

**Descriptions—Microbiology
of
Courses**

567. Veterinary Microbiology and Infectious Diseases I
Spring. 5(4-3)

R: Open only to graduate-professional students in College of Veterinary Medicine. 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.

SA: MIC 563, MIC 565

569. Veterinary Microbiology and Infectious Diseases II
Fall. 5(4-3)

R: Open only to graduate-professional students in College of Veterinary Medicine.

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.

SA: MPH 531C, MPH 531D, MIC 563, MIC 565

660. Veterinary Clinical Microbiology Clerkship
Fall, Spring, Summer. 3 credits.

P: Completion of semester 5 of the professional veterinary program. R: Open only to graduate-professional students in the College of Veterinary Medicine.

Clinical bacteriology with an optional experience in parasitology, virology, or both.

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.

R: Completion of 5 semesters of the graduate-professional program in the College of Veterinary Medicine.

Laboratory-based investigation of microbiological problems pertinent to veterinary medicine.

813. Molecular Virology

Spring of even-numbered 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.

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

Spring of odd-numbered years. 3(3-0)

P: MIC 401. R: Open only to graduate students in the Colleges of Human Medicine, Osteopathic Medicine, Veterinary Medicine, Natural Science, and Agriculture and Natural Resources.

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 Physiology. Administered by Biochemistry.

P: BCH 401 or BCH 461.

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-numbered years. 3(3-0)

P: BCH 461; MIC 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.

Morphological and physiological properties of groups of bacteria and archaea. Relationship of those properties to ecological niche and importance.

828. Bacterial Diversity Laboratory

Fall of odd-numbered years. 2 credits.

P: MIC 827 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.

829. 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.

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.

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.

P: BCH 462, 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-numbered years. 3(3-0) Interdepartmental with Crop and Soil Sciences.

P: MIC 425.

Ecology, physiology, and biochemistry of microorganisms indigenous to soil.

851. Immunology

Fall of odd-numbered 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.

Functional aspects of immune responses; synthesis, structure, and function of effector molecules; cell-cell interactions; current advances and research techniques.

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. 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.

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 24 credits in all enrollments for this course.

R: Open only to graduate students in Microbiology and Public Health.

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.

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 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.

MILITARY SCIENCE MS

**Department of Military Science
Office of the Provost**

101A. Leadership: The Military Profession

Fall. 1(1-1)

R: Not open to students with credit in MS 101B.

Technical, ethical, and personal ramifications of officership. Introduction to military leadership. Lab introduces military skills.

SA: MS 101

101B. Leadership: The Military Profession

Spring. 1(1-2)

R: Not open to students with credit in MS 101A.

Analysis of military profession from several academic perspectives. Technical, ethical, and personal ramifications of officership. Introduction to military leadership. Leadership laboratory introduces military skills.

SA: MS 101

102A. Leadership: Wilderness Survival

Fall. 1(1-1)

R: Not open to students with credit in MS 102B.

Introduction to wilderness survival including the psychology of survival, survival planning, survival kits; knots; shelters; water procurement; fire craft; field expedient; weapons, tools and equipment; desert, tropical, and cold weather survival; basic survival medicine.

102B. Leadership: Wilderness Survival

Spring. 1(1-2)

R: Not open to students with credit in MS 102A.

Introduction to wilderness survival including the psychology of survival, survival planning, survival kits; knots; shelters; water procurement; fire craft; field expedient; weapons, tools and equipment; desert, tropical, and cold weather survival; basic survival medicine.

201A. Leadership: The Military Leader

Fall. 1(1-1)

R: Not open to students with credit in MS 201B.

Individual leadership development using standardized assessment technology. Administration, personal relations, and decision making. Military writing and professional obligations. Lab includes rappelling and marksmanship.

SA: MS 201

201B. Leadership: The Military Leader

Spring. 1(1-2)

R: Not open to students with credit in MS 201A.

Individual leadership development using standardized assessment technology. Administration, personal relations, and decision making. Military writing and professional obligations. Lab includes rappelling and marksmanship.

SA: MS 201

202A. Leadership: Land Navigation/Tactical Operations
Fall, 1(1-1)

R: Not open to students with credit in MS 202B. 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 lensatic compass.

202B. Leadership: Land Navigation/Tactical Operations
Spring, 1(1-2)

R: Not open to students with credit in MS 202A. 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 lensatic compass.

301. Leadership: Command and Control Communication
Fall, Spring, 3(3-2)

P: MS 202. Wire and radio communications for tactical operations. Encryption/decryption, use of codes, and electronic warfare. Theories and models of behavioral sciences for leadership. Lab emphasizes communication skills.

302. Leadership: Small Unit Tactics
Fall, Spring, 3(3-2)

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 lensatic compass.

