

Medicine—MED

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.

MICROBIOLOGY AND MOLECULAR GENETICS MMG

Department of Microbiology and Molecular Genetics College of Natural Science

101 Preview of Microbiology

Fall. 1(1-0) R: Open only to freshmen or sophomores. SA: MPH 101

Overview of modern microbiology, emphasizing impact on society.

103 Frontiers of Microbiology

Spring. 1(2-0) R: Open only to freshmen and sophomores.

Current microbiology research: significance to modern biological science and impact on society.

111L Cell and Molecular Biology Laboratory

Fall, Spring, Summer. 2(1-3) Interdepartmental with Biological Science; Plant Biology; Zoology. Administered by College of Natural Science. P: (BS111 or concurrently) Not open to students with credit in LBS 159H.

Principles and applications of common techniques used in cell and molecular biology.

201 Fundamentals of Microbiology

Spring. 3(3-0) RB: (CEM 141 or ISP 201 or ISP 207 or ISP 209 or ISP 217) SA: MMG 105, MMG 205

Microbial structure, function, growth, control, and diversity. Role of microbes in health, industry, and the environment.

- 206 Allied Health Microbiology Laboratory**
 Spring. 1(0-2) P: (MMG 105 or MMG 205 or concurrently) SA: MPH 206
 Fundamentals of microbiological techniques including microscopy, staining, aseptic technique, culture media, identification, control with disinfectants and antibiotics, and safety in the microbiological laboratory.
- 301 Introductory Microbiology**
 Fall, Spring. 3(3-0) P: (BS 111 or LBS 145 or LBS 149H) and (CEM 251 or concurrently or CEM 351 or concurrently or CEM 143) SA: MPH 301
 Fundamentals of microbiology, including microbial structure and function, nutrition and growth, death and control. Importance and applications of major microbial groups.
- 302 Introductory Microbiology Laboratory**
 Spring. 1(0-3) P: (MMG 105 or concurrently or MMG 205 or concurrently or MMG 301 or concurrently) SA: MPH 302
 Methodology of microbiology: microscopy, staining, aseptic technique, culture media, quantification, and laboratory safety.
- 408 Advanced Microbiology Laboratory (W)**
 Fall. 3(1-6) P: (MMG 302 and MMG 431 or concurrently) and completion of Tier I writing requirement. R: Open only to students in the Department of Microbiology and Molecular Genetics or LBS Environmental Biology/Microbiology or Microbiology coordinate major. SA: MPH 408
 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.
- 409 Eukaryotic Cell Biology**
 Spring. 3(3-0) P: (BS 111 or LBS 145 or LBS 149H) and (BMB 401 or concurrently or BMB 462 or concurrently) SA: MIC 403, MPH 403
 Structure and function of nucleated cells. Emphasis on the molecular mechanisms that underlie cell processes.
- 413 Virology**
 Spring. 3(3-0) P: (BMB 462 or concurrently) RB: (MMG 409) SA: MPH 403
 Viruses and modern molecular biology. Viral replication and gene expression of the major classes of viruses. Virus-cell interactions and viral diseases.
- 421 Prokaryotic Cell Physiology**
 Fall. 3(3-0) P: (MMG 301 and BMB 461 or concurrently) SA: MIC 401, MPH 401
 Prokaryotic cell structure and function. Growth and replication. Macromolecular synthesis and control.
- 425 Microbial Ecology**
 Spring. 3(3-0) Interdepartmental with Crop and Soil Sciences. RB: (MMG 301) SA: MPH 425
 Microbial population and community interactions. Microbial activities in natural systems, including associations with plants or animals.
- 426 Biogeochemistry**
 Summer. 3 credits. Given only at W.K. Kellogg Biological Station. Interdepartmental with Crop and Soil Sciences; Geological Sciences; Zoology. RB: (BS 110 or LBS 144 or LBS 148H or BS 111 or LBS 145 or LBS 149H) and (CEM 143 or CEM 251) SA: MPH 426
 Integration of the principles of ecology, microbiology, geochemistry, and environmental chemistry. Societal applications of research in aquatic and terrestrial habitats.
- 431 Microbial Genetics**
 Fall. 3(3-0) P: (BMB 461 or concurrently) RB: (MMG 301 or ZOL 341) SA: MIC 401, MPH 401
 Genetics of bacteria, their viruses, plasmids, and transposons. Emphasis on genetic principles.
- 433 Microbial Genomics**
 Spring. 3(2-3) P: (MMG 431) RB: (MMG 421 or BMB 461) and (CSE 101)
 Structure of microbial genomes and implications for growth and evolution of bacteria and fungi. Computer analysis of genome sequence databases. Applications to gene expression and phylogenetic analysis.
