

Science Education

This major prepares teachers for licenses to teach all introductory or first level science courses in the secondary schools of Illinois. Students completing the major with an emphasis in biology may also teach advanced placement courses in the discipline. To major in science education, the student must complete the science education core as listed below and the courses required for specialization in biology.

All courses for the major must be completed with a grade of C- or better.

The student must complete the major with a minimum of a 2.5 grade point average.

SCIENCE EDUCATION MAJOR REQUIREMENTS 39-51 crs.

SCIENCE EDUCATION CORE REQUIREMENTS 29 crs.

BIO 110	PRINCIPLES OF CELLULAR AND MOLECULAR BIOLOGY	5
BIO 111	PRINCIPLES OF ORGANISMAL AND POPULATION BIOLOGY	5
CHE 105	GENERAL CHEMISTRY I	4
CHE 106	GENERAL CHEMISTRY II	4
ES 110	EARTH AND ASTRONOMICAL SCIENCE	3
PHY 211	GENERAL PHYSICS: MECHANIC, HEAT, SOUND	4
PHY 212	GENERAL PHYSICS: ELECTRICITY, MAGNETISM, OPTICS	4

BIOLOGY EMPHASIS 10 crs.

The core requirements plus the following:

BIO 211	GENETICS	4
BIO 220	EVOLUTION	3
BIO 250	INTRODUCTION TO ENVIRONMENTAL SCIENCE	3

For a list of professional education program requirements, see the secondary education section above.

Education (EDU)

EDU 115 3

TECHNOLOGY INTEGRATION INTO THE CLASSROOM CURRICULUM

This course provides an overview of current computer applications and models of educational technology for the classroom through a hands-on project-based approach. Students will be able to creatively and effectively integrate the use of technology in the K-12 curriculum. Emphasis will be placed on learning how to use current technologies in a classroom setting. Particular focus will be placed on the pedagogy and how to effectively implement technology tools in the classroom to instruct students. Course activities include the use of Microsoft Office applications, educational software, and Internet research. This course includes two lecture and two lab hours. This course fulfills the general studies technology requirement only for teacher education students.

EDU 205 3

MULTICULTURAL EDUCATION

Students will examine the social and educational issues that affect the schooling of P-12 students from culturally diverse backgrounds. Course content will address particular issues such as ethnicity and race, socioeconomic status, gender, academic exceptionalities, sexuality, language, religion, and geographical location. Students will develop personal philosophies and apply models of multicultural education to various grade levels. Students will demonstrate effective teaching and learning strategies that are culturally relevant for P-12 students.

EDU 210 3

INTRODUCTION TO TEACHING (W)

This course is an introduction to the foundations of American education and the profession of teaching and professional practice. School organization, teaching dispositions, history and philosophy of education, and legal issues are explored through classroom discussion and direct observation in K-12 school settings. This course includes a 24 hour eight-week field component that requires weekly observations in assigned school settings.

EDU 350 3

EDUCATIONAL PSYCHOLOGY: HUMAN GROWTH AND LEARNING

This course provides an examination of the major theories and research studies that address how individuals grow, develop, and learn. Students will explore the practical applications of providing learning opportunities in school settings that support the cognitive, social, emotional, moral/ethical, and physical development of all learners. Same as PSY 350.

EDU 380-389 1-3

TOPICS IN EDUCATION

This course addresses special topics in education that are not ordinarily covered by other courses offered by the division. Courses offered may include current issues in education such as assessment, evaluation, gifted education, multi-cultural diversity, etc. Prerequisite: Admission to the Teacher Education Program or instructor consent.

EDU 401 3

METHODS OF TEACHING FINE ARTS

This course prepares students with the understanding, concepts, techniques, and materials of the visual arts, music, drama, and dance. Students understand the cultural dimensions of the arts and the interrelationships among the art forms. Students are given the tools to promote artistic development, appreciation, and performance. Students will be able to use various tools, including technology, to create, analyze and perform works of art. Prerequisite: Acceptance into the Teacher Education Program.

