

# SCIENCE EDUCATION (SED)

## SED 200 FIELD EXPERIENCE IN SECONDARY SCIENCE EDUCATION

3, 2/2

Classroom and field experience designed to help students make a better-informed decision if they are contemplating a career in secondary science education. A 30-hour field component is required for each student. Offered occasionally. Equivalent Course: MED 200

## SED 307 TECHNIQUES FOR TEACHING LABORATORY ACTIVITIES IN THE SECONDARY SCIENCE CLASSROOM

3, 0/0

SED 307

Equivalent Course: MED 307

## SED 311 PROBLEM SOLVING IN PHYSICAL SCIENCE

3, 3/0

Prerequisites: A college-level course in a science other than biology, or permission of instructor. Inquiry-based course for elementary preservice candidates. Investigation of the physical sciences through problem solving, laboratory activities, simulations, and explorations. Option in elementary education science concentration. Offered alternate years.

## SED 312 PROBLEM SOLVING IN LIFE SCIENCE

3, 3/0

Prerequisites: A college-level course in a science other than biology, or permission of instructor. Inquiry-based course for elementary pre-service candidates. Investigation of the life sciences through problem solving, laboratory activities, simulations, and explorations. Option in elementary education science concentration. Offered alternate years.

## SED 313 PROBLEM SOLVING IN EARTH SCIENCE

3, 3/0

Prerequisites: A college-level course in a science other than biology, or permission of instructor. Inquiry-based course for elementary pre-service candidates. Investigation of the earth sciences through problem solving, laboratory activities, simulations, and explorations. Option in elementary education science concentration. Offered fall semesters.

## SED 316 TEACHING READING IN THE SECOND LANGUAGE IN MIDDLE SCHOOLS

3, 3/0

SED 316

## SED 323 SCI AS INQUIRY

3, 3/0

The procedures of science as a search for knowledge of natural phenomena; comparison with other methods of inquiry; implications for nonscientists. Option in elementary education science concentration. Offered occasionally.

## SED 335 OUTDOOR SCIENCE EDUCATION

3, 2/2

Prerequisites: A college-level course in a science other than biology, or permission of instructor. Interdisciplinary approach to outdoor science education; basic concepts of natural history in classroom and field; extended field trips to the college camp. Offered occasionally.

## SED 445 LITERACY FOR TEACHING SCIENCE

3, 2/2

Prerequisites: Instructor permission. Study of literacy related to secondary science. Candidates will practice promotion of literacy, conduct an action research project on identifying literacy levels of students, and plan literacy activities based on data collection. Offered Every Semester.

## SED 501 HISTORY OF SCIENCE FOR SCIENCE TEACHERS

3, 3/0

Historic development of major scientific discoveries and achievements within a narrow range that directly impacts the teaching of science. Contextual forces that affect science discovery. Contributions from other disciplines such as mathematics, technology, navigation, military actions and engineering.

## SED 502 SECONDARY SCIENCE EDUCATION TEACHING: THEORY, CONTENT AND PEDAGOGY

3, 2/0

Prerequisites: SCI 545 or EDU 609 or equivalent; may be taken concurrently. Acceptance into the graduate program. Use of inquiry-based teaching techniques in middle and high school science classrooms to develop candidates' science teaching skills. Current directions of research in science education. Teaching, curriculum design and lesson planning strategies and techniques, classroom management, lab safety, science resources, the nature of science, assessment, unit and lesson planning and professional dispositions for teachers.

## SED 521 LABORATORY TECHNIQUES FOR ELEMENTARY SCHOOL TEACHERS

3, 3/0

Appropriate laboratory exercises designed to acquaint the elementary teacher with the subject matter, laboratory equipment, and techniques necessary to effectively teach elementary science.

## SED 527 CURRENT TOPICS IN SCIENCE

3, 3/0

Prerequisites: 6 credit hours each in two science areas. Implications of science research for present and future living; implications of research in science for the secondary school science curriculum.

### SED 545 LITERACY FOR TEACHING SCIENCE

3, 2/2

Prerequisites: Acceptance into a graduate science teacher degree program. Study of literacy related to secondary science. Promotion of literacy; action research project on identifying literacy levels of students; planning literacy activities based on data collection.

