

**484 Molecular Diagnostic Experience in Infectious Disease**  
2 credits. P:M: (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.

**485 Molecular Diagnostic Experience in Inherited and Predictive Genetics**  
Spring. 2 credits. P:M: (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 inherited and predictive genetics.

**486 Molecular Diagnostic Experience in Genotyping and Individual Identification**  
Spring. 2 credits. P:M: (MT 437 or concurrently and MT 438) R: Open only to students in the Diagnostic Molecular Science major. C: MT 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 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.

**496 Integrative Correlations in Clinical Laboratory Science I**  
Fall, Spring. 1(2-0) P:M: (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. Ethics, diagnostic value of laboratory tests, social-economic impact of laboratory tests and their regulation.

**497 Integrative Correlations in Clinical Laboratory Science II**  
Fall, Spring. 1(2-0) P:M: (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.

**498 Integrative Correlations in Clinical Laboratory Science III**  
Spring. 2(1-2) P:M: (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.

**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.

**812 Advanced Clinical Chemistry**  
Spring of even years. 2(2-0) Interdepartmental with Pathology. RB: (BMB 462 and 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.

**820 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.

**830 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.

**831 Clinical Application of Molecular Biology**  
Spring, Summer. 2(2-0) P:M: (MT 830) RB: Basic biochemistry, medical or research laboratory experience

Molecular diagnostic principles. Diagnostic outcomes in traditional and non-traditional laboratory disciplines.

**831L Molecular Pathology Laboratory**  
Summer. 2(0-4) P:M: (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.

**842 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.

**844 Topics in Biomedical Laboratory Operations**  
Spring. 1(1-0) P:M: (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.

**846 Decision Processes for Biomedical Laboratory Operations**  
Fall. 2(2-0) P:M: (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.

**850 Concepts in Immunodiagnosics**  
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.

**851 Clinical Application of Immunodiagnostic Principles**  
Spring, Summer. 2(2-0) P:M: (MT 850)

Immunodiagnostic theories and principles applied to clinical assay development and method evaluation.

**851L Immunodiagnosics Laboratory**  
Summer. 2(2-0)

Performance of immunopurifications, invitro diagnostic assays and basic flow cytometry. Data analysis and quality control evaluation.

**860 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.

**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.

**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 only to Biomedical Laboratory Operations majors or approval of department.

Students complete 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 only to graduate students in Clinical Laboratory Sciences.

Master's thesis research.

## MEDICINE

## MED

### Department of Medicine College of Human Medicine

**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. 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.

**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. 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.

## Medicine—MED

- 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. RB: (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.
- 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. RB: (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.
- 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. RB: (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.
- 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. RB: (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.
- 614 Pulmonary 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.  
Pulmonary physiology. Evaluation of pulmonary function. Diagnosis and treatment of common pulmonary diseases.
- 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. RB: (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.
- 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. RB: (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.
- 618 Infectious Diseases 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.  
Clinical problems in infectious and immunologic diseases. Integrated basic science input is provided in seminars.
- 619 Ambulatory Care Clerkship**  
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 15 credits in all enrollments for this course. Interdepartmental with Family Practice; Pediatrics. Administered by Department of Family Practice. RB: (FMP 602) R: Open only to graduate-professional students in College of Human Medicine.  
Continuous and comprehensive patient care under supervision of appropriate physicians.
- 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. RB: (MED 608) R: Open only to graduate-professional students in College of Human Medicine. SA: MED 620  
Clinical and/or clinical-research clerkship: endocrine diseases, electrolyte abnormalities, endocrine hypertension, or diabetes mellitus.
- 623 Advanced Medicine**  
Fall, Spring, Summer. 6 to 12 credits. Fall: Lansing-GR-Saginaw-Flint-Kalamazoo-UP. Spring: Lansing-GR-Saginaw-Flint-Kalamazoo-UP. Summer: Lansing-GR-Saginaw-Flint-Kalamazoo-UP. 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 the College of Human Medicine.  
Hospital-based clinical experience in diagnosing and managing acutely ill patients with non-surgical problems.
- 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. RB: (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.
- 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. RB: (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.
- 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. RB: (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.
- 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. RB: (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.
- 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. RB: (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.
- 633 Extended Clinical Experience**  
Fall, Spring, Summer. 6(6-0) Fall: All six(6) campuses. Spring: All six(6) campuses. Summer: All six(6) campuses. P:M: (MED 608)  
Based in community hospitals and ambulatory sites, this is a 4 week clinical experience emphasizing interviewing skills, history, physical exam, problem solving and therapy.
- 635 Core Competencies I**  
Fall, Spring, Summer. 2(2-0) Fall: Flint-GR-Saginaw-Lansing-Kalamazoo-UP. Spring: same as above. Summer: same as above. A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Human Medicine; Family Practice; Pediatrics and Human Development. Administered by College of Human Medicine. R: Open only to graduate-professional students in College of Human Medicine.  
Core knowledge and skills from an interdisciplinary perspective.
- 636 Core Competencies II**  
Fall, Spring, Summer. 2(2-0) Fall: same as below. Spring: Flint-Saginaw-GR-Lansing-Kalamazoo-UP. Summer: same as above. A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Human Medicine; Family Practice. Administered by College of Human Medicine. R: Open only to graduate-professional students in College of Human Medicine.  
Core knowledge and skills from an interdisciplinary perspective.
- 637 Core Competencies III**  
Fall, Spring, Summer. 2(2-0) Fall: same as below. Spring: Flint-Saginaw-GR-Lansing-Kalamazoo-UP. Summer: Flint-Saginaw-GR-Lansing-Kalamazoo-UP. A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Human Medicine; Family Practice; Obstetrics, Gynecology and Reproductive Biology; Pediatrics and Human Development; Surgery. Administered by College of Human Medicine. R: Open only to graduate-professional students in College of Human Medicine.  
Core knowledge and skills from an interdisciplinary perspective.
- 820 Evidence-Based Medicine**  
Spring of even years. 3(3-0) Interdepartmental with Epidemiology. Administered by Department of Epidemiology. P:M: (EPI 810 or concurrently and STT 421 or concurrently)  
Methodology of clinical epidemiology and health services outcomes research. Linkage of epidemiology with daily clinical problems.