- 440 Food Microbiology**
 Spring. 3(3-0) Interdepartmental with Food Science. Administered by Department of Food Science and Human Nutrition. P: (MMG 205 or MMG 301) and completion of Tier I writing requirement. R: Not open to freshmen or sophomores. SA: MPH 440
 Major groups of microorganisms of importance to the food industry. Emphasis on ecological, physiological, and public health aspects.
- 441 Food Microbiology Laboratory**
 Spring. 2(0-4) Interdepartmental with Food Science. Administered by Department of Food Science and Human Nutrition. P: (FSC 440 or concurrently) and completion of Tier I writing requirement. RB: (MMG 206 or MMG 302) SA: MPH 441
 Methods for studying major groups of microorganisms important to the food industry. Isolation, enumeration, characterization, identification, and use of microorganisms.
- 445 Basic Biotechnology**
 Fall. 3(3-0) P: (MMG 205 or MMG 301) SA: MPH 445
 Growth and genetic improvement of industrial microorganisms. Fermentation fundamentals. Specific classical and recombinant-based bioprocesses and bioconversions of commercial importance.
- 451 Immunology**
 Fall. 3(3-0) P: (BS 111 or LBS 145 or LBS 149H) and (BMB 401 or concurrently or BMB 461 or concurrently) RB: (MMG 409) SA: MPH 451
 Structure and function of molecules involved in immune responses. Quantification of immune responses and cellular participants. Immunologic abnormalities. Immunotherapy. Experimental approaches to dissection of immune functions.
- 461 Molecular Pathogenesis**
 Spring. 3(3-0) P: (MMG 301) RB: (MMG 431) SA: MPH 461
 Molecular basis of microbial virulence. Nature of determinants and their role in overcoming host defense mechanisms.
- 463 Medical Microbiology**
 Fall. 3(3-0) P: (MMG 205 or MMG 301) RB: (MT 432 or MMG 451) R: Open only to juniors or seniors in the Department of Microbiology and Molecular Genetics or Clinical Laboratory Sciences or Medical Technology major or LBS Environmental Biology/Microbiology or Medical Technology or Microbiology coordinate major. SA: MPH 463
 Properties of pathogenic bacteria and viruses and their mechanisms of pathogenicity.
- 464 Diagnostic Microbiology Laboratory**
 Fall. 2(0-4) P: (MMG 463 or concurrently) R: Open only to juniors or seniors in the Department of Microbiology and Molecular Genetics or Clinical Laboratory Sciences or Medical Technology major or LBS Environmental Biology/Microbiology or Medical Technology or Clinical Laboratory Science or Microbiology coordinate major. SA: MPH 464, MIC 464
 Diagnostic procedures for the identification of pathogenic microbes.
- 490 Special Problems in Microbiology**
 Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Approval of department. SA: MPH 490
 Library research or tutorial instruction in advanced laboratory techniques.
- 491 Current Topics in Microbiology**
 Spring. 3(4-0) R: Open only to seniors in the Department of Microbiology and Molecular Genetics or LBS Environmental Biology/Microbiology or Microbiology coordinate major. SA: MPH 491
 Capstone experience for microbiology majors. Presentation and discussion of journal articles. Writing of position papers. Topics such as microbial physiology, ecology, genetics, molecular biology, virology, immunology, or pathogenesis.
- 492 Undergraduate Research Seminar**
 Spring. 1(1-0) P: (MMG 499 or MMG 499H) R: Open only to seniors in the Department of Microbiology and Molecular Genetics or LBS Environmental Biology/Microbiology or Microbiology coordinate major. SA: MPH 492
 Presentation and group discussion of undergraduate research results.
- 499 Undergraduate Research**
 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 Department of Microbiology and Molecular Genetics or LBS Environmental Biology/Microbiology or Microbiology coordinate major. SA: MPH 499
 Participation in a laboratory research project.
- 499H Honors Research**
 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 Honors College students in the Microbiology or Environmental Biology/Microbiology major or LBS Microbiology coordinate major or LBS Environmental Biology/Microbiology coordinate major. SA: MPH 499H
 Research project with thesis and oral report. A portion of Microbiology capstone experience.

