

SCHOOL OF EDUCATION

Our Website (<http://www.soe.vt.edu>)

Overview

The School of Education offers professional education degrees at both the undergraduate and graduate level. Initial undergraduate licensure programs include Elementary Education, Career and Technical Education (Agriculture, Business and Information Technology, Marketing Education, Family and Consumer Sciences, and Technology Education), Math Education, English Language Arts Education, and History and Social Sciences Education. Graduate initial licensure programs include Elementary Education, Math Education, Science Education (Biology, Earth Science, Physics, and Chemistry), History and Social Science Education, CTE (Agriculture, Business and Information Technology, Marketing Education, Family and Consumer Sciences, and Technology Education) and Music Education (instrumental and vocal). The School of Education also offers advanced licensure programs in Counselor Education, Educational Leadership and Policy Studies, and Reading Specialist preparation. These programs prepare education professionals for varied employment settings. Advanced programs are offered at the master's, education specialist, and doctoral levels. To obtain specific information about these programs and their requirements, interested students should visit the School of Education's website (www.soe.vt.edu)

Entrance to the School of Education

The Council for Accreditation of Educator Preparation (CAEP) requires that all students be formally admitted into professional education programs. This formal program admission is different from admission to Virginia Tech. Virginia Tech undergraduate students pursuing licensure will encounter three key gateways during their academic journey. The three gateways include program admission and candidacy, application to student teaching, and recommendation for Virginia teaching licensure. Each gateway is specially designed to ensure all candidates are well-prepared, highly qualified, and ready to enter the teaching profession upon program completion. The School of Education and undergraduate student advisors will provide guidance documents to students to assist them in navigating the applications to each program gateway.

Licensure and Employment Opportunities

All initial teacher education programs are fully accredited by the Council for the Accreditation of Educator Preparation (CAEP) and the Virginia Department of Education. Graduates of professional preparation programs are well prepared for their initial responsibilities and are actively recruited by school systems across the state. Advisors counsel students early in their programs with respect to post-graduation placement opportunities.

Professional Preparation Programs Offered in the School of Education

The School of Education offers undergraduate teacher education programs in CTE (Agriculture Education, Business and Information Technology Education, Technology Education, Family and Consumer Sciences Education, Marketing Education), Elementary Education (Pk-6), English Language Arts Education, History and Social Sciences Education and Mathematics Education. The School of Education also offers graduate professional preparation programs. Please consult the Graduate Catalog (www.graduateschool.vt.edu)

(www.graduateschool.vt.edu) and the School of Education's website (www.soe.vt.edu) for admission and graduation requirements.

- Career and Technical Education - Agricultural Education Major (<https://catalog.vt.edu/undergraduate/liberal-arts-human-sciences/education/career-technical-education-bs-agricultural-education/>)
- Career and Technical Education Major with Business and Information Technologies Education Option (<https://catalog.vt.edu/undergraduate/liberal-arts-human-sciences/education/career-technical-education-bs-business-information-technologies-education/>)
- Career and Technical Education Major with Family and Consumer Sciences Education Option (<https://catalog.vt.edu/undergraduate/liberal-arts-human-sciences/education/career-technical-education-bs-family-consumer-sciences-education/>)
- Career and Technical Education Major with Marketing Education Option (<https://catalog.vt.edu/undergraduate/liberal-arts-human-sciences/education/career-technical-education-bs-marketing-education/>)
- Elementary Education (PK-6) Major (<https://catalog.vt.edu/undergraduate/liberal-arts-human-sciences/education/elementary-education-pk-6-bs/>)
- English Language Arts Education Major (<https://catalog.vt.edu/undergraduate/liberal-arts-human-sciences/education/english-language-arts-education-bs/>)
- History and Social Sciences Education Major (<https://catalog.vt.edu/undergraduate/liberal-arts-human-sciences/education/history-social-sciences-education-bs/>)
- Mathematics Education Major (<https://catalog.vt.edu/undergraduate/liberal-arts-human-sciences/education/mathematics-education-bs/>)
- Technology Education Major (<https://catalog.vt.edu/undergraduate/liberal-arts-human-sciences/education/technology-education/>)