EDU 403 3

MIDDLE GRADES: PHILOSOPHY AND PRACTICES

Examines ideas and practices pertaining to middle grades teachers. Required course for the Illinois middle grades endorsement on elementary and/or secondary license. Focuses on middle grades philosophy, curriculum and instruction, and current practices. Includes instructional methods for designing and teaching developmentally appropriate content programs in middle grades including content area reading instruction. Examines organization and scheduling procedures as well as team teaching components. Complements knowledge acquired from methods courses and examines their application to middle grades ideas and practices or upper elementary grades and junior high schools. Scheduled visits to area middle grades may be included as part of the course activities. Prerequisite: Admission to the Teacher Education Program.

EDU 404 3

EARLY ADOLESCENTS AND SCHOOLING (W)

Focuses on the developmental characteristics of early adolescents and the nature and needs of early adolescents. Includes the advisory role of the middle grade (5-8) teacher in providing appropriate guidance as well as in assessing, coordinating and referring students to health, social services, and other related services. Study the development of youth of the middle grades (5-8) and ages (10-14). Required course for the Illinois endorsement on elementary and/or secondary license. Complements the knowledge acquired from Education 350 Educational Psychology and Psychology 406 Psychology of the Exceptional Child. Same as PSY 404. Prerequisite for Education majors: Admission to the Teacher Education Program, PSY 153, and junior standing. (NOTE: EDU 404 meets one of the two I.S.B.E. requirements for the middle grades endorsement. PSY 404 may be applied as part of a psychology major or concentration. This cross-listed course cannot be counted for both areas.)

EDU 407 1

WORKSHOPS

An intensive course for 5 days (or equivalent) presented by guest instructors and regular staff members. Does not count toward a major.

Education (EDU)

