

**Descriptions—Music  
of  
Courses**

**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.  
QA: MUS 999

**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.  
QA: BS 800, PHS 890

**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 R: Approval of college. Laboratory and field examinations of lake, stream and forest ecosystems.  
QA: NSC 856

**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.  
QA: NSC 802

**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.

**810. Transmission Electron Microscopy Laboratory**  
Fall, Spring, Summer. 3(1-4)  
P: NSC 802. R: Approval of department. Use of transmission microscope and preparative equipment. Preparation techniques for specimens, photographic and darkroom use, and interpretation of micrographs.  
QP: NSC 802 QA: NSC 810

**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.

**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.  
QP: NSC 802 QA: NSC 820, NSC 840

**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.

**NATURAL SCIENCE NSC  
College of Natural Science**

**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.  
QA: NSC 201

**202. Science Problem Solving Seminar II**  
Spring. 2(2-0)  
P: NSC 201. R: Approval of college. Continuation of NSC 201.  
QA: NSC 202

**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.  
QA: NSC 203

**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**  
Fall. 4(2-6)  
R: Open only to seniors in the College of Natural Science with a teacher certification option. 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.  
QA: BS 499, NS 300

**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.  
QA: BS 405, PHS 405

**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.

**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.  
QP: NSC 802, NSC 810 or NSC 820 QA: NSC 801

**850. Cell and Molecular Biology**  
Summer. 2 credits.  
P: Secondary certification in biology, 3 years teaching experience; C: NSC 851 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.  
QA: NSC 850

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

**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.  
QA: NSC 852

**855. Environmental and Behavioral Biology**  
Summer. 2 credits. Given only at W.K. Kellogg Biological Station.  
P: Secondary certification in biology; 3 years teaching experience; C: NSC 856 R: Approval of college. Biotic and abiotic features of lakes, streams, forest ecosystems, and microbial ecosystems.  
QA: NSC 855

**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.

**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. 3 to 8 credits. A student may earn a maximum of 10 credits in all enrollments for this course.  
R: Open only to Master's candidates in College of Natural Science. Approval of college.  
QA: BS 899, PHS 899

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

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