Professors: M. D. Alexander, A. P. Azano, B. S. Billingsley, B. R. Brand, P. E. Doolittle, D. Hicks, M. L. Johnson, B. D. Jones, G. F. Lawson, H. A. Mesmer, Y. Miyazaki, C. A. Mullen, M. Weaver-Hightower, L. E. Welfare, J. G. Wells, J. L. Wilkins, and T.O. Williams

Associate Professors: H. B. Bayne, B. D. Bowen, C. Catalano, M.C. Fullen, T. B. Lane, C. L. Lowery, D.A. Robertson, and T. T. Stewart

Assistant Professors: A. E. Allen, N.K. Ferand, S. M. Henry, B. D. Hunt, H. M. Locklear, L. Taylor and C. Thomas

Collegiate Professors: J.S. Mukuni

Professors of Practice: C.S. Cash, B.Kreye

Associate Professors of Practice: N. A. Bradley, J. L. Brinkmann, D. J. Fortune

Assistant Professor of Practice: S.D. Adams, J. Collins, C.S. Foster, D.J. Kniola, J.C. Dossett, and M. Engelhardt

Visiting Professor: R. Kuehl

Administrative and Professional Faculty: C. J. Christianson

Undergraduate Course Descriptions (EDCI)

EDCI 1004 - Introduction to Teacher Education and Licensure (1 credit)

Introduction to the School of Education and teacher education program including majors that lead to teacher licensure, education career exploration, curriculum requirements of licensure programs, and state licensure regulations. Review of academic skills, university programs, and services that support students and promote student development.

Instructional Contact Hours: (1 Lec, 1 Crd)

EDCI 1984 - Special Study (1-19 credits)

Instructional Contact Hours: Variable credit course

EDCI 2004 - Exploring the Teaching Profession- Field Studies in Education (3 credits)

Experiential learning, 10 hours per week, in a classroom setting, public or private, exposing students to knowledge, skills, and dispositions of professional educators. Allows for integration of experiential and course-based learning in professional identity formation and classroom management. Introduces students to concepts and terminology necessary for upperlevel educator preparation courses.

Prerequisite(s): EDCI 1004

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 2414 - Design Based Biotechnical Learning (3 credits)

STEM disciplinary content and practice. Design, construction, evaluate, and iterate working biotechnical prototype solutions addressing authentic human needs. Ethical decision-making based on technological solutions appropriate for local and/or global communities.

Pathway Concept Area(s): 4 Reasoning in Natural Sci., 6D Critique & Prac in Design, 10 Ethical Reasoning

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 2464 - Foundations of Social Studies Education (3 credits)

Introduction to social studies and the study of the social world in all its complexity including the interactions between people, cultures, societies, systems, and ways of being in the world. Exploration of what social studies encompasses, including its purposes and foundational concepts to provide a content-based foundation for future social studies teachers in history, geography, civics, and economics.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 2574 - Social Foundations of Education (3 credits)

History, purpose, and social contexts of education and the PK 12 public education system in the US. Diversity and culturally sensitive approaches to education. Historical, philosophical, social, cultural, and political factors that influence teachers roles and responsibilities and educational practice.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 2614 - The Reading Mind: Learning to read (3 credits)

Survey of theories and research that explain how people learn to read. Brief overview of English written systems. Models of skilled reading, literacy stages, and component processes (e.g., decoding, comprehension). Application of course concepts to self, common myths, media, and products. Analysis of patterns of inequity in reading achievement.

Pathway Concept Area(s): 3 Reasoning in Social Sciences, 11 Intercultural&Global Aware.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 2674 - Language, Culture, and Learning (3 credits)

This course explores connections between language, culture, and learning. Emphasis on recognizing and critically examining ways that diversity of cultural contexts and social identities influence learning, and challenging students to consider ethical responsibilities in supporting and participating in an equitable society.

Pathway Concept Area(s): 3 Reasoning in Social Sciences, 7 Identity & Equity in U.S., 11 Intercultural&Global Aware.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 2984 - Special Study (1-19 credits)

Repeatable with different course content.

