

ECO 481. ADVANCED INTERNSHIP IN ECONOMICS**1-4 sh**

This course provides opportunities for students to apply concepts and information gathered in the economics classroom to actual experience in the community. Placements may include businesses, not-for-profit organizations or teaching assistants in lower-division economics classes. Prerequisites: will vary with the topic but will generally include completion or concurrent enrollment in ECO 310 and ECO 311 or permission of instructor. Enrollment limited to economics majors. Offered fall, winter, spring and summer.

ECO 491. ADVANCED INDEPENDENT STUDY**1-4 sh**

Students pursuing the major or minor in economics may complete individual study in an area of special interest that is not otherwise covered in regular course offerings. Study is to be undertaken under the guidance of a member of the economics faculty. An Independent Study form must be completed prior to registration. Prerequisites: will vary with the topic but will generally include completion or concurrent enrollment in ECO 310 and ECO 311 or permission of instructor. Enrollment limited to economics majors. Offered fall, winter, spring and summer.

ECO 498. SENIOR THESIS**2-4 sh**

This is the culmination of the economics major and serves as the student's required comprehensive evaluation in the major field of study. For this research project, economics majors work individually with a professor to build on work done in previous courses, culminating in a work of presentation quality. The completed work is to be presented in a public forum such as SURE, national or regional professional society meetings or at a campus-level economics symposium. In addition, all students are to present their work before the collected faculty, students and guests of the economics department. Prerequisites: ECO 310, 311 and eight additional hours of economics numbered 300 or above; senior economics major.

ECO 499. ADVANCED RESEARCH**1-4 sh**

Students engage in advanced undergraduate research under the direction of an economics department faculty member. Predominately this course will be restricted to economics majors and will be in preparation for their senior thesis. Maximum of eight semester hours total credit. Prerequisites: eligibility as determined by the undergraduate research guidelines of Elon University and approval by the department. Enrollment limited to economics majors.

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Education

Chair, Department of Education: Associate Professor Long
 Professors: Crawford, Dillashaw, Simon
 Associate Professors: Bass, Howard, Stasz, Stuart, Wooten
 Assistant Professors: Drake, Rice

The mission of Teacher Education at Elon University is to prepare quality teachers who are knowledgeable, responsible and thoughtful professionals. The conceptual framework, "Thoughtful Practice in a Community of Learners," reflects the intention to create a learning environment in which teacher candidates inquire and collaborate to develop the knowledge, skills and dispositions for effective professional practice.

Inquiry

1. Seek to understand students' family and community cultures, and to use knowledge to inform practice.
2. Inquire, actively and persistently, about student learning through the use of a variety of assessment procedures.

3. Analyze, through reflective practice, the effectiveness of their instruction and make appropriate adaptations to maximize student learning.

Knowledge

4. Demonstrate in-depth knowledge of the subject area(s) for which they seek licensure.
5. Use knowledge of students' learning process to inform instruction.
6. Demonstrate understanding of pedagogical knowledge relevant to the subject area(s) for which they seek licensure.
7. Choose appropriately from among multiple instructional strategies to promote optimal student learning.
8. Choose appropriately from among a variety of resources, including technology, to promote active student learning.

Professionalism

9. Establish positive classroom learning environments that support the social and academic growth of students.
10. Hold high expectations for the academic and social growth of all students.
11. Seek opportunities to further personal learning and professional growth.
12. Demonstrate enthusiasm and respect for the profession of teaching.

Elon's education program prepares teachers for careers in the elementary, middle and high school grades. The program emphasizes practical hands-on experience in classrooms as well as educational theory and methods classes on campus. Yearly field experiences in public school classrooms begin the first year and culminate with a full semester of teaching in the teacher candidate's licensure area.

Elon is widely recognized for the success of its teacher education program, which is accredited by the National Council for Accreditation of Teacher Education, and is one of only two private institutions in the state selected to offer the prestigious N.C. Teaching Fellows Program.

Elon University offers programs leading to N.C. licensure in elementary education, middle grades education, special education (General Curriculum), special subject areas for grades K-12 and in seven areas at the secondary level.

