

**Descriptions — Music  
of  
Courses**

**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 12 credits. A student may earn a maximum of 30 credits in all enrollments for this course. R: Open only to doctoral students in Music Performance. 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 12 credits. A student may earn a maximum of 30 credits in all enrollments for this course. R: Open only to doctoral students in Music Performance. Directed experience in concert conducting in partial fulfillment of requirements for the Doctor of Musical Arts degree.

**999. Doctoral Dissertation Research**

Fall, Spring, Summer. 1 to 40 credits. A student may earn a maximum of 40 credits in all enrollments for this course. R: Open only to doctoral students in School of Music. Approval of school.

**NATURAL SCIENCE NSC**

**College of Natural Science**

**101. Preview of Science**

Fall. 1(1-0) Interdepartmental with Agriculture and Natural Resources, Engineering, and 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.

**192. Environmental Issues Seminar**

Fall, Spring. 1(1-0) A student may earn a maximum of 4 credits in all enrollments for this course. Interdepartmental with Agriculture and Natural Resources, Engineering, and Social Science. R: Open only to students in the College of Agriculture and Natural Resources, College of Engineering, College of Natural Science, and 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: Drew Section of MTH 0823 or MTH 116 or MTH 132 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.

**320. Introduction to Theory and Applications of Modern Microscopy**

Spring. 2(1-2)  
P: Completion of University mathematics requirement. R: Open only to juniors and seniors. General principles of operation of electron, laser, and scanning probe microscopes. Applications of microscopy. Specimen preparation for microscopy.

**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.

**401. Science Laboratories for Secondary Schools (W)**

Fall. 4(2-6)  
R: Open only to seniors in the College of Natural Science with a teacher certification option. Completion of Tier I writing requirement. Laboratory equipment, supplies, demonstrations, exercises, and safety. Care of live organisms. Disposal of biological and chemical wastes. Field trips required.

**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)  
R: Open only to seniors in Biological Science-Interdepartmental: Human Biology option. Completion of Tier I Writing Requirement.

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

**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 and seniors in the College of Natural Science with a teacher certification option. Research in faculty laboratories. Oral and written presentations.

**600. Special Problems for K-8 Teachers**

Fall, Spring, Summer. 1 to 5 credits. A student may earn a maximum of 10 credits in all enrollments for this course. R: Elementary teacher certification, 3 years teaching experience. Approval of department. Supervised study of problems in biological, physical, or earth sciences.

**651. Physical Science I**

Summer. 2 credits.  
R: Elementary teacher certification, 3 years teaching experience. Approval of college. The nature of matter and energy including energy transfer, density, and conservation of mass. Properties of elements, mixtures, and compounds.

**652. Physical Science II**

Summer. 2 credits.  
R: Elementary teacher certification, 3 years teaching experience. Approval of college. Electricity and magnetism, force and motion, heat and temperature, sound, and light

**653. Earth Science I**

Summer. 2 credits.  
R: Elementary teacher certification, 3 years teaching experience. Approval of college. The solar system, including the sun, planets, earth, and its moon. Weather and the water cycle.

**654. Earth Science II**

Summer. 2 credits.  
R: Elementary teacher certification, 3 years teaching experience. Approval of college. Rocks, minerals, and fossils and the physical and geological processes that form them.

**655. Life Science I**

Summer. 2 credits.  
R: Elementary teacher certification, 3 years teaching experience. Approval of college. Structure, function, genetics, and classification of organisms, including protists, plants, animals, and decomposers.

**656. Life Science II**

Summer. 2 credits.  
R: Elementary teacher certification, 3 years teaching experience. Approval of college. Interrelationships among and between organisms and their surroundings. Ecosystems, habitats, food chains, cycles, and pollution.

**800. Problems in Biological or Physical Science for Teachers**

Fall, Spring, Summer. 2 to 8 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Teacher Certification required. Approval of college. Supervised study of problems in biological or physical science.

**802. Essentials of Electron Microscopy**  
Fall, Spring, 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)  
P: 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(1-4)  
P: 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 Electron Microscopy**  
Fall, Spring, Summer, 1 to 3 credits. A student may earn a maximum of 40 credits in all enrollments for this course.  
P: NSC 802; NSC 810 or NSC 820.  
Use of electron microscopy techniques for selected research topics.

**830. Nature and Practice of Science**  
Fall, Spring, 1(1-0)  
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 credits. Interdepartmental with Crop and Soil Sciences. Administered by Crop and Soil Sciences.  
R: Approval of department; application required.  
Confocal imaging, theory and practice. Basic optics. Lasers. Light paths for transmission, fluorescence and reflection. Image quality, analysis and processing.

**850. Cell and Molecular Biology**  
Summer, 2 credits.  
P: Secondary certification in biology, 3 years teaching experience. C: NSC 851 concurrently. R: Secondary certification in biology, 3 years teaching experience; approval of college.  
Molecular basis of structure and function of cells. Protein structure and function, cell physiology, metabolic energy and transmission of genetic information.

**851. Cell and Molecular Biology Laboratory**  
Summer, 3 credits.  
P: Secondary certification in biology; 3 years teaching experience. C: NSC 850 concurrently. R: Approval of college.  
Generation of laboratory exercises appropriate for secondary students.

