204 Mechanisms of Disease
Spring. 3(3-0) P: BS 161 or LB 145 or BS 181H SA: MT 204
Pathophysiological mechanisms of diseases. Selected applications to organ system pathology.

213 Application of Clinical Laboratory Principles
Fall, Summer. 2(1-3) P: (CEM 141 and CEM 161) or (LB 171 and LB 171L) R: BS 171 R: Open to students in the Biomedical Laboratory Science major or in the Lyman Briggs Biomedical Laboratory Science Coordinate major or in the Clinical Laboratory Sciences major or in the Diagnostic Molecular Science major or in the Lyman Briggs Diagnostic Molecular Science Coordinate Major or in the Human Biology major. SA: MT 213 Lab safety and standards of good laboratory practice including specimen handling and processing. Application of technologies and techniques to the performance of clinical diagnostic testing.

220 Preparing for a Health Professions Career
Spring. 1(1-0) R: Open to sophomores or juniors. SA: MT 220 Development of skills needed for success in a health professions career. Historical, economic, sociological and ethical perspectives on the U.S. health professions with focus on medical laboratory careers.

324 Fundamentals of Hematology, Hemostasis, and Urinalysis
Fall, 3(3-0) P: (BS 161 or concurrently) or (LB 145 or concurrently) or (BS 181H or concurrently) SA: MT 324 Physiology and biochemistry of normal hematologic, hemostatic, and urinary systems. Principles of diagnostic assays to detect diseases affecting those systems.

324L Introductory Laboratory in Hematology, Hemostasis and Urinalysis
Fall. 1(0-3) P: BLD 324 or concurrently R: Open to students in the Clinical Laboratory Sciences major. SA: MT 423, MT 324L Routine laboratory assays used to assess the health of the hematological, hemostatic, and urinary systems.

413 Advanced Biomedical Laboratory Diagnostics Laboratory
Spring. 1(0-3) P: BLD 213 and BLD 324 and BLD 434 and BLD 435 and MMG 463 RB: BLD 424 and BLD 430 R: Open to students in the Diagnostic Molecular Science major or in the Biomedical Laboratory Science major or in the Lyman Briggs Diagnostic Molecular Science Coordinate Major or in the Lyman Briggs Biomedical Science Coordinate Major. Diagnostic assays across various disciplines within the clinical laboratory (microbiology, immunohematology, hematology, and molecular diagnostics) as well as data interpretation and problem solving skills.

414 Clinical Chemistry Analysis and Practice
Spring. 3(3-0) P: (STT 200 or concurrently) or (STT 201 or concurrently) or (STT 231 or concurrently) or (STT 351 or concurrently) or (STT 421 or concurrently) RB: BLD 213 and PHY 231 R: Open to students in the Biomedical Laboratory Science major or in the Lyman Briggs Biomedical Laboratory Science Coordinate major or in the Human Biology major. SA: MT 417 Not open to students with credit in BLD 417. Concepts and principles of analytic methods commonly used in the clinical laboratory. Qualitative and quantitative features of instrumental analysis. Issues of quality control and quality assurance, method evaluation and standards of laboratory practice.

416 Clinical Chemistry
Fall. 4(4-0) P: BLD 213 and (BMB 401 or BMB 461) and (PSL 250 or PSL 310 or PSL 431) RB: BLD 414 or (BLD 417 and CEM 333) SA: MT 416 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
Spring. 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) or (STT 231 or concurrently) RB: BLD 213 and PHY 231 R: Open to students or students in the Clinical Laboratory Sciences major or in the Diagnostic Molecular Science major or in the Lyman Briggs Diagnostic Molecular Science Coordinate Major. SA: MT 414, MT 417 Not open to students with credit in BLD 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. 2(2-0) P: BLD 324 SA: MT 422, MT 424 Etiology and pathogenesis of diseases of the hematologic, hemostatic, and urinary systems including anemias, leukemias, and hemophilies. Diagnostic testing for such diseases.