Microbiology and Molecular Genetics—MMG

- 522 Medical Microbiology and Immunology**
Spring. 5(4-2) R: Graduate-professional students in colleges of Human and Osteopathic Medicine. SA: MPH 522
Basic principles of microbiology (bacteriology, virology, mycology and parasitology) and immunology and their relation to disease in humans.
- 561 Veterinary Immunology**
Fall. 2(2-0) R: Open only to graduate-professional students in the College of Veterinary Medicine. SA: MPH 561, MIC 561
Concepts of cell biology, immunochemistry, immunobiology, and immunopathology related to the healthy state and the host response to infection and parasitism.
- 567 Veterinary Microbiology and Infectious Diseases I**
Spring. 5(4-3) R: Open only to graduate-professional students in College of Veterinary Medicine. SA: MIC 563, MIC 565, MPH 563, MPH 565 Not open to students with credit in VM 564.
Structure, function, and diagnostic characteristics of bacteria and fungi related to pathogenicity, transmission, control, host response, therapy, and management of selected diseases of animals.
- 569 Veterinary Microbiology and Infectious Diseases II**
Fall. 5(4-3) R: Open only to graduate-professional students in College of Veterinary Medicine. SA: MIC 563, MIC 565, MPH 531C, MPH 531D, MPH 563, MPH 565
Structure, function, and diagnostic characteristics of viruses, protozoa, and helminths related to pathogenicity, transmission, control, host response, therapy, and management of selected diseases of animals.
- 660 Veterinary Clinical Bacteriology Clerkship**
Fall, Spring, Summer. 3 credits. RB: Completion of semester 5 of the graduate-professional program in the College of Veterinary Medicine.
Guided clinical bacteriology experience.
- 662 Clinical Veterinary Virology Clerkship**
Fall, Spring, Summer. 3 credits. RB: Completion of semester 5 of the graduate-professional program in the College of Veterinary Medicine.
Guided clinical virology experience.
- 664 Veterinary Clinical Parasitology Clerkship**
Fall, Spring, Summer. 3 credits. RB: Completion of semester 5 of the graduate-professional program in the College of Veterinary Medicine.
Guided clinical parasitology experience.
- 690 Veterinary Microbiology Clerkship**
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: Completion of 5 semesters of the graduate-professional program in the College of Veterinary Medicine. SA: MPH 690
Laboratory-based investigation of microbiological problems pertinent to veterinary medicine.
- 801 Integrative Microbial Biology**
Fall. 4(4-0) Not open to students with credit in MMG 821 or MMG 829 or MMG 841 or MMG 827.
Structural, metabolic, phylogenetic, and genomic diversity of microbes and microbial communities. Microbial ecology, evolution, and behavior. Regulation of gene expression. Microbial interactions with other microbes, animals, or plants
- 803 Topics in Integrative Microbial Biology**
Fall, Spring. 2(2-0) A student may earn a maximum of 10 credits in all enrollments for this course. P:M: (MMG 801 or concurrently)
In-depth study of a particular topic from integrative microbial biology.
- 813 Molecular Virology**
Spring of even years. 3(3-0) R: Open only to graduate students in the Colleges of Human Medicine, Osteopathic Medicine, Veterinary Medicine, Natural Science, and Agriculture and Natural Resources. SA: MPH 813
Molecular nature and biochemistry of replication of animal viruses. Current advances, research concepts, and the role of viruses in molecular biology research.
- 821 Microbial Physiology**
Fall of even years. 3(3-0) RB: (MMG 421) R: Open only to graduate students in the Colleges of Human Medicine, Osteopathic Medicine, Veterinary Medicine, Natural Science, and Agriculture and Natural Resources. SA: MPH 821
Molecular architecture, assembly of cell parts, metabolism, and general physiology of typical eubacteria.
- 825 Cell Structure and Function**
Spring. 3(3-0) Interdepartmental with Biochemistry and Molecular Biology; Physiology. Administered by Department of Biochemistry and Molecular Biology. RB: BMB 401 or BMB 461. SA: BCH 825
Molecular basis of structure and function. Cell properties: reproduction, dynamic organization, integration, programmed and integrative information transfer. Original investigations in all five kingdoms.
- 827 Diversity of Prokaryotes**
Fall of odd years. 3(3-0) RB: (BMB 461 and MMG 421 or concurrently) R: Open only to graduate students in the Colleges of Human Medicine, Osteopathic Medicine, Veterinary Medicine, Natural Science, and Agriculture and Natural Resources. SA: MPH 827
Morphological and physiological properties of groups of bacteria and archaea. Relationship of those properties to ecological niche and importance.
- 829 Advanced Microbial Ecology**
Spring of odd years. 3(3-0) Interdepartmental with Crop and Soil Sciences.
Functional roles of microorganisms, their population dynamics and interactions, and their mechanisms of evolutionary change in natural communities, laboratory experiments, and mathematical models.
- 833 Microbial Genetics**
Fall. 3(3-0) R: Open only to graduate students in the Colleges of Human Medicine, Osteopathic Medicine, Veterinary Medicine, Natural Science, and Agriculture and Natural Resources. SA: MPH 833
Gene structure and function. Genetic regulation at classical and molecular levels in prokaryotes and lower eukaryotes.
- 835 Eukaryotic Molecular Genetics**
Spring. 3(3-0) Interdepartmental with Genetics. RB: (BMB 462 and ZOL 341) R: Open only to graduate students in the colleges of Agriculture and Natural Resources, Engineering, Human Medicine, Natural Science, Osteopathic Medicine, and Veterinary Medicine.
Gene structure and function in animals, plants, and fungi. Basic aspects of modern human genetics and the genetic basis for disease. Molecular genetic analyses. Eukaryotic modeling systems.
- 841 Soil Microbiology**
Spring of even years. 3(3-0) Interdepartmental with Crop and Soil Sciences. RB: (MMG 425) SA: MPH 841
Ecology, physiology, and biochemistry of microorganisms indigenous to soil.
- 851 Immunology**
Fall of odd years. 3(3-0) R: Open only to graduate students in the Colleges of Human Medicine, Osteopathic Medicine, Veterinary Medicine, Natural Science, and Agriculture and Natural Resources. SA: MPH 851
Functional aspects of immune responses; synthesis, structure, and function of effector molecules; cell-cell interactions; current advances and research techniques.
- 855 Molecular Evolution: Principles and Techniques**
Fall of odd years. 3(3-0) Interdepartmental with Zoology; Plant Biology. Administered by Department of Zoology. RB: (ZOL 341 or ZOL 445)
Current techniques used to characterize and compare genes and genomes. Genetic variation, assays of variation. Data analysis and computer use to conduct a phylogenetic analysis to compare organisms and infer relationships.
- 861 Advanced Microbial Pathogenesis**
Spring of odd years. 3(3-0) RB: (MMG 461 or MMG 409)
Molecular basis of microbial virulence. Virulence factors of microorganisms and the relationship of these factors to disease; host-pathogen interactions.
- 890 Special Problems in Microbiology**
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to graduate students in the Colleges of Human Medicine, Osteopathic Medicine, Veterinary Medicine, Natural Science, and Agriculture and Natural Resources. Approval of department. SA: MPH 890
Individualized laboratory or library research.
- 892 Seminar**
Fall, Spring. 1(1-0) A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to graduate students in College of Agriculture and Natural Resources, College of Engineering, College of Human Medicine, College of Natural Science, College of Osteopathic Medicine, or College of Veterinary Medicine. SA: MPH 892
Student review and presentation of selected topics in microbiology and public health.