EDU 409 INTRODUCTION TO INSTRUCTIONAL PLANNING AND DELIVERY (W) This course prepares teacher candidates with strategies to plan and design instruction based upon knowledge of the content, students, community, and curriculum goals. The teacher candidates develop lessons for delivery in the classroom utilizing a variety of instructional strategies needed to enhance the development of critical thinking and problem-solving skills, which are required in the current standards-based curriculum. Prerequisite: Acceptance into the Teacher Education Program.	3	EDU 435 METHODS OF TEACHING CONTENT AREA READING (ELEMENTARY) This course involves study about the teaching of content area reading in elementary school. Emphasis is placed on an understanding of the reading process, research-based best practices, the importance of content area reading instruction, and current methods and materials used in content area reading instruction and assessment. Lecture-discussions, small group/workshop exercises, reflective writing, and simulated teaching may comprise the class activity format. Prerequisite: Admission to the Teacher Education Program.	2
EDU 412 METHODS OF TEACHING READING AND WRITING IN THE CONTENT AREAS This course focuses on methods to enable interaction with content texts. Emphasis is on strategies for teaching vocabulary, concepts, comprehension, reasoning, and organization in specialty subject areas at the secondary and special (K-12) levels. Prerequisite: Admission to the Teacher Education Program.	2	EDU 441 TEACHING ELEMENTARY MATHEMATICS This course highlights the structure and process of teaching mathematics in the elementary school with alignment to the Common Core Standards. Lesson topics emphasize combating mathematics anxiety, developing various instructional strategies (including Singapore mathematics methods), encouraging proper use of academic vocabulary, promoting metacognition through mental mathematics and all problem solving experiences, integrating appropriate mathematics manipulatives and technology in developmentally appropriate ways, and creating a variety of assessment tools to satisfy differentiation of instruction. Discovery learning instruction will be modeled, as well as a variety of collaboration models for sharing mathematical ideas, highlighting the needs of students with exceptionalities and those from disadvantaged or culturally different backgrounds. Prerequisite: Admission to the Teacher Education Program.	3
EDU 420 THE LEARNING ENVIRONMENT This course prepares teacher candidates to understand what fuels individual/group motivation and how to use that knowledge to create a learning environment that encourages positive social interaction, active learning, and self-motivation to learn/achieve. Prerequisite: Admission to the Teacher Education Program.	3	EDU 442 TEACHING SCIENCE IN THE ELEMENTARY CLASSROOM This course explores the theory and practice of instructional design specific to the teaching and learning of science. Students will examine the core concepts of earth, physical, and biological sciences through use of science practices appropriate for the elementary classroom. The focus will be on instructional strategies to engage all students in science learning and problem-solving. Prerequisite: Admission to the Teacher Education Program.	3
EDU 429 CHILDREN'S LITERATURE FOR ELEMENTARY TEACHERS In this class, students will research diverse children's literature and authors of various literary genres. Learning theories, instructional delivery, collaborative relationships, and technology connected to children's literature will be emphasized. National (International Reading Association and National Council of Teachers of English) and state standards (Common Core State Standards) connected to the implementation of a children's literature curriculum will be highlighted. Children's literature in traditional print, online, and digital formats are part of this course. Prerequisite: Acceptance into the Teacher Education Program.	3	EDU 445 LEARNING AND TEACHING LANGUAGE ARTS (W) In this class, teacher candidates will explore the writing, speaking, listening, and language strands of the Common Core State Standards. Instructional delivery will closely model the foundations set forth by the National Council of Teachers of English. Teacher candidates will develop effective teaching strategies via observation requirements, lesson plans, daily oral language, and peer teaching assignments. Reflective measures such as professional development experiences, lesson plan reflections and designing an ELA classroom learning foundation will be utilized to become better-prepared teachers. In addition, informal and formal assessments in ELA will be explored. Prerequisite: Admission to the Teacher Education Program.	3
EDU 430 EARLY LITERACY (W) This is course is designed as a study of early literacy. The foundations of reading and language acquisition are explored. Students will become familiar with research related to the acquisition of literacy, including the development of oral language and its relation to reading and writing. Phonemic awareness, phonics instruction, vocabulary, fluency, comprehension as well as the scaffolding and development of these skills are the focus of this course. Prerequisite: Admission to the Teacher Education Program.	3		

Education (EDU)

