Clinical Chemistry

416 Clinical Chemistry
Fall. 4(4-0) P: (MT 213) and (BMB 401 or BMB 461) and (PSL 250 or PSL 432) R: (MT 417) and (CEM 332 or CEM 333)
Correlation of laboratory test results with normal physiology and biochemistry and with disease states. Metabolic and endocrine systems. Acquired and inherited diseases. Therapeutic drug monitoring, and toxicology.

417 Quality Processes in Diagnostic Laboratory Testing
Fall. 2(2-0) P: (STT 200 or concurrently or STT 201 or concurrently or STT 421 or concurrently or STT 351 or concurrently or STT 231 or concurrently) R: (MT 213) SA: MT 414
Statistical methods for validating diagnostic laboratory tests including quality control processes, proficiency testing, method evaluation, related regulatory requirements, laboratory information systems, and laboratory mathematics.

424 Advanced Hematology, Hemostasis and Urinalysis
Spring. 1(0-3) P: (MT 324) SA: MT 422
Etiology and pathogenesis of diseases of the hematologic, hemostatic and urinary systems including anemias, leukemias, and hemophilies. Diagnostic testing for such diseases.

434 Clinical Immunology
Fall. 3(3-0) P: (BS 111 or concurrently or LBS 145 or LBS 149H or LBS 159H) SA: MT 432 Not open to students with credit in CEM 451
Concepts of innate, cellular, and humoral immunity. Immunodeficiency and autoimmunity. Principles and applications of immunoassays in medical laboratories.

435 Transfusion and Transplantation Medicine
Spring. 3(3-0) P: (MT 434 or MMG 451) SA: MT 432
Principles and practice of transfusion medicine including blood typing. Principles and practices of transplantation medicine. Transplantation immunology, organ procurement, and rejection detection.

436 Principles of Diagnostic Molecular Science
Spring. 2(2-0) P: (BMB 461 and BS 111 and ZOL 341) Not open to students with credit in MT 830. C: BMB 462 concurrently. Principles and techniques of molecular diagnostic assays including applicable regulations.

437 Clinical Applications of Diagnostic Molecular Science
Spring. 2(2-0) P: (MT 436) Not open to students with credit in MT 831. Application of molecular diagnostic methods in clinical and other types of laboratory disciplines.

438 Molecular Diagnostic Laboratory
Fall. 2(0-6) P: (MT 436) Not open to students with credit in MT 832. Laboratory in molecular techniques with emphasis on clinical and diagnostic applications.

442 Education and Management in the Clinical Laboratory
Spring. 3(3-0) P: (MTH 116 or LBS 117) or (MTH 103 and MTH 114) or (STT 200 or STT 201 or STT 231 or STT 351 or STT 421) R: Open only to students in the Clinical Laboratory Sciences major.
Basic principles and concepts in education and management in clinical laboratories. Systematic approach to instructional design, delivery and evaluation. Principles of leadership, personnel management, fiscal management, and regulatory compliance.

450 Eukaryotic Pathogens
Spring. 3(3-0) P: (BS 111) R: (BMB 205 or MMG 301)
Medically important fungi and parasites. Host-parasite relationships, life cycles, culture, identification, and associated diseases.

455 Integrating Clinical Laboratory Science Discipline (W)
Fall. Spring. 2(2-0) P: (MT 324 or concurrently and MT 417 or concurrently and MT 416 or concurrently and MMG 463 or concurrently and MT 435 or concurrently and CEM 332 or concurrently) and completion of Tier I writing requirement. R: Open only to seniors in the Clinical Laboratory Sciences major or Clinical Laboratory Sciences undergraduate major.
Problem oriented approach integrating topics from Medical Technology courses with emphasis on writing experience in the major and on critical thinking skills.

471 Advanced Clinical Chemistry Laboratory
Fall, Spring. Summer. 3 credits. P: (CEM 333)
Application and integration of theory and technical skills in clinical chemistry and biochemistry.

