Science Education Courses (SCI ED)

Courses

Inquiry-oriented introduction to fundamental concepts and processes in meteorology, astronomy, and geology using active investigation. Integrated lecture/lab for 5 periods. For Elementary Education and Early Childhood majors only. Prerequisite(s): student must have satisfied university entrance requirements in English and Mathematics. (Fall and Spring)

Inquiry-oriented introduction to fundamental concepts and processes in life science that includes ecology, evolution, cell biology, and human body systems. Integrated lecture/lab for 5 periods. For Elementary Education and Early Childhood Education majors only. Prerequisite(s): student must have satisfied university entrance requirements in English and Mathematics. (Fall and Spring)

Inquiry-oriented introduction to fundamental concepts and processes in physics and chemistry that includes energy, force and motion, and the nature of matter. Integrated lecture/lab for 5 periods. For Elementary Education and Early Childhood Education majors only. Prerequisite(s): student must have satisfied university entrance requirements in English and Mathematics. (Fall and Spring)

SCI ED 1600 (820:095). Exploring Science Teaching — 1 hr.
Exploration of science teaching with well-qualified teacher speakers, classroom discussions about innovative teaching, student learning, and teaching as a profession. Brief field experience included. Discussion, 1 period. Prerequisite(s): consent of instructor. (Fall and Spring)

Introduction to significant physical science concepts and models of effective teaching related to elementary school physical science. Continuation of concepts and processes in physics and chemistry that include electricity, magnetism, light, sound, solutions, acids and bases, changes in matter, and chemical bonding. Prerequisite(s): SCI ED 1300 (820:031). (Even Springs)

SCI ED 3100/5100 (820:130g). Experiences in Elementary School Science — 2 hrs.
Focuses on teaching science using an inquiry approach. Introduces elementary teachers to inquiry teaching and assessment strategies, instructional planning, and inquiry-oriented curricula. Includes experiences in applying knowledge of science content and pedagogy in teaching elementary school students. Prerequisite(s): one course from SCI ED 2300 (820:181), BIOL 3181 (840:181), or EARTHSCI 3500 (870:181); junior standing. (Even Falls)

Experiences with instructional technologies used in science teaching including data collection applications and supporting materials, web-based resources and software applications. Creation of an electronic portfolio. Field experiences in secondary school science classrooms. Discussion/lab, 3 periods. Prerequisite(s): TEACHING 2017; EDPSYCH 2030 (200:030); major or minor in a science teaching program or consent of instructor. (Fall and Spring)

SCI ED 3250 (820:189). Seminar in Environmental Problems — 1 hr.
Exploration of current topics by student teams. Team examination of various facets of an issue, focusing on development of a factual resume of natural, political, economic, and humanistic data which will be integrated for use in developing potential solutions. Value clarification activities. (Variable)

SCI ED 3300/5300 (820:190g). Orientation to Science Teaching — 3 hrs.
Introduction to inquiry science teaching including instructional planning and strategies, assessment, and classroom management. Highlights issues and trends in science teaching. Discussion, 3 periods. Field experiences in secondary school science classroom. Prerequisite(s): TEACHING 2017; EDPSYCH 2030 (200:030); a major or minor in a science area; junior standing. Prerequisite(s) or corequisite(s): SCI ED 3200 (820:196). (Fall and Spring)

SCI ED 3500/5500 (820:113g). Techniques for Science Teachers — 1-5 hrs.
Topics selected to assist science teachers in improving their teaching. These may include teaching or assessment strategies, laboratory techniques, specific science concepts, or examples of new curricula. Topic listed in Schedule of Classes. Application to major requires advisor approval. May be repeated. Prerequisite(s): junior standing; consent of instructor. (Variable)

SCI ED 4198 (820:198). Independent Study. (Variable)

Teaching approaches, instructional and assessment strategies, curricular and laboratory materials, and issues in grades 5-12 physical science, physics, chemistry, and earth science. Field experiences in secondary school science classrooms. Discussion, 3 periods. Prerequisite(s): TEACHING 3128; EDPSYCH 3148 (200:148); MEASRES 3150 (250:150); SCI ED 3300/5300 (820:190g); SCI ED 3200 (820:196); junior standing. (Fall)

SCI ED 6299 (820:299). Research. Prerequisite(s): consent of department. (Fall, Spring, Summer)

SCI ED 6400 (820:270). Special Problems in Science Education — 1-6 hrs.
Problems selected according to needs of students. (Variable)

Introduction to qualitative, quantitative, and mixed methods research used in science education. Emphasis on and critical analysis of primary literature. Application of literature review, research design, data analysis and writing styles to graduate projects. (Variable)

SCI ED 6600 (820:294). Developing Science Curricula — 2 hrs.
Analysis and design of science curricula with attention to K-12 national and state initiatives and standards. Seminar format, 2 hours/week. (Variable)

SCI ED 6700 (820:200). The History, Philosophy, and Nature of Science — 2 hrs.
Examination of the nature of science, major philosophical and historical developments of science, and their implications to the science classroom. Seminar format, 2 hours/week. (Variable)
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Study of learning theories from behaviorism to constructivism and how these theories are translated into science teaching practice through various teaching models. Seminar format, 2 hours/week. (Variable)

Major trends and issues in science education, focusing primarily from the 1950s to the present. Seminar format, 2 hours/week. (Variable)