The student who successfully completes any of the teacher education programs at Elon University will be eligible for licensure to teach in North Carolina. The state of North Carolina is party to the Interstate Certification Compact which qualifies Elon University graduates also to be licensed in all states party to this Compact. Currently there are 26 states which have entered into this reciprocity agreement. Any student planning to teach in a state not a part of the Interstate Certification Compact should obtain a copy of the licensure requirements for a public school teacher from the state superintendent of education of the state in which the student plans to teach.

Before being admitted into the Teacher Education Program, the student must make application to the program, be recommended by the appropriate major department, be interviewed and approved by the Teacher Education Committee and meet minimum score requirements on the Preprofessional Skills Tests. North Carolina requires the following minimum scores: PPST Reading-176, PPST Mathematics-173 and PPST Writing-173. A minimum GPA of 2.5 is required for all coursework completed at the time of admission and must be maintained in order to continue in the program.

In all cases, approval for admission to the program is subject to the discretion of the Teacher Education Committee, which bases its decision not only on the above factors, but also on satisfactory command of standard English usage (written and oral) and mental, physical, moral and emotional acceptability for teaching. The Teacher Education Committee may, at its discretion, dismiss a student from the Teacher Education program.

Application forms for the Teacher Education Program are available in the office of the School of Education and must be filed by October 15 or March 15 of the semester immediately prior to the beginning of the student's junior year. A student must be unconditionally admitted to the program before being permitted to take education courses beyond the 200 level. Exceptions to this policy must be approved by the dean of the School of Education.

To be recommended for teacher licensure, a teacher candidate must meet all academic requirements and have a minimum GPA of 2.5. A teacher candidate must also meet the North Carolina minimum score on the Specialty Area Test (minimum scores for these tests vary with content area) and have a recommendation from the school system in which student teaching was completed. They must also complete a technology portfolio as required by the North Carolina State Board of Education.

All students who are education majors or who already hold a bachelor's degree and are seeking only licensure are subject to the decisions and regulations of the N.C. State Board of Education. These decisions and regulations are binding on the student on the date and time specified by the Board.

At Elon University, the teacher education programs are fully approved by the N.C. State Board of Education. While a student ordinarily may graduate and be licensed under the catalog requirements in effect at the time the student is admitted to the Teacher Education Program, the Board may mandate changes in standards of approved teacher education programs, requiring students to modify or add to their original degree programs to be eligible for licensure upon completion of graduation requirements. Students should consult their advisor about current program requirements.

A major in Elementary Education consists of the courses necessary to meet the requirements for elementary education (K-6) licensure in the public schools of North Carolina. The following courses are required of all elementary education majors:

ENG 250	Interpretations of Literature	4 sh
ENG 398	Children's Literature	4 sh
FNA 369	Fine Arts in the Public Schools	4 sh
HED 362	Healthful Living in the Elementary School	3 sh
HST 112	Europe and the Mediterranean World since 1660	4 sh
HST 123	The U.S. and N.C. since 1865	4 sh
GEO 131	The World's Regions	4 sh
POL 111	American Government	4 sh
BIO 101	Topics in General Biology	3 sh
BIO 102	General Biology Lab	1 sh
CHM 101/102	Basic Concepts in Chemistry/Lab	4 sh or
PHY 110	Energy and the Environment	
PHY 102	Introduction to Astronomy	4 sh or
PHY 103	Introduction to Geology	
PSY 321	Educational Psychology	4 sh

MTH 210	Mathematics for Elementary and Middle Grades Teachers (GS Math requirement is a prerequisite)	4 sh
CIS 220	Computers and Teaching	3 sh
EDU 211	Introduction to Education with Practicum	4 sh
EDU 321	Reading in the Elementary School	4 sh
EDU 430	Foundations of Education	3 sh
EDU 450	Meeting Special Learning Needs of Children	3 sh
	<u>Principles of Learning and Teaching (PLT) I</u>	8 sh
EDU 311	Principles of Learning and Teaching (PLT) I <i>Concentration areas:</i> Language Arts and Social Studies Methods and Materials	
	or	
EDU 312	Principles of Learning and Teaching (PLT) I <i>Concentration areas:</i> Mathematics and Science Methods and Materials	
	and	
	<u>Principles of Learning and Teaching (PLT) II</u>	8 sh
EDU 411	Principles of Learning and Teaching (PLT) II <i>Concentration areas:</i> Language Arts and Social Studies Methods and Materials	
	or	
EDU 412	Principles of Learning and Teaching (PLT) II <i>Concentration areas:</i> Mathematics and Science Methods and Materials	

Students who enroll in EDU 311 will enroll in EDU 412 in the following semester.
 Students who enroll in EDU 312 will enroll in EDU 411 in the following semester.
 This will ensure that all four content areas are addressed.