472 Advanced Clinical Chemistry
Fall. Spring, Summer. 1 credit. R: Open only to seniors in the Clinical Laboratory Sciences major. C: MT 471 concurrently.
Theoretical aspects of clinical chemistry, chemical and biochemical reactions, statistical analysis, and pathophysiologic relationships. Integration of cognitive material with clinical laboratory test results.

473 Advanced Clinical Hematology and Body Fluids Laboratory
Fall, Spring, Summer. 4 credits. P: (MT 424L)
Application and integration of theory and technical skills in hematology, hemostasis, and body fluid analysis.

474 Advanced Clinical Hematology and Body Fluids
Fall, Spring, Summer. 1 credit. R: Open only to seniors in the Clinical Laboratory Sciences major. C: MT 473 concurrently.
Theoretical aspects of advanced hematology, hemostasis and body fluid analysis. Integration of cognitive material with clinical laboratory test results.

475 Advanced Clinical Immunology and Immunohematology Laboratory
Fall, Spring, Summer. 2 credits. P: (MT 433)
Application and integration of theory and technical skills in immunology and immunohematology.

476 Advanced Clinical Immunology and Immunohematology
Fall, Summer. 1 credit. R: Open only to seniors in the Clinical Laboratory Sciences major. C: MT 476 concurrently.
Theoretical aspects of immunology and immunohematology. Integration of cognitive material with clinical laboratory test results.

477 Advanced Clinical Microbiology Laboratory
Fall, Spring, Summer. 3 credits. P: (MMG 464 and MT 450)
Application and integration of theory and technical skills in clinical microbiology and infectious disease.

478 Advanced Clinical Microbiology
Fall, Spring, Summer. 1 credit. R: Open only to seniors in the Clinical Laboratory Sciences major. C: MT 478 concurrently.
Theoretical aspects of clinical microbiology and infectious disease. Integration of cognitive material with clinical laboratory test results.

482 Advanced Diagnostic Molecular Science
Spring. 2 credits. R: Open only to students in the Diagnostic Molecular Science major. C: MT 483 concurrently, MT 484 concurrently, MT 485 concurrently, MT 486 concurrently.
Integration of principles and concepts in diagnostic molecular science with clinical laboratory test results.

483 Molecular Diagnostic Experience in Hematopathology and Oncology
Spring. 2 credits. P: (MT 438 or concurrently) R: Open only to students in the Diagnostic Molecular Science major. C: MT 482 concurrently.
Clinical experience in molecular diagnostic laboratories with applications in hematopathology and oncoology.
Molecular Diagnostic Experience in Infectious Disease
Spring. 2 credits. P:MT (438 or concurrently). R: Open only to students in the Diagnostic Molecular Science major. C: MT 437 concurrently. Clinical experience in molecular diagnostic laboratories with applications to infectious disease diagnosis.

Molecular Diagnostic Experience in Inherited and Predictive Genetics
Spring. 2 credits. P:MT (438 or concurrently). R: Open only to students in the Diagnostic Molecular Science major. C: MT 462 concurrently. Clinical experience in molecular diagnostic laboratories with applications in inherited and predictive genetics.

Molecular Diagnostic Experience in Genotyping and Individual Identification
Spring. 2 credits. P:MT (437 or concurrently and MT 438). R: Open only to students in the Diagnostic Molecular Science major. C: MT 462 concurrently. Clinical experience in molecular diagnostic laboratories with applications to genotyping and identification of individuals.

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 students in the Clinical Laboratory Sciences or Medical Technology major or LBS Medical Technology coordinate major. Faculty directed study including assigned readings, reviews of appropriate scientific periodicals, research and laboratory experience.

Integrative Correlations in Clinical Laboratory Science I
Fall, Spring. 1(2-0) P:MT (MT 213). R: Open only to juniors or seniors in the Medical Technology or Clinical Laboratory Science and Lyman Briggs coordinate majors. Application of the principles and concepts of clinical laboratory science in a problem-based learning format. Emphasis on the diagnostic value of laboratory tests, social-economic impact of laboratory tests and their regulation.