424L Advanced Laboratory in Hematology, Hemostasis, and Urinalysis
Spring. 1(0-3) P: BLD 324L and (BLD 424 or concurrently) SA: MT 423, MT 424L Specialized and advanced assays used in the diagnosis of diseases of the hematological, hemostatic, and urinary systems.
Biomedical Laboratory Diagnostics—BLD

455 Integrating Clinical Laboratory Science Discipline (W)
Fall, Spring. 2(2-0) P: (BLD 324 or concurrently) or (BLD 417 or concurrently) or (BLD 416 or concurrently) or (MMG 463 or concurrently) or (BLD 435 or concurrently) or (CEM 332 or concurrently) or (BLD 436 or concurrently) and completion of Tier I writing requirement R: Open to undergraduate students in the Clinical Laboratory Sciences major or in the Biomedical Laboratory Science major or in the Diagnostic Molecular Science major. SA: MT 455

Problem oriented approach integrating topics from biomedical laboratory diagnostics courses with emphasis on writing experience in the major and on critical thinking skills.

463 Medical Microbiology
Fall, 3(0-3) interdepartmental with Microbiology and Molecular Genetics. Administered by Microbiology and Molecular Genetics. P: MMG 301 or (MMG 201 and BS 161) or (MMG 201 and LB 143) or (MMG 201 and BS 181) RB: MMG 451 or BLD 434 R: Open to juniors or seniors in the Biomedical Laboratory Diagnostics Program or in the Department of Microbiology and Molecular Genetics or in the Lyman Briggs Environmental/Biology/Microbiology Coordinate Major or in the Lyman Briggs Genomics and Molecular Genetics Coordinate Major or in the Lyman Briggs Human Biology Coordinate Major or in the Human Biology major or in the Lyman Briggs Medical Technology Coordinate Major or in the Lyman Briggs Microbiology Coordinate Major or in the Environmental Biology/Microbiology major or in the Genomics and Molecular Genetics major. SA: MIC 463

Properties of pathogenic bacteria and viruses and their mechanisms of pathogenicity and clinical diagnoses.

464 Diagnostic Microbiology Laboratory
Fall, 2(0-4) interdepartmental with Microbiology and Molecular Genetics. Administered by Microbiology and Molecular Genetics. P: MMG 463 or concurrently R: Open to juniors or seniors in the Department of Microbiology and Molecular Genetics or in the Biomedical Laboratory Diagnostics Program or in the Clinical Laboratory Sciences major. SA: MIC 464

Clinical laboratory diagnostic procedures for the identification of pathogenic microbes.

473 Advanced Clinical Hematology and Body Fluids Laboratory
Fall, Spring, Summer. 3 credits. P: BLD 424L R: Open to seniors in the Clinical Laboratory Sciences major. SA: MT 473

Application and integration of theory and technical skills in hematology, hemostasis, and body fluid analysis.

474 Advanced Clinical Hematology and Bodys Fluids
Fall, Spring, Summer. 1 credit. P: BLD 424 R: Open to seniors in the Clinical Laboratory Sciences major. SA: MT 474 C: BLD 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: BLD 433 R: Open to seniors in the Clinical Laboratory Sciences major. SA: MT 475

Application and integration of theory and technical skills in immunology and immunohematology.

476 Advanced Clinical Immunology and Immunohematology
Fall, Spring, Summer. 1 credit. P: BLD 435 and BLD 434 R: Open to seniors in the Clinical Laboratory Sciences major. SA: MT 476 C: BLD 475 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 BLD 450 R: Open to seniors in the Clinical Laboratory Sciences major. SA: MT 477

Application and integration of theory and technical skills in clinical microbiology and infectious disease.

478 Advanced Clinical Microbiology
Fall, Spring, Summer. 1 credit. P: MMG 463 or BLD 450 or BLD 498 R: Open to seniors in the Clinical Laboratory Sciences major. SA: MT 478 C: BLD 477 concurrently.

Theoretical aspects of clinical microbiology and infectious disease. Integration of cognitive material with clinical laboratory test results.