EDU 480	Student Teaching Seminar	2 sh
EDU 481	Supervised Observation and Student Teaching	10 sh

TOTAL **96 sh**

A major in Middle Grades Education consists of the courses necessary to meet the requirements for middle grades (6-9) licensure in the public schools of North Carolina. The following Core Courses are required of all middle grades majors:

CIS 220	Computers and Teaching	3 sh
PSY 321	Educational Psychology	4 sh
EDU 211	Introduction to Education with Practicum	4 sh
EDU 322	Reading in the Content Areas	2 sh
EDU 430	Foundations of Education	3 sh
EDU 441	Curriculum and Instruction in the Middle Grades	3 sh
EDU 450	Meeting Special Learning Needs of Children	3 sh

EDU 480	Student Teaching Seminar	2 sh
EDU 481	Supervised Observation and Student Teaching	10 sh
Two subject area concentrations		54–60 sh
TOTAL		92–98 sh

In addition to the **Core Courses**, a student majoring in middle grades education must select two subject area concentrations from the following:

Communication Skills Concentration

ENG 205	English Grammar	4 sh
ENG 224	American Literature II	4 sh
ENG 250	Interpretations of Literature	4 sh
ENG 319	Writing Center Workshop	4 sh
ENG 399	Young Adult Literature	4 sh
EDU 421	Materials and Methods of Teaching Middle Grades and High School English	4 sh
One course from the following:		4 sh
ENG 238	African-American Literature before 1945	
ENG 239	African-American Literature since 1945	
ENG 359	African-American Novels	
TOTAL		28 sh

Social Studies Concentration

ECO 201	Principles of Economics	4 sh
GEO 131	The World's Regions	4 sh
HST 112	Europe and the Mediterranean World since 1660	4 sh
HST 122	United States History since 1865	4 sh
HST 221	The World in the Twentieth Century	4 sh
HST 361	North Carolina in the Nation	4 sh
POL 111	American Government	4 sh
EDU 425	Materials and Methods of Teaching Middle Grades and High School Social Studies	4 sh
TOTAL		32 sh

Mathematics Concentration

MTH 112	General Statistics	4 sh
MTH 115	Trigonometry	4 sh
MTH 121	Calculus and Analytic Geometry I	4 sh
MTH 221	Calculus and Analytic Geometry II	4 sh
MTH 210	Mathematics for Elementary and Middle Grades Teachers	4 sh
MTH 241	Discrete Structures	4 sh
EDU 422	Materials and Methods of Teaching Middle Grades and Secondary Mathematics	4 sh
TOTAL		28 sh

Science Concentration

BIO 101	Topics in General Biology	3 sh
BIO 102	General Biology Lab	1 sh
SCI 121	Science without Borders	4 sh
CHM 111	General Chemistry I	3 sh
CHM 113	General Chemistry Lab	1 sh
PHY 110	Energy and the Environment	4 sh
PHY 102	Introduction to Astronomy	4 sh
PHY 103	Introduction to Geology	4 sh
EDU 424	Materials and Methods of Teaching Middle Grades and Secondary Science	4 sh

TOTAL **28 sh**

A major in Special Education (General Curriculum) consists of the courses necessary to meet the requirements for special education (K-12) initial licensure in North Carolina. The following courses are required of all special education majors:

