatic digestion and modification, electrophoresis, hybridization, amplification, library construction, and cloning.

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

860. Clinical Laboratory Diagnosis of Infectious Diseases
Spring of odd-numbered years. 2(2-0) Interdepartmental with Pathology.
P: MPH 451, MPH 464.
Laboratory techniques for diagnosing infectious diseases in humans. Emphasis on differential diagnosis and correlation of microbiological results with serology, hematology, and clinical chemistry.
QP: MPH 301, MPH 302, MPH 406

890. Selected Problems in Clinical Laboratory Science
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
R: Open only to graduate students in Clinical Laboratory Sciences.
Non-thesis research for Plan B master's students.

899. Master's Thesis Research
Fall, Spring, Summer. 1 to 10 credits. A student may earn a maximum of 24 credits in all enrollments for this course.
R: Open only to graduate students in Clinical Laboratory Sciences.

QA: MT 899

MEDICINE MED

Department of Medicine
College of Human Medicine

512. Infectious Diseases
Spring. 4 credits. Interdepartmental with Microbiology.
P: MPH 511 or approval of department. R: Open only to graduate-professional students in College of Human Medicine.
Infectious diseases of humans. Biology of the causative microorganism, epidemiology, pathogenesis, host-parasite relationships. Clinical and laboratory diagnosis, and clinical management.
QA: MED 512

590. Special Problems in Medicine
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
R: Open only to graduate-professional students in College of Human Medicine.
Supervised work on an experimental, theoretical, or applied problem.
QA: MED 590

608. Internal Medicine Clerkship
Fall, Spring, Summer. 2 to 18 credits. A student may earn a maximum of 42 credits in all enrollments for this course.
P: FMP 602. R: Open only to graduate-professional students in College of Human Medicine.
Community hospital clerkship. Interviewing skills, history, physical examination. Problem solving and therapy. Care of the whole patient leading to independence in patient management.
QP: FMP 602 QA: MED 608

609. Hematology Clerkship
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
P: MED 608. R: Open only to graduate-professional students in College of Human Medicine.
Data collection, problem solving, and management related to common hematologic disorders of children and adults.
QP: MED 608 QA: MED 609

610. Oncology Clerkship
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
P: MED 608. R: Open only to graduate-professional students in College of Human Medicine.
Data collection, problem solving and management of prevalent cancers in children and adults.
QP: MED 608 QA: MED 610

611. Cardiology Clerkship
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
P: MED 608. R: Open only to graduate-professional students in College of Human Medicine.
Evaluation of patients with cardiac diseases. Special diagnostic procedures including cardiac cuticularization, phonocardiography, echocardiography, and electrocardiography.
QP: MED 608 QA: MED 611

612. Nephrology Clerkship
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
P: MED 608. R: Open only to graduate-professional students in College of Human Medicine.
Integrated concepts of renal physiology and pathophysiology of renal disease. Clinical experience.
QP: MED 608 QA: MED 612

613. Dermatology Clerkship
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
P: MED 608. R: Open only to graduate-professional students in College of Human Medicine.
Experience in a dermatologist's office to develop clinical, observational, and diagnostic skills in dermatology.
QP: MED 608 QA: MED 613

614. Medical Chest Clerkship
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
P: MED 608 R: Open only to graduate-professional students in College of Human Medicine.
Chest diseases: tuberculosis, diagnosis, pulmonary function, and physiology. Experience in ambulatory and hospital settings.
QP: MED 608 QA: MED 614

615. Gastroenterology Clerkship
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
P: MED 608. R: Open only to graduate-professional students in College of Human Medicine.
Experience with gastrointestinal problems in ambulatory and hospital settings. Emphasis on continuity and comprehensive care.
QP: MED 608 QA: MED 615

616. Allergy Clerkship
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
P: MED 608. R: Open only to graduate-professional students in College of Human Medicine.
Ambulatory and hospital based experience to develop diagnostic skills in allergy. Review of basic therapeutics related to allergic diseases.
QP: MED 608 QA: MED 616

617. Neurology Clerkship
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
P: MED 608. R: Open only to graduate-professional students in College of Human Medicine.
Office and inpatient experience. Evaluation and management of neurological disease.
QP: MED 608 QA: MED 617

618. Infectious and Immunologic Diseases Clerkship
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
P: MED 608. R: Open only to graduate-professional students in College of Human Medicine.
Clinical problems in infectious and immunologic diseases. Integrated basic science input is provided in seminars.
QP: MED 608 QA: MED 618