### SED 587 TOPICS IN SCIENCE EDUCATION

1-6, 1/0

In-depth examination of important disciplinary issues, topics, or practices in science education; offered occasionally.

### SED 588 TOPICS COURSE

3, 3/0

Topics course.

### SED 631 CURRICULAR TRENDS IN SCIENCE TEACHING IN THE ELEMENTARY SCHOOL

3, 3/0

Recent curriculum developments in elementary school science. Students work with elementary science curricular material in a workshop atmosphere to understand the philosophies, objectives, and historical events leading to their development. Students develop and share practical classroom adaptations of these materials.

### SED 632 CURRICULAR TRENDS IN SCIENCE TEACHING IN THE SECONDARY SCHOOL

3, 3/0

Prerequisite: One year of teaching science as a subject, assignment to an administrative position with responsibility for science curriculum, or instructor permission. Recent curriculum developments, philosophies, objectives, and materials; current understandings of the psychology of inquiry; historical events leading to changes in curriculum.

### SED 650 CURRICULAR RESEARCH TOPICS IN SCIENCE

3, 3/0

Prerequisites: Acceptance into M.S.ED: Science Education graduate program. Nature of science educational research: problem analysis; descriptive and inferential statistics; experimental design; strategy of historical, descriptive, and experimental studies. Analysis of contemporary educational research.

### SED 664 TEACHING SCIENCE WITH TECHNOLOGY

3, 2/3

Prerequisite: Acceptance to the graduate science education program. Development and integration of a variety of visual and audio technologies for the creative enhancement of visual and auditory communication in the science classroom. Specialized technology needs of science teachers.

### SED 677 INITIAL MIDDLE SCHOOL SCIENCE TEACHING EXPERIENCE

6, 0/0

Prerequisites: EDU 609, EXE 500, SCI 502, SCI 545, SCI 664 and SPF 503. Assignment to a supervised middle school science teaching placement for five full days a week for 8 consecutive weeks. Candidates effectively demonstrate content knowledge; pedagogical preparation, instructional delivery; classroom management; knowledge of student development. They collaborate with school professionals and implement reflective practice.

### SED 678 INITIAL HIGH SCHOOL SCIENCE TEACHING EXPERIENCE

6, 0/0

Prerequisites: EDU 609, EXE 500, SCI 502, SCI 545, SCI 664 and SPF 503. Assignment to a supervised high school science teaching placement for five full days a week for 8 consecutive weeks. Candidates effectively demonstrate content knowledge; pedagogical preparation, instructional delivery; classroom management; knowledge of student development. They collaborate with school professionals and implement reflective practice.

### SED 679 SEMINAR IN SCIENCE EDUCATION

1, 1/0

Prerequisites: Acceptance into M.S. ED: Science Education graduate program. SCI 677 and SCI 678 taken as co-requisites. Taken simultaneously with student teaching. Supplements student teaching courses in areas connecting pedagogical theory with in-class experiences and practice.

### SED 685 EVALUATION IN SCIENCE EDUCATION

3, 3/0

Prerequisite: 6 credit hours of graduate-level coursework. Philosophy of evaluation as applied to science education; models of evaluation; techniques used in the practical application of the models; examples and procedures directly related to science teaching.

### SED 690 MASTER'S PROJECT

3, 3/0

A study undertaken by one or more individuals on a problem of special interest submitted in acceptable form according to directions given by the department.

### SED 694 RESEARCH METHODS AND TECHNIQUES IN SCIENCE EDUCATION

3, 3/0

Prerequisite: 9 credit hours of graduate-level coursework in science or science education. Nature of educational research: problem analysis; descriptive and inferential statistics; experimental design; strategy of historical, descriptive, and experimental studies. Recommended for students planning educational research projects or theses.

### SED 695 MASTER'S THESIS

3, 0/0

### SED 795 MASTER'S THESIS

3, 0/0

Individual investigation of an original problem submitted in acceptable form according to directions given by the Graduate School.