EDU 446 METHODS OF TEACHING AND LEARNING SOCIAL SCIENCE IN THE ELEMENTARY CLASSROOM This course is designed to introduce teacher candidates to the methods of teaching and learning social science in the elementary classroom. Candidates will demonstrate competency in curriculum development and instructional planning of integrated social science content that effectively meets the needs of diverse learners. Candidates will also exhibit instructional delivery techniques that focus on critical thinking, problem solving, and performance as well as assessment strategies appropriate to various developmental levels and cultural backgrounds. Prerequisite: Admission to the Teacher Education Program.	3	EDU 458 ASSESSING STUDENT LEARNING A review of theory, policy, and practice related to the assessment of student learning outcomes in the K-12 classroom. Content includes the writing of instructional objectives, types of assessment and their construction, and the analysis and use of test results. The focus is on strategies for assessing student learning and use of assessment data in instructional decision making. Prerequisite: Acceptance into the Teacher Education Program.	3
EDU 451 METHODS OF TEACHING PHYSICAL EDUCATION (K-12) Physical Education candidates develop knowledge and skills for planning, implementing and evaluating appropriate effective physical education progressions and programs for grades K-12. The course will focus on knowledge skills related to effective instructional strategies, efficient management and organizational principals, and motivational techniques specific to teaching physical education. Does not count toward a major in Physical Education. This course should be taken during the semester preceding student teaching. Prerequisite: Admission to the Teacher Education Program.	3	EDU 459 METHODS OF TEACHING SOCIAL STUDIES (MIDDLE GRADES) A discussion of current methods, trends, and concepts in teaching the social sciences at the middle grades level. Emphasis is given to the development of appropriate objectives and to reviewing curricular and instructional materials for teaching of the disciplines of the social sciences. Instructional methods appropriate for the exceptional, disadvantaged, and culturally different learner will be included. Knowledge of and appreciation for cultural diversity is stressed. Prerequisite: Admission to the teacher education program.	3
EDU 453 TEACHING ENGLISH LANGUAGE LEARNERS This course addresses the concepts, research and best practices for planning and implementing effective instruction to meet the needs of English language learners in a supportive environment. The appropriate use of materials and methods that are culturally responsive, academically rigorous and developmentally appropriate will be examined.	3	EDU 460 MOVEMENT CONCEPTS This course provides elementary education majors with exposure to movement and physical fitness concepts as well as to types of individual and team activities that help elementary students develop active lifestyles and improved quality of life.	2
EDU 454 FIELD PRACTICUM I (K-12) Field experience in a classroom of a local school under the guidance and supervision of an experienced teacher and university supervisor. This field experience will consist of 40 contact hours (4 hours per day, one day per week) over a ten-week period. Prerequisite: Admission to the Teacher Education Program. Concurrent enrollment: EDU 409.	1	EDU 461 FIELD PRACTICUM I (ELEMENTARY) Field experience in a classroom of a local elementary school under the guidance and supervision of an experienced teacher and university supervisor. This field experience will consist of 40 contact hours (4 hours per day, one day per week) over a ten-week period. Prerequisite: Admission to the Teacher Education Program. Prerequisite: Admission to the Teacher Education Program. Concurrent enrollment: EDU 409.	1
EDU 455 FIELD PRACTICUM II (K-12) Field experience in a classroom of a local school under the guidance and supervision of an experienced teacher and university supervisor. This field experience will consist of 50 contact hours (5 hours per day, one day per week) over a ten-week period. Prerequisite: EDU 467. Concurrent enrollment: EDU 420.	2	EDU 462 FIELD PRACTICUM II (ELEMENTARY) Field experience in a classroom of a local elementary school under the guidance and supervision of an experienced teacher and university supervisor. This field experience will consist of 50 contact hours (5 hours per day, one day per week OR 2.5 hours per day twice a week) over a ten-week period. Prerequisites: EDU 401, 409, 429, 458, 461. Concurrent enrollment: EDU 350, 420, 430, 442, 446.	2
EDU 456 FIELD PRACTICUM III (K-12) Field experience in a classroom of a local school under the guidance and supervision of an experienced teacher and university supervisor. This field experience will consist of 60 contact hours over a ten-week period. Prerequisite: 468. Concurrent enrollment: Content area methods course.	3	EDU 463 FIELD PRACTICUM III (ELEMENTARY) Field experience in a classroom of a local elementary school under the guidance and supervision of an experienced teacher and university supervisor. This field experience will consist of 60 contact hours (6 hours per day, one day per week OR 3 hours per day twice a week) over a ten-week period. Prerequisite: EDU 462 or SPE 462.	3

Education (EDU)

EDU 464 1

FIELD PRACTICUM I (MIDDLE GRADES)

Field experience in a classroom of a local middle grades under the guidance and supervision of an experienced teacher and university supervisor. This field experience will consist of 40 contact hours (4 hours per day, one day per week) over a ten-week period. Prerequisite: Admission to the Teacher Education Program. Concurrent enrollment: EDU 409.

EDU 465 2

FIELD PRACTICUM II (MIDDLE GRADES)

Field experience in a classroom of a local middle grades under the guidance and supervision of an experienced teacher and university supervisor. This field experience will consist of 50 contact hours (5 hours per day, one day per week OR 2.5 hours per day twice a week) over a ten-week period. Prerequisites: EDU 464.