899 Master's Thesis Research
Fall, Spring, Summer. 1 to 12 credits. A student may earn a maximum of 36 credits in all enrollments for this course. R: Open only to graduate students in Microbiology and Public Health. SA: MPH 899
Master's thesis research.

991 Topics in Microbiology
Fall, Spring. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. SA: MPH 991
Topics are selected from traditional subdisciplines such as bacteriology, virology, cell biology, and immunology or from transecting subdisciplines such as microbial genetics, physiology, molecular biology and ecology.

999 Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 120 credits in all enrollments for this course. R: Open only to graduate students in Microbiology and Molecular Genetics. SA: MPH 999
Doctoral dissertation research.

MILITARY SCIENCE MS

Department of Military Science Office of the Provost

101A Leadership: The Military Profession
Fall. 1(1-1) SA: MS 101 Not open to students with credit in MS 101B.
Introduction to military leadership and fundamental concepts of leadership. Application of leadership doctrine. The role of the U.S. Army, Army Reserves, and National Guard. Leadership laboratory introduces basic military skills.

101B Leadership: The Military Profession
Spring. 1(1-2) SA: MS 101 Not open to students with credit in MS 101A.
Introduction to military leadership and fundamental concepts of leadership. Application of leadership doctrine. The role of the U.S. Army, Army Reserves, and National Guard. Leadership laboratory introduces basic military skills.

120 Introduction to Army Leadership and Problem Solving
Spring. 1 to 2 credits. RB: (MS 101A or MS 101B)
Fundamentals of basic Army leadership. Military problem solving process. Military briefing and writing skills. Goal setting and time management. Introduction to the Army's developmental counseling program.

