

Music—MUS

- 958C Seminar in Choral Conducting**
Fall, Spring. 1 to 3 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Open only to doctoral students in School of Music with a major in Music Conducting.
Advanced conducting techniques for choral and instrumental music of all periods.
- 960 Seminar in Measurement in Music Education**
Spring of odd years. 3(3-0) RB: (MUS 864 and MUS 965) or approval of school. R: Open only to graduate students in Music Education.
Theory and practice of measuring musical behavior in terms of aptitude and achievement. Current trends in cognitive, affective, and psychomotor measurement in music.
- 961 Seminar in Music Teacher Education**
Fall of odd years. 3(3-0)
Issues, trends, and strategies for preparing prospective music educators.
- 962 Advanced Studies in the Philosophy of Music Education**
Fall of even years. 3(3-0)
Historic and contemporary views of the value and import of music and music education and their translation into practice.
- 965 Advanced Research Methods in Music Education**
Spring. 3(3-0) RB: (MUS 864)
Music education research projects using computerized statistical analysis.
- 970 Pedagogy of Theory**
Fall of odd years. 3(3-0) R: Open only to graduate students in the School of Music.
Organization, goals, and procedures for teaching music theory to undergraduates. Choice and sequencing of topics, pacing, supplementary materials, educational philosophies, and relevance to performance.
- 971 Pedagogy of Theory II**
Spring of even years. 2(2-0) R: Open only to graduate students in School of Music.
Organization, goals, and procedures for teaching music theory to undergraduates. Ear training and sight singing, and their application to general musicianship.
- 972 Analytical Studies I**
Fall. 3(3-0) R: Open only to graduate students in School of Music.
Melody, harmony, rhythm, color, texture, counterpoint, and structure in selected musical masterpieces from the 13th century to the early 19th century.
- 973 Analytical Studies II**
Spring. 3(3-0) R: Open only to graduate students in School of Music.
Melody, harmony, rhythm, color, texture, counterpoint, and structure in selected musical masterpieces from the nineteenth and twentieth centuries.
- 974 Atonality, Serialism, and Set Theory**
Spring. 2(2-0) R: Open only to graduate students in School of Music.
Atonal and paratonal music. Related compositional and analytical systems. Serialism, integral serialism, and set theory.

- 975 Readings in Music Theory**
Spring of odd years. 2(2-0) R: Open only to graduate students in School of Music.
Current topics in music theory. Research paper required.
- 980 Composition**
Fall, Spring. 2(2-0) A student may earn a maximum of 24 credits in all enrollments for this course. R: Open only to graduate students in School of Music.
Advanced guided projects in creative writing of music.
- 990 Doctoral Independent Study**
Fall, Spring, Summer. 1 to 10 credits. A student may earn a maximum of 20 credits in all enrollments for this course. R: Approval of school.
Special projects, directed reading, and research arranged by an individual doctoral candidate and a faculty member in areas supplementing the regular course offerings.
- 991 Special Topics**
Fall, Spring, Summer. 1 to 10 credits. A student may earn a maximum of 25 credits in all enrollments for this course. R: Approval of school.
Special topics supplementing regular course offerings proposed by faculty on a group study basis for doctoral students.
- 992 Seminar in Musicology**
Spring. 3(3-0) A student may earn a maximum of 18 credits in all enrollments for this course. R: Open only to graduate students in School of Music.
Topics in musicology such as early notations, music editing, or historical performance practices.
- 996 Doctoral Recital Performance**
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Open only to doctoral students in Music Performance. Approval of school.
Directed experience in recital performance in partial fulfillment of requirements for the Doctor of Musical Arts degree.
- 997 Doctoral Concert Conducting**
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Open only to doctoral students in the School of Music with a major in Music Conducting. Approval of school.
Directed experience in concert conducting in partial fulfillment of requirements for the Doctor of Musical Arts degree.
- 998 Doctoral Music Composition**
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Open only to doctoral students in the Music Composition major. Approval of school.
Directed experience in composition in partial fulfillment of requirements for the Doctor of Musical Arts degree.
- 999 Doctoral Dissertation Research**
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Open only to doctoral students in the School of Music. Approval of school.
Doctoral dissertation research.