EDU 466 3

FIELD PRACTICUM III (MIDDLE GRADES)

Field experience in a classroom of a local middle grades under the guidance and supervision of an experienced teacher and university supervisor. This field experience will consist of 60 contact hours (6 hours per day, one day per week OR 3 hours per day twice a week) over a ten-week period. Prerequisites: EDU 465.

EDU 467 1

FIELD PRACTICUM I (SECONDARY)

Field experience in a classroom of a local secondary school under the guidance and supervision of an experienced teacher and university supervisor. This field experience will consist of 40 contact hours (4 hours per day, one day per week) over a ten-week period. Prerequisite: Admission to the Teacher Education Program. Concurrent enrollment: EDU 409.

EDU 468 2

FIELD PRACTICUM II (SECONDARY)

Field experience in a classroom of a local secondary school under the guidance and supervision of an experienced teacher and university supervisor. This field experience will consist of 50 contact hours (5 hours per day, one day per week OR 2.5 hours per day twice a week) over a ten-week period. Prerequisite: EDU 467.

EDU 469 3

FIELD PRACTICUM III (SECONDARY)

Field experience in a classroom of a local secondary school under the guidance and supervision of an experienced teacher and university supervisor. Prerequisite: 468. This field experience will consist of 60 contact hours (6 hours per day, one day per week OR 3 hours per day twice a week) over a ten-week period.

EDU 470 3-8

INTERNSHIP IN EDUCATIONAL SERVICES

Practical experience applying professional field-work skills in an appropriate work environment. Limited to Educational Studies majors. Must be taken during the final semester of the program.

EDU 471 3

METHODS OF TEACHING SOCIAL STUDIES (SECONDARY)

A discussion of current methods, trends, and concepts in teaching the social sciences at the secondary level. Emphasis is given to the development of appropriate objectives and to reviewing curricular and instructional materials for teaching of the disciplines of the social sciences. Required of all teaching majors in history and social science. Instructional methods appropriate for the exceptional, disadvantaged, and culturally different learner will be included. Knowledge of and appreciation for cultural diversity is stressed. Does not count toward a major, and cannot be used to satisfy a core curriculum requirement. This course should be taken during the semester preceding student teaching. Prerequisite: Admission to the Teacher Education Program.

EDU 472 3

METHODS OF TEACHING SCIENCE (SECONDARY)

A review of current teaching methods and strategies of science programs at the secondary level. Emphasis is placed upon inquiry approaches and appropriate curricular and instructional materials. Required of all teaching majors in Science Education. Instructional methods appropriate for the exceptional, disadvantaged, and culturally different learner are included. Does not count toward a major in the sciences or the core curriculum requirement in science. This course should be taken during the semester preceding student teaching. Prerequisite: Admission to the Teacher Education Program.

EDU 473 3

METHODS OF TEACHING MATHEMATICS (SECONDARY)

An introduction to current methods, concepts, and curricular materials appropriate for use in secondary mathematics. Required of all teaching majors in mathematics. Instructional methods appropriate for the exceptional, disadvantaged and culturally different learner are included. Does not count toward a mathematics major. May not be used as a core curriculum requirement for graduation. This course should be taken during the semester preceding student teaching. This course should be taken during the semester preceding student teaching. Prerequisite: Admission to the Teacher Education Program.

EDU 474 3

METHODS OF TEACHING MATHEMATICS (MIDDLE GRADES)

Introduction to and practice of current methods, concepts, and curricular materials appropriate for use in middle grades mathematics. Includes use of calculators, computers, and manipulatives as tools for learning mathematics. Methods of instructing the exceptional, disadvantaged, and culturally different child are also included.

