Descriptions — Medicine of Courses

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 therapeutic principles related to allergic diseases.

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.

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.
P: MED 608. R: Open only to graduate-professional students in College of Human Medicine. Clinical problems in infectious and immunologic disease. Integrated basic science input is provided in seminars.

619. Ambulatory Care Clerkship
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 15 credits in all enrollments for this course. Interdepartmental with Family Practice and Pediatrics. Administered by Family Practice.
P: 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.
P: MED 608. R: Open only to graduate-professional students in College of Human Medicine. Clinical problems in endocrine diseases, electrolyte abnormalities, endocrine hypertension, or diabetes mellitus.

623. Advanced Medicine
Fall, Spring, Summer. 6 credits. A student may earn a maximum of 18 credits in all enrollments for this course.
P: MED 608. R: Open only to graduate-professional students in College of Human Medicine. Hospital-based clinical experience in diagnosing and managing acutely ill patients with non-surgical problems.

625. 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.

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.

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.

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.

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.

635. Core Competencies I
Fall. 2 credits. A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Human Medicine and Family Practice. Administered by Human Medicine.
P: FMP 602. R: Open only to graduate-professional students in College of Human Medicine. A weekly seminar addressing core knowledge and skills from an interdisciplinary perspective.

636. Core Competencies II
Spring. 2 credits. A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Human Medicine and Family Practice. Administered by Human Medicine.
P: FMP 602. R: Open only to graduate-professional students in College of Human Medicine. A weekly seminar addressing core knowledge and skills from an interdisciplinary perspective.

637. Core Competencies III
Spring, Summer. 2 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
P: FMP 602. R: Open only to graduate-professional students in College of Human Medicine. A weekly seminar addressing core knowledge and skills from an interdisciplinary perspective.

640. Advanced Comprehensive Care
Fall, Spring, Summer. 6 credits. A student may earn a maximum of 18 credits in all enrollments for this course. Interdepartmental with Human Medicine, Pediatrics and Human Development, Family Practice, and Obstetrics. Gynecology and Reproductive Biology. Administered by Human Medicine.
P: FMP 602. R: Open only to graduate-professional students in College of Human Medicine. Clinical experience in community-oriented primary care. Emphasis on urban and rural underserved populations.

MICROBIOLOGY

Department of Microbiology
College of Human Medicine
College of Veterinary Medicine

101. Precalculus of Microbiology
Fall. 3-1-0
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.

105. Microbes in Everyday Life
Fall. 3-3-0
Role of microbes in agriculture, industry, and medicine. Impact on society of infectious diseases of plants and animals, soil fertility, water quality, biotechnology, genetic engineering, and bioremediation. Public health and environmental concerns.

205. Allied Health Microbiology Laboratory
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.

206. Allied Health Microbiology Laboratory
Spring. 1-0-3
P: MIC 105, MIC 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.

301. Introductory Microbiology
Spring. 3-3-0
P: BS 111; CEM 251 or concurrently
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: MIC 301 or concurrently
Methodology of microbiology: microscopy, staining, aseptic technique, culture media, quantification, and laboratory safety.

496. Medical Mycology
Spring. 3-2-3
Interdepartmental with Botany and Plant Pathology, and Medical Technology. Administered by Botany and Plant Pathology.
P: BOT 402, MIC 302
Characteristics and laboratory identification of fungal diseases in humans and other animals. Laboratory techniques. Morphology of causative fungi.

498. Advanced Microbiology Laboratory (W)
Fall. 3-0-6
P: MIC 302; MIC 401 or concurrently. R: Open only to Microbiology majors. Completion of Tier I writing requirement.
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.

499. Enzymatic Cell Biology
Spring. 3-3-0
P: BS 111
Structure and function of nucleated cells. Emphasis on the molecular mechanisms that underlie cell processes.
415. Virology
Spring, 3(3-0) Interdepartmental with Botany and Plant Pathology.
P: MIC 409 or BCH 462.

421. Prokaryotic Cell Physiology
Fall, 3(3-0)
P: MIC 301; BCH 461 or concurrently.
Prokaryotic cell structure and function. Growth and replication. Macromolecular synthesis and control.

425. Microbial Ecology
Spring, 3(0-0) Interdepartmental with Crop and Soil Sciences.
P: MIC 301.
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 Geological Sciences, Crop and Soil Sciences, and Zoology.
P: BS 110 or BS 111, CEM 143 or CEM 251.
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(0-0)
P: BS 111.
Genetics of bacteria, their viruses, plasmids, and transposons. Emphasis on genetic principles.

440. Food Microbiology
Spring, 3(0-0) Interdepartmental with Food Science. Administered by Food Science.
P: MIC 205. R: Not open to freshmen and sophomores. Major groups of microorganisms of importance to the food industry. Emphasis on ecological, physiological, and public health aspects.