401. 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. Oral and written communication. Leadership assessment and development. Lab: practical experience in unit administration.

402. Military Law, Ethics and Professionalism
Spring, 3(2-3)

P: MS 401. Military legal system. Application of military justice. Fundamental values and principles of conduct in the profession of arms. Development of subordinates and the role of noncommissioned officers. Lab includes leadership development assessment.

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 and 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 credit. 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.

114. Marching Band
Fall, 1 credit. 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 credit. 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 credit. A student may earn a maximum of 10 credits in all enrollments for this course. Rehearsal and performance of broad range of band literature chosen from baroque period to the present.

117. Concert Band
Fall, Spring, 1 credit. 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 credit. 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 credit. 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 and percussion literature.

120. Symphony Orchestra
Fall, Spring, 1 credit. 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.

121. Chamber Orchestra
Fall, Spring, 1 credit. A student may earn a maximum of 10 credits in all enrollments for this course. R: Audition required.

Rehearsal and performance of representative chamber works of baroque, classic and contemporary composers.

122. Campus Orchestra
Fall, Spring, 1 credit. A student may earn a maximum of 10 credits in all enrollments for this course. Rehearsal and performance of symphonic and concert literature written for large orchestra, conducted by staff conductors under the supervision of faculty.

123. Collegiate Choir
Fall, Spring, 1 credit. A student may earn a maximum of 10 credits in all enrollments for this course. R: Audition required.

Rehearsal and performance of representative literature for mixed choir with emphasis on renaissance, baroque, classical, romantic, and contemporary composers.

124. Choral Union
Fall, Spring, 1 credit. A student may earn a maximum of 10 credits in all enrollments for this course. R: Audition required.

University and community chorus. One evening rehearsal per week, culminating in performance of a major work with orchestra.

125. Glee Club, Men and Women
Fall, Spring, 1 credit. A student may earn a maximum of 10 credits in all enrollments for this course. Rehearsal and performance of broad range of choral literature chosen from medieval period to the present.

126. State Singers
Fall, Spring, 1 credit. A student may earn a maximum of 10 credits in all enrollments for this course. R: Audition required.

Mixed choir performing music from all periods.

127. University Chorale
Fall, Spring, 1 credit. A student may earn a maximum of 10 credits in all enrollments for this course. R: Audition required.

Mixed chamber choir for experienced singers performing representative literature from all periods.

129. Percussion Ensemble
Fall, Spring, 1 credit. A student may earn a maximum of 10 credits in all enrollments for this course. R: Audition required.

Rehearsal and performance of representative works for percussion and mallet ensembles.

130. Jazz Band
Fall, Spring, 1 credit. A student may earn a maximum of 10 credits in all enrollments for this course. R: Audition required.

Rehearsal and performance in large jazz ensemble. Literature from classic bands of Ellington and Basie to contemporary composers.

131. Jazz Combo
Fall, Spring, 1(1-2) A student may earn a maximum of 10 credits in all enrollments for this course. R: Audition required.

Rehearsal and performance in small jazz ensembles. Literature from all historical periods of jazz.

141. Class Instruction in Piano I
Fall, Spring, 1(1-1)

R: Open only to students in School of Music. Use of the piano as a teaching tool.

142. Class Instruction in Piano II
Spring, 1(1-1)

P: MUS 141. R: Open only to students in School of Music. Use of the piano as a teaching tool.

143. Class Instruction in Voice I: Music Majors
Fall, 1(1-1)

C: MUS 151 concurrently. R: Open only to students in School of Music with an emphasis in voice. English lyric diction. Rules of pronunciation. Performance of English language songs in class.

144. Class Instruction in Voice II: Music Majors
Spring, 1(1-1)

P: MUS 143. C: MUS 151 concurrently. R: Open only to students in School of Music with an emphasis in voice. Italian lyric diction. Rules of pronunciation. Performance of Italian language songs in class.

145. Class Instruction in Voice I
Fall, 1(1-1)

R: Not open to students in School of Music with an emphasis in voice. Rules of pronunciation. Vocal techniques.

146. Class Instruction in Voice II
Spring, 1(1-1)

P: MUS 145. R: Not open to students in School of Music with an emphasis in voice. Vocal techniques and exploration of vocal literature.

147. Class Instruction in Elementary Piano I
Fall, Spring, 2(2-1)

R: Not open to students in School of Music. Basic notation, performance, improvisation, and transposition. Repertoire includes folksongs, simple classics, and blues.

148. Class Instruction in Elementary Piano II
Fall, Spring, 2(2-1)

P: MUS 147. R: Not open to students in School of Music. Note reading and performance, folksongs, easy ragtime, jazz, and shorter classics.