622. Endocrinology and Metabolism Clerkship
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
P: MED 608. R: Open only to graduate-professional students in College of Human Medicine.
Clinical and/or clinical-research clerkship: endocrine diseases, electrolyte abnormalities, endocrine hypertension, or diabetes mellitus.
QP: MED 608 QA: MED 620

626. Physical Medicine and Rehabilitation Clerkship
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
P: MED 608. R: Open only to graduate-professional students in College of Human Medicine.
Developing regimens for physical medicine procedures, occupational therapy and rehabilitation skills.
QP: MED 608 QA: MED 626

627. Rheumatology Clerkship
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
P: MED 608. R: Open only to graduate-professional students in College of Human Medicine.
Combined ambulatory and hospital consultative clerkship for diagnostic skills in areas of rheumatic diseases.
QP: MED 608 QA: MED 627

628. Advanced Internal Medicine
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
P: MED 608. R: Open only to graduate-professional students in College of Human Medicine.
Clinical experiences to refine diagnostic and management skills in general internal medicine.
QP: MED 608 QA: MED 628

630. Emergency Medicine Clerkship
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
P: MED 608. R: Open only to graduate-professional students in College of Human Medicine.
Clinical diagnosis and treatment of emergencies seen in community emergency departments.
QP: MED 608 QA: MED 630

632. Occupational Medicine Clerkship
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
P: MED 608. R: Open only to graduate-professional students in College of Human Medicine.
Health problems of chemical and mineral dust, radiation, and repetitive trauma.
QP: MED 608 QA: MED 632

MICROBIOLOGY MIC

Department of Microbiology
College of Human Medicine
College of Natural Science
College of Osteopathic Medicine
College of Veterinary Medicine

101. Preview of Microbiology
Fall. 1(1-0)
R: Open only to freshmen and sophomores. Not open to students with credit in a microbiology course.
Overview of modern microbiology, emphasizing impact on society.
QA: MPH 101

205. Allied Health Microbiology
Spring. 3(3-0)
P: CEM 141 or CEM 151.
Microbial structure, function, growth, death, and control related to medical and public health concerns. Host-parasite relationships, immunology, action of major pathogenic groups. Commercial applications of microbiology.
QP: CEM 141

206. Allied Health Microbiology Laboratory
Spring. 1(0-2)
P: MPH 205 or concurrently.
Fundamentals of microbiological techniques including microscopy, staining, aseptic technique, culture media, identification, control with disinfectants and antibiotics, and safety in the microbiological laboratory.
QP: MPH 200

301. Introductory Microbiology
Spring. 3(3-0)
P: CEM 251.
Fundamentals of microbiology, including microbial structure and function, nutrition and growth, death and control. Importance and applications of major microbial groups.
QP: CEM 241 QA: MPH 301, MPH 303

302. Introductory Microbiology Laboratory
Spring. 1(0-3)
P: MPH 301 or concurrently.
Methodology of microbiology: microscopy, staining, aseptic technique, culture media, quantification, and laboratory safety.
QP: MPH 301 or MPH 303 QA: MPH 302, MPH 304

401. Prokaryotic Physiology and Genetics
Fall. 4(4-0)
P: MPH 301; BCH 461 or concurrently.
Prokaryotic cell structure and function, macromolecular synthesis and control, unique metabolic pathways, and genetics of bacteria and bacteriophages.
QP: MPH 303 or MPH 301, BCH 451 QA: MPH 407, MPH 421

403. Eukaryotic Cells and Viruses
Spring. 4(4-0)
P: BCH 462 or concurrently.
Molecular analyses of eukaryotic cell structure and function, growth and division. Cell-cell communication and signalling. Virus structure and replication strategies, virus-cell interactions.
QP: MPH 303, BCH 453 QA: MPH 403, MPH 413

408. Advanced Microbiology Laboratory
Fall. 3(1-6)
P: MPH 302; MPH 401 or concurrently. R: Open only to Microbiology majors.
Microbiological techniques and procedures to study physiology and genetics of bacteria and bacteriophages. Collection and critical assessment of quantitative data and written communication of results.
QP: MPH 303 QA: MPH 304, MPH 306

425. Microbial Ecology
Spring. 3(3-0) Interdepartmental with Crop and Soil Sciences.
P: MPH 301.
Microbial population and community interactions. Microbial activities in natural systems, including associations with plants or animals.
QP: MPH 301 or MPH 303 QA: MPH 426, MPH 426A