Education (EDU)

EDU 475 3 METHODS OF TEACHING ENGLISH/ LANGUAGE ARTS (SECONDARY) A survey of appropriate methods and materials useful in teaching English in the secondary schools including evaluation of written compositions and an introduction to current approaches to literary analysis. The students will develop at least one teaching unit. Instructional methods appropriate for the exceptional, disadvantaged, and culturally different learner are included. Required of all teaching majors in English. Does not count toward the English major and may not be used to satisfy a core curriculum requirement. This course should be taken during the semester preceding student teaching. Prerequisite: Admission to the Teacher Education Program.	EDU 492 12 STUDENT TEACHING (MIDDLE GRADES) Field experience in a selected classroom of local elementary schools under the guidance and supervision of an experienced teacher and clinical supervisor. Full-time student teaching for fall or spring session (16 weeks). Prerequisites: Passing score on the Illinois Content Area Examination. Concurrent enrollment: EDU 490.
EDU 477 3 METHODS OF TEACHING ENGLISH/ LANGUAGE ARTS (MIDDLE GRADES) A survey of appropriate methods and materials useful in teaching English and language arts in the middle grades including evaluation of written compositions and an introduction to current approaches to literary analysis. The students will develop at least one teaching unit. Instructional methods appropriate for the exceptional, disadvantaged, and culturally different learner are included.	EDU 493 6 STUDENT TEACHING (ELEMENTARY) Field experience in a selected classroom of a local elementary school under the guidance and supervision of an experienced teacher and university supervisor. Full-time student teaching in the fall or spring for 8 weeks. This course is a co-requisite with SPE 493.
EDU 478 3 METHODS OF TEACHING SCIENCE (MIDDLE GRADES) A review of current teaching methods and strategies of science programs at the middle grades level. Emphasis is placed upon inquiry approaches and appropriate curricular and instructional materials. Instructional methods appropriate for the exceptional, disadvantaged, and culturally different learner are included.	EDU 495 12 STUDENT TEACHING (ELEMENTARY) Field experience in a selected classroom of local elementary schools under the guidance and supervision of an experienced teacher and clinical supervisor. Full-time student teaching for fall or spring session (16 weeks). Prerequisites: Passing score on the Illinois Content Area Examination. Concurrent enrollment: EDU 490.
EDU 479 3 INSTRUCTIONAL STRATEGIES FOR ADULT LEARNERS Principles and practice of adult learning and instruction; selection and use of appropriate instructional design strategies and materials in a variety of work contexts. Traditional methods, as well as innovative approaches, will be included. Prerequisite: Completion of EDU 210/510.	EDU 496 12 STUDENT TEACHING (SECONDARY) Field experience in a selected classroom of local secondary schools under the guidance and supervision of an experienced teacher and the clinical supervisors. Full-time student teaching for fall or spring session (16 weeks). Prerequisite: Completion of all coursework, a passing score on the appropriate content test, and admission to Student Teaching. Concurrent enrollment in EDU 490.
EDU 480-489 1-3 TOPICS IN EDUCATION This course addresses special topics in education that are not ordinarily covered by other courses offered by the division. Courses offered may include current issues in education such as assessment, evaluation, gifted education, multi-cultural diversity, etc. Prerequisite: Admission to the Teacher Education Program or instructor consent.	EDU 497 12 STUDENT TEACHING (MUSIC or PHYSICAL EDUCATION) Field experience in selected schools under the guidance and supervision of experienced teachers and clinical supervisors. Full-time student teaching for the fall or spring session with time divided equally between elementary and secondary schools (8 weeks each). Prerequisite: Completion of all coursework, a passing score on the appropriate content test, and admission to Student Teaching. Concurrent enrollment in EDU 490.
EDU 490 3 STUDENT TEACHING SEMINAR This course addresses the student teaching field experience and culminating assessments for program completion and licensure. Concurrent enrollment: EDU 495, 496, or 497.	EDU 499 0 TEACHING PERFORMANCE ASSESSMENT This is the culminating assessment for student teaching required for graduation and Illinois state teaching licensure. Student teachers will be required to complete the APT exam and edTPA assignment mandated by the state. Concurrent enrollment: EDU 495, 496, or 497.