NATURAL SCIENCE

NSC

College of Natural Science

- 101 Preview of Science**
Fall. 1 credit. Interdepartmental with Agriculture and Natural Resources; Engineering; Social Science. R: Approval of college.
Overview of natural sciences. Transitional problems. Communications and computer skills. Problem-solving skills. Diversity and ethics problems in science. Science and society.
- 102 Preprofessional Freshman Seminar**
Fall, Spring. 1(1-0)
Overview of human health care professions with emphasis on academic and nonacademic undergraduate preparation, campus resources, communication and computer skills, and collaborative learning.
- 150 Preview of Biomedical Research**
Spring. 1(1-0) Interdepartmental with Medical Technology. Administered by Medical Technology Program.
Exploration of biomedical research careers. Biomedical research in the United States: funding, safety, regulatory agencies, ethics, experimental design, trouble-shooting, and data interpretation.
- 192 Environmental Issues Seminar**
Fall, Spring. 1 credit. A student may earn a maximum of 4 credits in all enrollments for this course. Interdepartmental with Agriculture and Natural Resources; Engineering; Social Science; Communication Arts and Sciences. R: Open only to students in the College of Agriculture and Natural Resources or College of Engineering or College of Natural Science or College of Communication Arts and Sciences or College of Social Science. Approval of college.
Environmental issues and problems explored from a variety of perspectives, including legal, scientific, historical, political, socio-economic, and technical points of view.
- 201 Science Problem Solving Seminar I**
Fall. 2(2-0) P: (MTH 1825 or concurrently or MTH 116 or concurrently or MTH 132 or concurrently) R: Approval of college.
Problem solving principles and strategies used in the disciplines of science and mathematics. Activities reflecting the types of problems encountered.
- 202 Science Problem Solving Seminar II**
Spring. 2(2-0) P: (NSC 201) R: Approval of college.
Continuation of NSC 201.
- 203 Drew Laboratory Directed Studies**
Fall, Spring, Summer. 1 to 2 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P: (NSC 202) R: Open only to Drew Laboratory students.
Using topics related to a faculty member's ongoing research, students explore the relationship between science and technology and social issues.

292 Applications in Environmental Studies
 Fall, 2(1-2) Interdepartmental with Agriculture and Natural Resources; Engineering; Communication Arts and Sciences; Social Science. P: (NSC 192) R: Open only to students in the Specialization in Environmental Studies.

Community engagement project. Projects vary depending on student's major and area of environmental interest.

390 Special Problems
 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.

Faculty directed individualized study of an interdisciplinary problem.

448 Ecology, Law and Economics
 Spring, 3(3-0) P: (EC 201)

Review and integrate principles of ecology, fundamentals of law, and principles of economics into a conceptual model that describes interrelations among the natural system, the economy, and the state. Analyze and assess the legal-economic natural resource and environmental policies in the context of the integrated model. Relate the ecology-law-economics model to emerging paradigms of sustainable development, ecological economics, industrial ecology, and the Natural Step.

490 Special Problems
 Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Approval of department.

Faculty directed individualized study of an interdisciplinary problem.

491 Selected Topics
 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.

Selected interdisciplinary topics not normally covered in other courses.

495 Capstone in Human Biology (W)
 Fall, Spring, 2(2-0) P: Completion of Tier I writing requirement. R: Open only to seniors in the Human Biology or Lyman Briggs Human Biology major.

Integration of human biology disciplines with a focus on health and disease.

496 Directed Study in Human Biology
 Fall, Spring, Summer. 1 to 3 credits. P: Completion of Tier I writing requirement.

Directed studies in human biology.

497 Internship in Human Biology
 Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P: Completion of Tier I writing requirement.

Practical experience applying human biology training outside the classroom setting.