Instructional Contact Hours: Variable credit course

Repeatability: up to 99 credit hours

EDCI 3004 - Pre-Education Seminar (1-6 credits)

Experiential learning in a PreK through 12th grade setting, public or private, exposing students to knowledge, skills, and dispositions of professional educators. Allows for integration of experiential and course-based learning in professional identity formation and exploration of education careers. NOT student teaching. May be repeated for elective credit up to a maximum of 12 credit hours. Pre: Junior standing.

Instructional Contact Hours: (1-6 Lec, 1-6 Crd)

Repeatability: up to 12 credit hours

EDCI 3024 - Issues of Schooling in the United States (3 credits)

Exploration of U.S. education, purposes, and roles. Impacts of historic, social, political, economic, religious, cultural, global, and curricular issues. Analysis of equal educational opportunity. Role of the teaching profession in educational reforms.

Pathway Concept Area(s): 3 Reasoning in Social Sciences, 7 Identity & Equity in U.S., 11 Intercultural&Global Aware.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 3074 - Elementary Curriculum: Methods in Teaching (3 credits)

Instructional approaches in elementary education curriculum with a focus on: family engagement, collaboration, teaching strategies, behavior and classroom management, assessment, and differentiation. Design and implementation of lesson plans for elementary school students. Professional educator standards.

Corequisite(s): EDCI 3964

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 3144 - Education of Exceptional Learners (3 credits)

Introduction to the historical, ethical, legal, and economic models relevant to understanding students with disabilities and meeting their needs to increase their potential for success throughout their lives. Addresses research in early intervention, K-12 instruction, post-secondary education, and transition into work settings.

Pathway Concept Area(s): 3 Reasoning in Social Sciences, 10 Ethical Reasoning

Instructional Contact Hours: (3 Lec, 3 Crd)

Course Crosslist: HD 3144

EDCI 3234 - Foundations of Reading Instruction (PK-6) (3 credits)

Theoretical, practical, and research-based foundations in the science of reading instruction for grades PK-6. Phonics, phonological awareness, fluency, vocabulary, and comprehension instruction. Assessment-informed instruction, classroom organization, reader-text matching.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 3244 - Curriculum and Instruction in Elementary Mathematics, PK-3 (3 credits)

Key concepts in curriculum and instruction in grades PK-3 mathematics: mathematical thinking, number and number sense, computation and estimation, geometry and measurement, mathematical discourse within elementary classrooms, teaching methods in grades PK-3, and the role of mental arithmetic. Teaching mathematics through problem solving, reasoning, and communication to support the learning process for all elementary students.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 3254 - Elementary Methods in Science (3 credits)

Study and analysis of approaches to elementary science instruction; assessment for learning; instructional design and methods; content integration in lesson plans; inquiry based science investigations; planning science investigations; needs of students; and inclusiveness of learners.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 3334 - Teaching Language Arts in the Elementary Classroom (4 credits)

Implementation and assessment of curriculum and instruction in elementary language arts. The six focus areas of writing, speaking, listening, reading, visual representation, and viewing are the core components and the role of childrens literature in language learning.

Instructional Contact Hours: (4 Lec, 4 Crd)

EDCI 3354 - STEM in Elementary Schools (3 credits)

STEM education for pre-service elementary education teachers. Equity in elementary science education. Inquiry as a process in society. Integration of inquiry-based practices and engineering design. STEM activities that mirror real-world problem solving and innovation. Next Generation Science and VDOE standards and engineering models, including 5E Instructional Model, in instructional design.

Prerequisite(s): EDCI 3254

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 3464 - Elementary Social Studies Teaching Methods (3 credits)

Emphasizes foundational concepts of curriculum in Social Studies for preservice teachers to effectively utilize state and federal standards to guide instructional strategies and assessments in the elementary classroom (PK-6). Functions of Virginia state and local governments. Exploration of alternative approaches with instructional strategies.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 3474 - Assessment and Diagnosis in Elementary Mathematics Classroom (3 credits)

Research in assessment and diagnosis in PK-5 mathematics classroom. Comparison of evaluation and assessment methods and development of assessment models appropriate for use in PK-5 mathematics classrooms. This course involves the exploration of formative and summative assessment tools, formal and informal assessment strategies, and critical issues in assessment practices.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 3954 - Study Abroad (1-19 credits)

Instructional Contact Hours: Variable credit course

EDCI 3954G - Study Abroad (1-19 credits)

Pathway Concept Area(s): 7 Identity & Equity in U.S.