441. Food Microbiology Laboratory
Spring, 10(3-0) Interdepartmental with Food Science. Administered by Food Science.
P: PSC 410 or concurrently; MIC 206. R: Not open to freshmen and sophomores. Open only to majors in Food Engineering, Food Science, Foods: Technology and Management, or Microbiology and Public Health.
Methods for studying major groups of microorganisms important to food industry. Isolation, enumeration, characterization, identification and use of microorganisms.

445. Basic Biotechnology
Fall, 3(0-0)
P: MIC 205 or MIC 301.
Growth and genetic improvement of industrial microorganisms. Fermentation fundamentals. Specific classical and recombinant-based bioprocesses and bioconversions of commercial importance.

451. Immunology
Fall, 3(0-0)
P: MIC 409.

461. Molecular Pathogenesis
Spring, 3(0-0)
P: MIC 431.
Molecular basis of microbial virulence. Nature of determinants and their role in overwhelming host defense mechanisms.
Bacterial Diversity Laboratory  
Fall of odd-numbered years. 2(0-6)  
P: MIC 327 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.  
Isolation and identification of representative groups of bacteria.

Advanced Microbial Ecology  
Fall of even-numbered 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.

Microbial Genetics  
Fall. 3(0-6)  
R: Open only to graduate students in the Colleges of Human Medicine, Osteopathic Medicine, Veterinary Medicine, Natural Science, and Agriculture and Natural Resources.  
Gene structure and function. Genetic regulation at classical and molecular levels in prokaryotes and lower eukaryotes.

Eukaryotic Molecular Genetics  
Spring. 3(3-0) Interdepartmental with Genetics.  
P: BCH 482, 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 of disease. Molecular genetic analyses. Eukaryotic modeling systems.

Soil Microbiology  
Spring of even-numbered years. 3(3-0) Interdepartmental with Crop and Soil Sciences.  
P: MIC 425.  
Ecology, physiology, and biochemistry of microorganisms indigenous to soil.

Immunology  
Fall of odd-numbered years. 8(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.  
Functional aspects of immune responses; synthesis, structure, and function of effector molecules; cell-cell interactions; current advances and research techniques.  

Special Problems in Microbiology  
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 6 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, Agricultural Science, and Agriculture and Natural Resources. Approval of department.  
Individualized laboratory or library research.

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.  
Student review and presentation of selected topics in microbiology and public health.

Master's Thesis Research  
Pall, Spring, Summer. 1 to 12 credits. A student may earn a maximum of 24 credits in all enrollments for this course.  
R: Open only to graduate students in Microbiology and Public Health.

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

Doctoral Dissertation Research  
Fall, Spring, Summer. 1 to 12 credits. A student may earn a maximum of 99 credits in all enrollments for this course.  
R: Open only to graduate students in Microbiology and Public Health.

Department of Military Science  
Office of the Provost

Leadership: The Military Profession  
Fall, Spring. 1-1(1)  
Analysis of military profession from several academic perspectives. Technical, ethical, and personal ramifications of officership. Introduction to military leadership. Lab introduces military skills.

Leadership: Land Navigation  
Fall, Spring. 1-1(1)  

Leadership Assessment Program, the Military Leader  
Fall, Spring. 1-1(1)  
Individual leadership development using standardized assessment technology. Administration, personal relations, and decision making. Military writing and professional obligations. Lab includes rappelling and marksmanship.

Leadership: First Aid/Fitness Training  
Fall, Spring. 1-1(1)  
Emergency first aid including casualty evaluation, life-saving measures, CPR, and environmental injury prevention. Leader's role in implementing Army Physical Fitness Program. Individual and group fitness programs. Lab: hands on leadership training.

Leadership: Command and Control Communication  
Fall, Spring. 3(2-2)  
P: MS 202.  
Wire and radio communications for tactical operations. Encryption/decryption, use of codes, and electronic warfare. Theories and models of behavioral science for leadership. Lab emphasizes communication skills.

Leadership: Small Unit Tactics  
Fall, Spring. 3(2-2)  
P: MS 301.  
Military topographic and special maps: intersection, resection, modified resection, and polar coordinates. Tactical operation overlays. Preview of small unit leader's role in the Army. Lab: use of compass.

Leadership Management  
Fall, Spring. 3(2-3)  
P: MS 302.  
Army training personnel administration and logistics systems, and the leader's role as a trainer and effective manager and written communication. Leadership assessment and development. Lab: practical experience in unit administration.

Military Law, Ethics and Professionalism  
Spring. 3(2-3)  
P: MS 401.  

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 and seniors. Approval of department.  
Individual research in areas related to military science.

MUSIC  
School of Music  
College of Arts and Letters

Chamber Music  
Pall, Spring. 10(0-2) 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 chamber music literature.

Marching Band  
Pall. 10(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.

Spartan Brass  
Spring. 10(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.

Campus Band  
Pall, Spring. 10(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.

Concert Band  
Pall, Spring. 10(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 from various historical periods and styles.

Wind Symphony  
Pall, Spring. 10(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.

Symphony Orchestra  
Pall, Spring. 10(4) 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.