479 Professional Behavior in Clinical Laboratory Science
Fall, Spring, Summer. 1(0-2) P: (BLD 220 and BLD 442) and (BLD 417 or concurrently) or (BLD 473 or concurrently) or (BLD 475 or concurrently) or (BLD 477 or concurrently) R: Open to students in the Clinical Laboratory Sciences major. SA: MT 479

Application of professional behavior principles to practical experiences in clinical laboratory science.

482 Advanced Diagnostic Molecular Science
Spring, 2 credits. R: Open to students in the Diagnostic Molecular Science major. SA: MT 482 C: BLD 483 concurrently or BLD 484 concurrently or BLD 485 concurrently or BLD 486 concurrently.

Integration of principles and concepts in diagnostic molecular science with diagnostic laboratory test results.

483 Molecular Diagnostic Experience in Hemopathology and Oncology
Spring, 2 credits. P: BLD 438 R: Open to students in the Diagnostic Molecular Science major. SA: MT 483 C: BLD 482 concurrently.

Clinical experience in molecular diagnostic laboratories with applications in hemopathology and oncology.

484 Molecular Diagnostic Experience in Infectious Disease
Spring, 2 credits. P: BLD 438 R: Open to students in the Diagnostic Molecular Science major. SA: MT 484 C: BLD 437 concurrently.

Clinical experience in molecular diagnostic laboratories with applications to infectious disease diagnosis.

485 Molecular Diagnostic Experience in Inherited and Predictive Genetics
Spring, 2 credits. P: BLD 438 R: Open to students in the Diagnostic Molecular Science major. SA: MT 485 C: BLD 482 concurrently.

Clinical experience in molecular diagnostic laboratories with applications in inherited and predictive genetics.

486 Molecular Diagnostic Experience in Genotyping and Individual Identification
Spring, 2 credits. P: BLD 438 R: Open to students in the Diagnostic Molecular Science major. SA: MT 486 C: BLD 482 concurrently.

Clinical experience in molecular diagnostic laboratories with applications to genotyping and identification of individuals.

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 to students in the Clinical Laboratory Sciences major or in the Diagnostic Molecular Science major or in the Lyman Briggs School of Medical Technology Coordinate Major or in the Medical Technology major. SA: MT 495

Faculty directed study including assigned readings, reviews of appropriate scientific periodicals, research, and laboratory experience.

498 Focused Problems in Clinical Laboratory Science
Spring, 2(1-2) P: (MMG 463 or concurrently) and (MMG 464 or concurrently) R: Open to students in the Clinical Laboratory Sciences major. SA: MT 454, MT 496

Case study problems of medical microbiology, hematology, and clinical chemistry.

498L Infectious Disease Diagnostic Laboratory
Spring, 1(0-3) P: MMG 463 and MMG 464 and BLD 434 and (BLD 450 or concurrently) RB: BLD 430 R: Open to undergraduate students in the Clinical Laboratory Sciences major.

Applying pre-analytical, analytical, and post-analytical principles to the identification of infectious agents in unknown samples.

801 Biomedical Laboratory Diagnostics Seminar
Fall, Spring. 1(1-0) A student may earn a maximum of 2 credits in all enrollments for this course. SA: MT 801

Current research topics in clinical laboratory sciences.
811  Fundamentals of Scientific Research
Spring of even years. 1(1-0) R: Open to masters students in the Biomedical Laboratory Diagnostics Program. SA: MT 810 Not open to students with credit in NSC 830. Best practices for the research enterprise. Ethical conduct of research. Critical evaluation of scientific literature.

815  Cell Biology in Health and Disease I
Spring. 2(2-0) RB: Undergraduate course in Biochemistry and Physiology. Experience in a clinical laboratory Principles and theories of cell biology and biochemistry are presented with a focus on applications to clinical pathology.

816  Cell Biology in Health and Disease II
Summer. 2(2-0) P: BLD 815 RB: Undergraduate course in Biochemistry and Physiology. Experience in a clinical laboratory Continuation of BLD 815.