Instructional Contact Hours: Variable credit course

EDCI 3964 - Field Study (1-19 credits)

Instructional Contact Hours: Variable credit course

EDCI 3984 - Special Study (1-19 credits)

Instructional Contact Hours: Variable credit course

EDCI 4014 - History Lab: Creative Technologies, Hidden Histories, Informal Learning (3 credits)

Application of creative technologies to visualize hidden histories in transdisciplinary experiential learning projects. Training in creative technologies, informal learning techniques, interpretation of marginalized histories, and digital cultural heritage design. Consideration of ethical questions involving the representation of diverse social identities, traditions, and histories. Pre: Sophomore Standing.

Pathway Concept Area(s): 6D Critique & Prac in Design, 7 Identity & Equity in U.S., 10 Ethical Reasoning

Instructional Contact Hours: (3 Lec, 3 Crd)

Course Crosslist: ART 4014, HIST 4014

EDCI 4024 - Humanizing the K-12 Classroom (3 credits)

Social, political, economic and historic structures maintaining power and privilege in the K-12 education system that disadvantage students of different racial, ethnic, socioeconomic, class, and cultural groups. Classroom environmental design to support equity and social justice. Impact of teacher and student identity development on student learning. Twenty hours of experiential learning in educational setting. Pre: Junior Standing.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 4074 - Culturally Responsive Teaching in the Elementary Classroom (3 credits)

In-depth, extensive, and reflective understandings of diversity regarding individual students, families, communities, and schooling contexts. Classroom instructional and management strategies that are responsive to cultural and linguistic differences.

Corequisite(s): EDCI 4964

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 4244 - Curriculum and Instruction in Middle School Mathematics (4-8) (3 credits)

Key concepts in curriculum and instruction in grades 4-8 mathematics to meet diverse learning needs. Algebraic structure of the rational numbers as it relates to childrens understanding of fractions, decimals, and percents, algebraic and proportional reasoning, and probability and data analysis. Childrens mathematical thinking and learning from a psychological perspective. Teaching mathematics through problem solving, reasoning, and communication to promote an inclusive community of learning based on appropriate educational theories.

Pathway Concept Area(s): 5A Quant & Comp Thnk Adv., 11 Intercultural&Global Aware.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 4264 - Intro to Reading Instruction for Elementary Students: A Clinical Course (3 credits)

Overview of reading theory, terminology, and development in grade K-5. Introduction to reading assessment, text selection, lesson planning, and instructional strategies. Supervised clinical setting instructing K-5 learner. Pre: Junior or senior standing.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 4274 - Curriculum and Instruction in Middle School Mathematics (3 credits)

Key concepts in curriculum and instruction in middle school mathematics to meet diverse learning needs. Algebraic structure of the rational numbers as it relates to understanding of fractions, decimals, and percents, algebraic and proportional reasoning, and probability and data analysis. Mathematical thinking and learning from a psychological perspective. Teaching mathematics through problem solving, reasoning, and communication to promote an inclusive community of learning based on appropriate educational theories.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 4454 - Engineering Leadership in Practice Managing the Technical Design Process (3 credits)

Introduction to management and mentoring skills associated with the application of the engineering design process. Course covers skills necessary for leading diverse teams of people through a technical design project. Managing teams of local high school students through an authentic technical design experience associated with design competitions. Course addresses the practical applications of science, math and engineering, while building and managing teams of people to meet technical project goals. Prerequisite: ME 4015 or similar team-based design experience, or by permission of instructor.