**852. Interdisciplinary Seminar in Biological Science**  
Fall, Spring, Summer, 1 credit.  
P: Secondary certification in biology; 3 years teaching experience. R: Approval of college.  
Interrelationships of biological science and technology. Role of society in regulation of research and technological innovations.

**855. Environmental and Behavioral Biology**  
Summer, 3 credits. Given only at W.K. Kellogg Biological Station.  
P: Secondary certification in biology; 3 years teaching experience. C: NSC 856 concurrently. R: Approval of college.  
Biotic and abiotic features of lakes, streams, forest ecosystems, and microbial ecosystems.

**856. Environmental and Behavioral Biology Laboratory**  
Summer, 3 credits. Given only at W.K. Kellogg Biological Station.  
P: Secondary certification in biology, 3 years teaching experience. C: NSC 855 concurrently. R: Approval of college.  
Laboratory and field examinations of lake, stream and forest ecosystems.

**860. Problem Solving Techniques in Physical Science**  
Summer, 3 credits.  
P: NSC 861, NSC 862, NSC 863. R: Secondary certification in chemistry or physics or earth science or physical science, 3 years teaching experience. Approval of college.  
Measurement and analysis of chemical, physical, and geological phenomena.

**861. Chemistry for Teachers**  
Summer, 2 credits.  
P: Secondary certification in chemistry or physics or earth science or physical science, 3 years teaching experience. R: Approval of college.  
Intensive lecture and laboratory study of basic chemistry from a modern viewpoint.

**862. Physics for Teachers**  
Summer, 2 credits.  
P: Secondary certification in chemistry or physics or earth science or physical science, 3 years teaching experience. R: Approval of college.  
Intensive lecture and laboratory study of basic physics from a modern viewpoint.

**863. Earth Science for Teachers**  
Summer, 2 credits.  
P: Secondary certification in chemistry or physics or earth science or physical science, 3 years teaching experience. R: Approval of college.  
Intensive lecture and laboratory study of basic earth sciences from a modern viewpoint.

**864. Interdisciplinary Seminar in Physical Science**  
Summer, 2 credits.  
P: NSC 860. R: Approval of college.  
Interrelationships of the physical sciences. The role of society in regulation of science to technology transfer.

**870. Teaching College Science**  
Spring, 2 credits.  
R: One year of graduate study in a biological or physical science. Approval of college.  
Philosophies of education. Ethnic, gender, and cultural issues. Designing a laboratory course. Problems of class size. Instructional technologies. Assessment and evaluation.

**889. Research for Inservice Teachers**  
Fall, Spring, Summer, 1 to 8 credits. A student may earn a maximum of 10 credits in all enrollments for this course.  
R: Open only to inservice K-12 teachers with baccalaureate degrees.  
Research in faculty laboratories. Oral and written presentations.

**899. Master's Thesis Research**  
Fall, Spring, Summer, 1 to 8 credits. A student may earn a maximum of 10 credits in all enrollments for this course.  
R: Open only to master's students in the College of Natural Science. Approval of college.

**901. Frontiers in Biological Science**  
Fall, Spring, 1 to 4 credits. A student may earn a maximum of 36 credits in all enrollments for this course.  
R: Secondary certification in chemistry or physics or earth science or physical science or biology, 3 years teaching experience. Approval of college.  
Weekend workshops with research faculty exploring background and latest findings in their area of research.

**902. Frontiers in Physical Science**  
Fall, Spring, 1 to 4 credits. A student may earn a maximum of 40 credits in all enrollments for this course.  
R: Secondary certification in chemistry or physics or earth science or physical science or biology, 3 years teaching experience. Approval of college.  
Weekend workshops with research faculty exploring background and latest findings in their area of research.

## NURSING

NUR

### College of Nursing

**202. Introduction to Nursing Practice I**  
Fall, 3(2-3)  
R: College of Nursing majors only. Not open to Registered Nurses.  
Theoretical concepts of nursing necessary for professional practice. Assessment, interpersonal communication, documentation and decision-making.

**204. Introduction to Nursing Practice II**  
Spring, 4(2-6)  
P: NUR 202. R: Open only to College of Nursing students. Not open to Registered Nurses.  
Application of introductory nursing practice concepts in simulated and clinical practice settings. Development of introductory nursing practice psychomotor skills.

**303. Concepts of Nursing Care of the Adult**  
Fall, Spring, 4(4-0)  
P: NUR 204. C: NUR 304 concurrently. R: Open only to College of Nursing students.  
Family centered nursing care for adults at various levels of health and illness. Prototype health states with emphasis on associated nursing diagnosis and professional standards of care.

**304. Practicum in Nursing Care of the Adult**  
Fall, Spring, 4 credits.  
P: NUR 204. C: NUR 303 concurrently. R: Open only to College of Nursing students.  
Nursing care of the adult client with an emphasis on health promotion, disease prevention, care in acute and chronic illness, and rehabilitation.

**305. Concepts of Nursing Care of the Childbearing Family**  
Fall, Spring, 2(2-0)  
P: NUR 204. C: NUR 306 concurrently. R: Open only to College of Nursing students.  
Concepts of holistic nursing care with culturally diverse childbearing families during the prenatal, intrapartum, and postpartum periods. Concepts of health promotion and risk factors in client care situations.