498 Research in Human Biology
 Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P: Completion of Tier I writing requirement.

Research in faculty laboratories

499 Research
 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 juniors or seniors in the College of Natural Science with a teacher certification option.

Research in faculty laboratories. Oral and written presentations.

802 Essentials of Electron Microscopy
 Fall, 2(2-0)

Principles of operation and uses of transmission and scanning electron microscopy. Related electron beam instruments. Specimen preparation and analytical methods.

810 Transmission Electron Microscopy Laboratory
 Fall, Spring, Summer. 3(1-4) RB: (NSC 802)

Use of transmission microscope and preparative equipment. Preparation techniques for specimens, photographic and darkroom use, and interpretation of micrographs.

820 Scanning Electron Microscopy; Energy Dispersive X-ray Microanalysis
 Fall, Spring, 3(2-2) RB: (NSC 802 or concurrently)

Use of scanning electron microscope and energy dispersive x-ray microanalysis. Machine variables, artifacts, quantitative analysis, specimen preparation, darkroom procedures.

825 Special Problems in Microscopy
 Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 40 credits in all enrollments for this course. RB: (NSC 802) and (NSC 810 or NSC 820 or NSC 837)

Use of microscopy techniques for selected research topics.

828 Food Safety Seminar Series
 Fall, Spring, 1(1-0) Interdepartmental with Veterinary Medicine; Agriculture and Natural Resources; Social Science. Administered by College of Veterinary Medicine. RB: Enrollment in graduate program in related discipline

Selected current topics covering the broad areas of food safety as they relate to production, processing, transport, microbiology, toxicology, and social and human dimensions.

829 Problems in Food Safety
 Fall, 1(1-0) Interdepartmental with Veterinary Medicine; Agriculture and Natural Resources; Social Science. Administered by College of Veterinary Medicine. RB: Enrollment in graduate program in related discipline

In-depth discussion of selected problems in food safety.

830 Nature and Practice of Science
 Fall, Spring, 1 credit.

Foundations of scientific inquiry. Recommended scientific best-practices including principles and practices of research integrity and professionalism. Evaluation of scientific quality and productivity.

837 Confocal Microscopy
 Fall, Spring, 2(2-2) Interdepartmental with Crop and Soil Sciences.

Confocal imaging, theory and practice. Basic optics. Lasers. Light paths for transmission, fluorescence and reflection. Image quality, analysis and processing.

840 Writing in the Sciences
 Fall, Spring, Summer. 2(2-0) A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Arts and Letters.

Discussion and critique of students' writing in peer response workshop groups

NEUROLOGY AND NOP OPHTHALMOLOGY

Department of Neurology and Ophthalmology College of Osteopathic Medicine

552 Medical Neuroscience
 Spring, 4(3-2) Interdepartmental with Physiology; Radiology; Human Anatomy. R: Graduate-professional students in the Colleges of Human Medicine and Osteopathic Medicine. SA: ANT 552

Correlation of normal structure and function of the human nervous system with clinical testing, classical lesions, and common diseases.

590 Special Topics in Clinical Neuroscience
 Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 12 credits in all enrollments for this course.

Work under the direction of a faculty member on an experimental, theoretical or applied problem in clinical neuroscience or neurology.

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. RB: (MED 608) R: Open only to graduate-professional students in College of Human Medicine. SA: MED 617

Office and inpatient experience. Evaluation and management of neurological disease.

620 Directed Studies
 Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 24 credits in all enrollments for this course. RB: Completion of Semester 6 in the graduate-professional program. R: Open only to graduate-professional students in the College of Osteopathic Medicine.

Study in general or specialty neurology and ophthalmology.

656 Neurology Clerkship
 Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Open only to graduate-professional students in the College of Osteopathic Medicine upon completion of Units I and II. SA: PMR 656

Clinical exposure in neurology. Program structure developed to achieve proficiency in motor skills, aptitudes; comprehension of concepts and principles; patient evaluation, diagnosis, management, and therapy.