Prerequisite(s): ME 4015

Instructional Contact Hours: (2 Lec, 3 Lab, 3 Crd)

Course Crosslist: ME 4454

EDCI 4554 - Educating Exceptional Learners (3 credits)

Analysis of purpose, rationale, and foci of educational programs, and related services for individuals with special needs. Identification of characteristics associated with each exceptionality covered by the Individuals with Disabilities Education Act. Review of procedures for assessment, eligibility decisions, and the development of individualized educational programs. Overview of selected instructional strategies, environmental adaptations, and special materials. Examination of findings concerning program efficacy. Pre: Junior standing.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 4724 - Secondary School Teaching Methods I (3 credits)

Methods for designing and implementing instruction in specific middle and high school content area classrooms (CTE, English, history, social sciences, mathematics, and music) in conjunction with a field experience course. Lesson planning, assessment, differentiation, technology, standards, and adolescent learning development. Reflectivity and collaboration for continuous improvement.

Corequisite(s): 3964, or EDCT 3964, or EDTE 6964

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 4734 - Adolescent Literacy and Reading (3 credits)

Challenges to adolescent literacy. Basic processes related to reading, comprehension, vocabulary development, and conceptual knowledge; diverse adolescent readers. Effective plans and teaching strategies for comprehending and using information in disciplinary texts in middle and high school content area classrooms. (Career and Technical, English, history, math, music, and science).

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 4744 - Secondary School Teaching Methods II (3 credits)

Methods for designing and implementing a variety of instructional approaches in specific middle and high school content area classrooms (CTE, English, history, social sciences, mathematics, and music) in conjunction with student teaching internship. Emphasis on planning and implementation of instructional design, research inquiry, classroom management, integration of technology. Unit plan development and evaluation.

Prerequisite(s): EDCI 4724

Corequisite(s): 3964 or EDTE 3964

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCI 4964 - Field Study (1-19 credits)

Instructional Contact Hours: Variable credit course

EDCI 4974 - Independent Study (1-19 credits)

Instructional Contact Hours: Variable credit course

EDCI 4984 - Special Study (1-19 credits)

Repeatable with different content.

Instructional Contact Hours: Variable credit course

Repeatability: up to 99 credit hours

EDCI 4994 - Undergraduate Research (1-19 credits)

Instructional Contact Hours: Variable credit course

Undergraduate Course Descriptions (EDCO)

EDCO 2004 - Healthy Relationships: Understanding Self and Others (3 credits)

Basic concepts, skills, and theory associated with creating and sustaining healthy relationships in social and professional settings. Self-awareness as it relates to relationship-building. Characteristics and identities of self and others as they relate to relationship-building. Relationship-building skills such as active listening, perspective taking, and empathy.

Pathway Concept Area(s): 3 Reasoning in Social Sciences, 7 Identity & Equity in U.S., 11 Intercultural&Global Aware.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCO 2984 - Special Study (1-19 credits)

Instructional Contact Hours: Variable credit course

Undergraduate Course Descriptions (EDCT)

EDCT 1474 - Computer Information Systems (3 credits)

Fundamentals of Information Technology. Social and individual impact of technology. Software and hardware technologies. Networking, programming, and development.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCT 2604 - Introduction to Career and Technical Education (3 credits)

Philosophies, history, legislation, context, administration and delivery systems of the various licensure areas included in Career and Technical Education.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCT 2964 - Field Study (1-19 credits)

Instructional Contact Hours: Variable credit course

EDCT 3964 - Field Study (1-19 credits)

Instructional Contact Hours: Variable credit course

EDCT 4004 - International Trends in Workforce Development (3 credits)

Trends in international workforce development including global talent supply and demand; portable skills and workforce readiness; social, economic and employment issues; worker values; impact of technology, and workplace communication skills for effective writing, speaking, reading, and listening.

Pathway Concept Area(s): 1A Discourse Advanced, 11 Intercultural&Global Aware.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCT 4034 - Methods of Planning Educational Programs in Agriculture (3 credits)

Course examines the procedures involved in the development of courses, curriculum, and instructional materials for education programs in agriculture.