201A Leadership: The Military Leader
Fall. 1(1-1) SA: MS 201 Not open to students with credit in MS 201B.
Introduction to effective leadership. Communications. Value of the United States Army. Responsibilities of military officers and professionalism. Laboratory includes tactics, marksmanship training, and military skills.

201B Leadership: The Military Leader
Spring. 1(1-2) SA: MS 201 Not open to students with credit in MS 201A.
Introduction to effective leadership. Communications. Value of the United States Army. Responsibilities of military officers and professionalism. Laboratory includes tactics, marksmanship training, and military skills.

220 Challenges in Army Leadership
Spring. 1 to 2 credits. RB: (MS 201A or MS 201B) Not open to students with credit in MS 202A or MS 202B.
Application of military case studies. Recognizing challenging situations for military leaders and units. Applying sound ethical leadership practices to implement decisions. Understanding basic military small unit tactics.

301 Leading Small Organizations
Fall. 3(3-2) RB: (MS 101A or MS 101B) and (MS 102A or concurrently or MS 102B or concurrently) and (MS 201A or concurrently or MS 201B or concurrently) and (MS 202A or concurrently or MS 202B or concurrently) Completion of basic camp or boot camp. Must meet U.S. Army contracting requirements.
Skills required for military officers: communication, team building, delegating tasks, supervision, ethics, and physical fitness. Leading small units. Participation in physical fitness is required.

302 Leadership: Small Unit Tactics
Spring. 3(3-2) RB: (MS 301)
Basic military tactics and the military communication/orders process focusing on small units. Application of lessons learned from leadership case studies to practical exercises of leadership. Delegation of tasks and supervision of subordinates in a stressful environment.

401 Leadership: Training Management, Counseling, and Unit Management
Fall. 3(3-2) RB: (MS 302)
Army training philosophy. The lieutenant's role in training management, personnel administration, and logistics. Practical exercises in counseling and training presentations. Practical application of leadership development doctrine. Laboratory includes practical experience in unit administration and training management.

402 Military Law, Ethics and Professionalism
Spring. 3(3-2) RB: (MS 401)
Introduction of the military legal system and the Law of War. The basis of the military profession and the importance of ethical development to the profession of arms. Development of subordinates. Laboratory includes practical exercises in professional development and leadership opportunities.

490 Independent Study in Military Science
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course. R: Open only to juniors or seniors. Approval of department.
Individual research in areas related to military science.

MUSIC MUS

School of Music College of Arts and Letters

112 Chamber Music
Fall, Spring. 1(0-2) A student may earn a maximum of 10 credits in all enrollments for this course. R: Open only to students in the School of Music.
Rehearsal and performance of a broad range of chamber music literature.

113 Philharmonic Orchestra
Fall, Spring. 1(0-5) A student may earn a maximum of 10 credits in all enrollments for this course. RB: High school and/or youth orchestra experience/or other college or university ensemble experience R: Audition required.
Rehearsal and performance of symphonic and operatic repertoire.

114 Marching Band
Fall. 1(0-9) A student may earn a maximum of 6 credits in all enrollments for this course. R: Audition required.
Rehearsal and performance of broad range of marching band literature at football games.

115 Spartan Brass
Spring. 1(0-2) A student may earn a maximum of 6 credits in all enrollments for this course. R: Audition required.
Rehearsal and performance of broad range of brass literature at basketball and hockey games.

116 Campus Band
Fall, Spring. 1(0-3) A student may earn a maximum of 10 credits in all enrollments for this course. R: Audition required.
Rehearsal and performance of broad range of band literature chosen from baroque period to the present.

117 Concert Band
Fall, Spring. 1(0-3) A student may earn a maximum of 10 credits in all enrollments for this course. R: Audition required.
Rehearsal and performance of broad range of wind literature from various historical periods and styles.

118 Wind Symphony
Fall, Spring. 1(0-6) A student may earn a maximum of 10 credits in all enrollments for this course. R: Audition required.
Rehearsal and performance of broad range of wind literature from various periods and styles.

119 Symphony Band
Fall, Spring. 1(0-4) A student may earn a maximum of 10 credits in all enrollments for this course. R: Audition required.
Rehearsal and performance of a broad range of wind and percussion literature.

120 Symphony Orchestra
Fall, Spring. 1(0-6) A student may earn a maximum of 10 credits in all enrollments for this course. R: Audition required.
Rehearsal and performance of symphonic and operatic repertoire.