SCIENCE AND SME
MATHEMATICS EDUCATION

College of Natural Science

120 Seminar in Integrated Science for Elementary Schools
Spring, 1(1-1) Interdepartmental with Teacher Education. Administered by Science and Mathematics Education. P: (BS 161 or BS 162 or BS 181H or BS 162H or LB 144 or LB 145) or (CEM 141 or PHY 231 or PSL 250 or GLG 201 or GEO 203) R: Open to students in the College of Education or in the Education major or in the Special Education major or approval of college.

The proposal of biological and chemical wastes. Field Trips
Laboratory equipment, supplies, demonstrations, life sciences, earth sciences, and physical sciences.

Analysis of the concepts integrating science across topics in earth science, life science, and physical science.
Research design and data analysis of individual research projects relevant to the K-12 science curriculum, integrating topics in life, earth, and physical science.

430 History of Mathematics
Spring, 3(3-0) P: MTH 133 and MTH 301 Development of mathematical thought from ancient times to the present, selected from Egyptian, Babylonian, Mayan, Greek, Indian, and Arab contributions to mathematics and to the context of today’s school mathematics curriculum.

490 Special Problems
Fall, Spring, 1 to 4 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Approval of college.
Faculty directed individualized study of an interdisciplinary problem.

600 Special Problems for K-8 Teachers
Fall, Spring, 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. R: Approval of college.

Supervised study of problems or issues in biological sciences, physical sciences, earth sciences or mathematical sciences.

800 Problems in Science or Mathematics for Teachers
Fall, Spring, 1 to 5 credits. A student may earn a maximum of 15 credits in all enrollments for this course. R: Secondary certification in biological sciences, physical sciences or chemistry; secondary certification in Mathematics or Mathematics Education. R: Approval of college.

Supervised study of problems or issues in biological science, or physical sciences, or mathematical sciences.

820 College Student Cognition in Science
Spring, 3(3-0) RB: At least 3 undergraduate courses in science. R: Open to students in the Master of Arts for Teachers in General Science.
Introduction to research methodologies and findings relevant to college student cognition in science disciplines. Material from education, psychology, cognitive sciences, and the science disciplines will be used to reveal college student cognitive processes as they relate to science fields.

828 Physical Science I
Summer, 3(2-1) RB: Elementary teacher certification, 1 year teaching experience. R: Open to graduate students in the Master of Arts for Teachers in General Science. Approval of college.

The nature of matter and energy including energy transfer, density, and conservation of mass. Properties of elements, mixtures, and compounds.
865  **Technology for Teachers**  
Summer. 2(2-1) RB: Secondary certification in chemistry or physics or earth science or physical science, 1 year of teaching. R: Open to graduate students in the Physical Science-Interdepartmental major. Approval of college. Utilization and application of new technologies in secondary science classrooms.

866  **Integrated Science for Secondary Teachers**  
Summer. 3(2-1) RB: Secondary certification in chemistry or physics or earth science or physical science, 1 year of teaching. R: Open to graduate students in the Physical Science-Interdepartmental major. Approval of college. Development of class activities that integrate across the sciences: physics, chemistry, earth science, and biology.

870  **Teaching College Science**  

871  **Biochemistry and Cell Biology for Teachers**  
Summer of odd years. 7(4-6) RB: Undergraduate degree in the biological sciences R: Open to lifelong graduate students. Approval of department; application required. Review of basic principles in biochemistry and cell biology, and their application to current topics.

874  **Field Ecology for Teachers**  
Summer of even years. 7(4-6) RB: Undergraduate degree in the biological sciences R: Open to lifelong graduate students. Approval of department; application required. Review of basic principles of ecology and their application in a field setting.

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. RB: Open only to in-service K-12 teachers with baccalaureate degrees. R: Approval of college. SA: NSC 889. 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 36 credits in all enrollments for this course. R: Open only to master's students in the College of Natural Science. Approval of college. SA: NSC 899. Master's thesis research.

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. RB: Secondary certification in chemistry or physics or earth science or physical science or biology, 3 years teaching experience. R: Approval of college. SA: NSC 901. 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. RB: Open only to students with secondary teacher certification in chemistry or physics or earth science or physical science or biology and 3 years of teaching experience. R: Approval of college. SA: NSC 902. Weekend workshops with research faculty exploring background and latest findings in their area of research.