Instructional Contact Hours: (2 Lec, 3 Lab, 3 Crd)

Course Crosslist: ALCE 4034

EDCT 4624 - Managing a Career and Technical Education Program (3 credits)

Responsibilities of a Career and Technical Education teacher. Managing CTE program based on operational policies, promoting program to in-school and external stakeholders, implementing work-based learning, advising program student organizations, and creating a community-based program.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCT 4634 - Student Assessment in Career and Technical Education (3 credits)

Assessment of standards-based outcomes of learning in workforce development and career and technical education programs. Focus on work-based learning, hands-on competencies, Cognitive Learning Targets, and performance assessment. Pre: Senior standing.

Prerequisite(s): EDCT 2604 and EDCT 2964

Instructional Contact Hours: (3 Lec, 3 Crd)

EDCT 4754 - Internship in Education (1-16 credits)

Planned program of clinical practice in education under the direction and supervision of a university supervisor and a selected practitioner. Pre: Recommendation of program area and successful completion of Professional Studies requirement.

Instructional Contact Hours: (1-16 Lec, 1-16 Crd)

Repeatability: up to 16 credit hours

EDCT 4884 - Youth Program Management (3 credits)

Organizational design of educational youth programs such as 4-H and FFA, including administrative planning, human resource development, recruitment, marketing, and budgeting.

Instructional Contact Hours: (3 Lec, 3 Crd)

Course Crosslist: ALCE 4884

EDCT 4964 - Field Study/Practicum (1-19 credits)

Instructional Contact Hours: Variable credit course

EDCT 4974 - Independent Study (1-19 credits)

Instructional Contact Hours: Variable credit course

EDCT 4984 - Special Study (1-19 credits)

Instructional Contact Hours: Variable credit course

Undergraduate Course Descriptions (EDEP)

EDEP 2374 - Educational Psychology for PK-12 Teachers (3 credits)

Theoretical, empirical, and practical foundations of educational psychology, including human learning, cognitive processes, development, motivation, classroom management, and instructional strategies for diverse students. Emphasis on application of theory to practice.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDEP 2444 - Motivating Yourself and Others (3 credits)

Survey of human motivation research and research methodologies in education, psychology, and neuroscience. Application of this research in diverse populations, including analysis of human motivation and design of motivating activities. (3H,3C)

Pathway Concept Area(s): 3 Reasoning in Social Sciences, 11 Intercultural&Global Aware.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDEP 2984 - Special Study (1-19 credits)

Instructional Contact Hours: Variable credit course

EDEP 3474 - Principles and Practices in PK-12 Assessment (3 credits)

Theoretical, empirical, and practical foundations of assessment in PK-12. Basic test design and measurement principles and practices, the use of assessments in education, the use of assessment data, and critical issues in assessment. Emphasis on creating classroom-level assessment systems.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDEP 4984 - Special Study (1-19 credits)

Instructional Contact Hours: Variable credit course

Undergraduate Course Descriptions (EDIT)

EDIT 4614 - Instructional Technology: Audio-visual and Computer Uses (3 credits)

An introductory instructional technology course. Principles and production of audio-visual materials and methods in instruction. Application of microcomputers in instruction, emphasizing computer literacy, programming and evaluation of instructional software. Course in methods of teaching, field teaching experience, or teaching experience required.

Instructional Contact Hours: (2 Lec, 3 Lab, 3 Crd)

EDIT 4974 - Independent Study (1-19 credits)

Instructional Contact Hours: Variable credit course

EDIT 4994 - Undergraduate Research (1-19 credits)

Instructional Contact Hours: Variable credit course

Undergraduate Course Descriptions (EDTE)

EDTE 1004 - Introduction to Integrative STEM Education (3 credits)

Introduction to creative hands-on problem-solving using technological and engineering design and application. Comprehensive views of how technology and engineering require integration of knowledge to solve technological challenges. Intersection of science, technology, engineering, and mathematics (STEM) with society. Use of virtual and hands-on modeling to identify, evaluate, and test the proper materials and processes for product design. Professional skills such as problem-solving, collaboration, and effective communication.

Pathway Concept Area(s): 6D Critique & Prac in Design, 11 Intercultural&Global Aware.

Instructional Contact Hours: (3 Lec, 3 Crd)

EDTE 1014 - Teaching Technology, Engineering, and Design (3 credits)

Introduction to strategies for teaching technology, engineering, and design in middle and high schools. Exploration of state standards and national recommendations for teaching technology, engineering, and design. Curriculum design and pedagogical frameworks for teaching technological and engineering design-based learning activities, implementing differentiated instruction, and addressing industry trends.