821  Advanced Clinical Laboratory Practice
Spring. 1(1-0) P: PHM 830 or approval of department RB: Experience in a clinical laboratory Establishment and review of good clinical laboratory practice through the appropriate use of statistical functions.

830  Concepts in Molecular Biology
Fall, Spring. 2(2-0) Interdepartmental with Pathobiology and Diagnostic Investigation. Administered by Biomedical Laboratory Diagnostics. RB: One course in biochemistry or concurrently. SA: MT 830 Techniques and theories of molecular biology, nucleic acid synthesis and isolation, enzymatic digestion and modification, electrophoresis, hybridization, amplification, library construction, and cloning.

831  Clinical Application of Molecular Biology
Spring, Summer. 2(2-0) P: BLD 830 RB: Basic biochemistry, medical or research laboratory experience SA: MT 831 Molecular diagnostic principles. Diagnostic outcomes in traditional and non-traditional laboratory disciplines.

832  Molecular Pathology Laboratory
Summer. 2(0-4) P: BLD 831 or concurrently SA: MT 831L, MT 832 Equipment operation, DNA extraction and measurement, electrophoresis, hybridization and transfers, amplification and detection including techniques and automated sequencing. Clinical applications.

835  Hemostasis, Thrombosis and Effective Resource Management
Fall. 3(3-0) RB: Background in hemostasis, thrombosis and blood product management. R: Open to lifelong graduate students in the College of Natural Science or in the Biomedical Laboratory Diagnostics Program or in the Clinical Laboratory Sciences major or approval of department. Theories of coagulation, thrombosis and effective blood product management. Needs and particular stresses during an active bleeding crisis.

836  Adverse Transfusion Outcomes: Detection, Monitoring and Prevention
Spring, Summer. 2(2-0) RB: Medical technology and clinical laboratory sciences laboratory professionals. R: Open to lifelong graduate students and open to graduate students in the Biomedical Laboratory Operations major or in the Clinical Laboratory Sciences major. Adverse transfusion outcomes (ATO) covering cause, methods of detection, monitoring paradigms and prevention.

837  Transfusion Service Operations and Management
Fall, Spring. 1(1-0) RB: Clinical transfusion service practical experience. Management and operational practices needed to meet both the fiscal and regulatory oversight of a transfusion service.

842  Managing Biomedical Laboratory Operations
Fall, Spring. 2(2-0) R: Open to graduate students or lifelong graduate students or approval of department. SA: MT 842 Integration of the roles of legislative, regulatory, technological and economic factors that influence the practice and management of biomedical laboratory operations.

844  Topics in Biomedical Laboratory Operations
Spring. 1(1-0) P: BLD 842 R: Open to graduate students or lifelong graduate students or approval of department. SA: MT 844 Current issues relevant to biomedical laboratory operations from an interdisciplinary perspective with an emphasis on efficient laboratory operations.

846  Decision Processes for Biomedical Laboratory Operations
Fall. 2(2-0) P: BLD 842 R: Open to masters students or lifelong graduate students or approval of department. SA: MT 846 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.

850  Concepts in Immunodiagnostics
Fall, Spring. 2(2-0) RB: An undergraduate course in biochemistry or cell biology. SA: MT 850 Immunology principles and theory applied to diagnostic evaluation of the host immune response during health and disease.

851  Clinical Application of Immunodiagnostic Principles
Spring. Summer. 2(2-0) P: BLD 850 SA: MT 851 Immunodiagnostic theories and principles applied to clinical assay development and method evaluation.

852  Immunodiagnostics Laboratory
Summer. 2(2-0) P: BLD 850 SA: MT 851L, MT 852 Performance of immunopurifications, in vitro diagnostic assays and basic flow cytometry. Data analysis and quality control evaluation.

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 to graduate students in the Clinical Laboratory Sciences major. SA: MT 890 Non-thesis research for Plan B master’s students.

895  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 to masters students in the Biomedical Laboratory Operations major or approval of department. SA: MT 895 Completion of a significant on-site project in cooperation with an industrial/clinical partner.

899  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 to graduate students in the Clinical Laboratory Sciences major. SA: MT 899 Master's thesis research.