Integrative Correlations in Clinical Laboratory Science II
Fall, Spring. 1(2-0) P:MT (MT 496). R: Open only to juniors or seniors in the Medical Technology or Clinical Laboratory Science and Lyman Briggs coordinate majors. Continuation of MT 496.

Integrative Correlations in Clinical Laboratory Science III
Spring. 2(1-2) P:MMG 463 or concurrently and MMG 464 or concurrently and MT 496). R: Open only to students in the Clinical Laboratory Sciences major. SA: MT 454 Continuation of MT 496 with emphasis on cases of medical microbiology, hematology, and clinical chemistry.

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.

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

Advanced Human Hematology
Spring of odd years. 2(2-0) Interdepartmental with Pathology. RB: MT 424. Pathogenesis, mechanisms, and morphological pictures. Laboratory tests and interpretation of results.

Concepts in Molecular Biology
Fall, Spring. 2(2-0) Interdepartmental with Pathology. RB: 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.

Clinical Application of Molecular Biology
Spring. Summer. 2(2-0) P:MT (MT 830). RB: Basic biochemistry, medical or research laboratory experience. Molecular diagnostic principles. Diagnostic outcomes in traditional and non-traditional laboratory disciplines.

Molecular Pathology Laboratory
Summer. 2(0-4) P:MT (MT 831 or concurrently). Equipment operation, DNA extraction and measurement, electrophoresis, hybridization and transfers, amplification and detection including SSOP, ARMS, RFLP and SCP as well as automated sequencing will be covered with specific emphasis on clinical applications.

Managing Biomedical Laboratory Operations
Fall. 2(2-0) R: Open only to Biomedical Laboratory Operations majors or approval of department. Integration of the roles of legislative, regulatory, technological and economic factors that influence the practice and management of biomedical laboratory operations.

Topics in Biomedical Laboratory Operations
Spring. 1(1-0) P:MT (MT 842). R: Open only to Biomedical Laboratory Operations majors or approval of department. Current issues relevant to biomedical laboratory operations from an interdisciplinary perspective with an emphasis on efficient laboratory operations.

Decision Processes for Biomedical Laboratory Operations
Fall. 2(2-0) P:MT (MT 842). R: Open only to Biomedical Laboratory Operations majors or approval of department. Integrative case studies presented in a problem-based learning format. Strategies for decision making in the operations of a biomedical laboratory. Cases integrate scientific principles, management principles and regulatory factors.

Concepts in Immunodiagnostics
Fall, Spring. 2(2-0) RB: An undergraduate course in biochemistry or cell biology. Immunology principles and theory applied to diagnostic evaluation of the host immune response during health and disease.

Clinical Application of Immunodiagnostic Principles
Spring, Summer. 2(2-0) P:MT (MT 850). Immunodiagnostic theories and principles applied to clinical assay development and method evaluation.

Immunodiagnostic Laboratory
Summer. 2(2-0). Performance of immunopurifications, in vitro diagnostic assays and basic flow cytometry. Data analysis and quality control evaluation.

Clinical Laboratory Diagnosis of Infectious Diseases
Fall of odd years. 2(2-0) Interdepartmental with Pathology. RB: MMG 451 and MMG 464. Laboratory techniques for diagnosing infectious diseases in humans. Emphasis on differential diagnosis and correlation of microbiological results with serology, hematology, and clinical chemistry.

Selected Problems in Clinical Laboratory Science
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 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.

Projects in Biomedical Laboratory Operations
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to Biomedical Laboratory Operations majors or approval of department. Students complete a significant on-site project in cooperation with an industrial/client partner.

Master's Thesis Research
Fall, Spring, Summer. 1 to 10 credits. A student may earn a maximum of 36 credits in all enrollments for this course. R: Open only to graduate students in Clinical Laboratory Sciences. Master's thesis research.

MED—Medicine

Department of Medicine
College of Human Medicine

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. RB: 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.

Hematology Clerkship
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. RB: 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.