Prerequisite(s): EDTE 1004 or ENGE 1215 or ENGE 1414

Instructional Contact Hours: (3 Lec, 3 Crd)

EDTE 2005 - Engineering Technologies (3 credits)

Fundamentals of technology and engineering design for middle and high school technology educators. 2005: Human needs and cultural context in engineering design process and design thinking. Contributions of systems engineering. Knowledge and skills for processing common materials. Introduction to computer-aided design for two and three-dimensional modeling. Laboratory safety. 2006: Technology and engineering practices. Measurement, analysis, and simulation tools and techniques. Advanced materials processing. Application of computer-aided design for two and three-dimensional modeling. Teaching technology in 6th through 12th grade classrooms.

Prerequisite(s): EDTE 1014

Instructional Contact Hours: (3 Lec, 3 Crd)

EDTE 2006 - Engineering Technologies (3 credits)

Fundamentals of technology and engineering design for middle and high school technology educators. 2005: Human needs and cultural context in engineering design process and design thinking. Contributions of systems engineering. Knowledge and skills for processing common materials. Introduction to computer-aided design for two and three-dimensional modeling. Laboratory safety. 2006: Technology and engineering practices. Measurement, analysis, and simulation tools and techniques. Advanced materials processing. Application of computer-aided design for two and three-dimensional modeling. Teaching technology in 6th through 12th grade classrooms.

Prerequisite(s): EDTE 2005

Instructional Contact Hours: (3 Lec, 3 Crd)

EDTE 2204 - Emerging Issues in Technology and Engineering (3 credits)

Examination of current and projected technology and engineering topics that are growing in regional, state, national, and global importance. Analyzing how the Grand Challenges for Engineering shape future technological advancements and their impact on societies, the environment, and global issues. Development, revision, and field-testing of appropriate learning activities for middle and high school students in selected topic areas.

Prerequisite(s): EDTE 2005

Instructional Contact Hours: (3 Lec, 3 Crd)

EDTE 2964 - Field Study/Practicum (1-19 credits)

Instructional Contact Hours: Variable credit course

EDTE 2984 - Special Study (1-19 credits)

Instructional Contact Hours: Variable credit course

EDTE 3204 - Robotics Education (3 credits)

Introduction to designing robotic systems including sensors, electronic components, and mechanical devices. Foundational technical developments in the use of robots and other computer-controlled devices including technical reporting. History and evolution of robots and automation and their social, economic, industrial, and educational impacts. Robotics-based instruction for middle and high-school students.

Prerequisite(s): EDTE 2006 and CS 1014 and CS 1064

Instructional Contact Hours: (3 Lec, 3 Crd)

EDTE 3964 - Field Study/Practicum (1-19 credits)

Instructional Contact Hours: Variable credit course

EDTE 4204 - Capstone in Technology and Engineering Education (3 credits)

Workforce experience in technology and engineering education, including open-ended research, design, and industry collaboration. Open-ended and team-focused challenges in STEM contexts. Design-cycle (from problem identification to prototype and technical reporting) based on global, economic, environmental, and societal challenges. Comprehensive instructional unit planning to prepare pre-service educators to teach technological and engineering design-based learning to middle and high school students.

Prerequisite(s): EDTE 2204 and EDTE 3204

Instructional Contact Hours: (3 Lec, 3 Crd)

EDTE 4754 - Internship in Education (1-16 credits)

Planned program of clinical practice in education under the direction and supervision of a university supervisor and a selected practitioner. Recommendation of program area and successful completion of Professional Studies required.

Instructional Contact Hours: (1-16 Lec, 1-16 Crd)

Course Crosslist: ALS 4754

EDTE 4964 - Field Study/Practicum (1-19 credits)

Instructional Contact Hours: Variable credit course

EDTE 4974 - Independent Study (1-19 credits)

Instructional Contact Hours: Variable credit course

EDTE 4984 - Special Study (1-19 credits)

Instructional Contact Hours: Variable credit course