ENG 250	Interpretations of Literature	4 sh
FNA 369	Fine Arts in the Public Schools	4 sh
HED 362	Healthful Living in the Elementary School	3 sh
HST 112	Europe and the Mediterranean World since 1660	4 sh
HST 123	The U.S. and N.C. since 1865	4 sh
GEO 131	The World's Regions	4 sh
POL 111	American Government	4 sh
BIO 101	Topics in General Biology	3 sh
BIO 102	General Biology Lab	1 sh
CHM 101/102	Basic Concepts in Chemistry/Lab	4 sh or
PHY 110	Energy and the Environment	4 sh
PSY 321	Educational Psychology	4 sh
MTH 210	Mathematics for Elementary and Middle Grades Teachers (GS Math requirement is a prerequisite)	4 sh
CIS 220	Computers and Teaching	3 sh
EDU 211	Introduction to Education with Practicum	4 sh
EDU 342	Foundations of Special Education	3 sh
EDU 345	Planning and Managing the Learning Environment for Students With Exceptional Learning Needs	4 sh
EDU 435	Assessment Methods and Interpretation in Special Education	4 sh
EDU 444	Language, Literacy and Mathematics in Special Education	4 sh
EDU 445	Teaching/Learning Strategies for Students with Exceptional Learning Needs	4 sh
	<u>Principles of Learning and Teaching (PLT) I</u>	8 sh
EDU 311	Principles of Learning and Teaching (PLT) I	

Concentration areas:

Language Arts and Social Studies Methods and Materials

or

EDU 312 Principles of Learning and Teaching (PLT) I

Concentration areas:

Mathematics and Science Methods and Materials

and

Principles of Learning and Teaching (PLT) II

8 sh

EDU 411 Principles of Learning and Teaching (PLT) II

Concentration areas:

Language Arts and Social Studies Methods and Materials

or

EDU 412 Principles of Learning and Teaching (PLT) II

Concentration areas:

Mathematics and Science Methods and Materials

or

Two of the following methods courses:

8 sh

EDU 421 Materials and Methods of Teaching Middle Grades and High School English

EDU 422 Materials and Methods of Teaching Middle Grades and Secondary Mathematics

EDU 424 Materials and Methods of Teaching Middle Grades and Secondary Science

EDU 425 Materials and Methods of Teaching Middle Grades and High School Social Studies

EDU 480 Student Teaching Seminar 2 sh

EDU 481 Student Teaching 10 sh

TOTAL 97 sh

The student planning to teach at the high school level completes a major in a discipline and the necessary **Professional Studies** courses for teacher licensure at the secondary level (grades 9-12). Secondary education licensure is available in biology, chemistry, comprehensive science, English, history, mathematics, physics and social studies. Specific requirements for each program are listed with the appropriate department in this catalog. In general, the following Professional Studies courses must be satisfactorily completed:

EDU 211 Introduction to Education with Practicum 4 sh

EDU 322 Reading in the Content Areas 2 sh

Choose an appropriate methods course: 4 sh

EDU 421 Materials and Methods of Teaching Middle Grades and High School English

EDU 422 Materials and Methods of Teaching Middle Grades and Secondary Mathematics

EDU 424 Materials and Methods of Teaching Middle Grades and Secondary Science

EDU 425 Materials and Methods of Teaching Middle Grades and High School Social Studies

EDU 430	Foundations of Education	3 sh
EDU 450	Meeting Special Learning Needs of Children	3 sh
EDU 480	Student Teaching Seminar	2 sh
EDU 481	Supervised Observation and Student Teaching	10 sh
CIS 220	Computers and Teaching (Not required for Mathematics Education majors)	3 sh
PSY 321	Educational Psychology	4 sh
TOTAL		35 sh

Programs leading to licensure in Special Subject Areas (K-12) level are available in French, health education, music education, physical education and Spanish. Specific requirements for these programs are listed with the appropriate department in this catalog. In general, the following Professional Studies courses must be satisfactorily completed:

EDU 211	Introduction to Education with Practicum	4 sh
EDU 322	Reading in the Content Areas	2 sh
One of the following courses:		4 sh
EDU 423	Materials and Methods of Teaching Physical Education	
EDU 427	Materials and Methods of Teaching Health and Safety	
EDU 428	Materials and Methods of Teaching Foreign Languages	
MUS 461	Music Education in the Public Schools	
EDU 430	Foundations of Education	3 sh
EDU 450	Meeting Special Learning Needs of Children (Not required for Physical Education majors)	3 sh
EDU 480	Student Teaching Seminar	2 sh
EDU 481	Supervised Observation and Student Teaching	10 sh
CIS 220	Computers and Teaching	3 sh
PSY 321	Educational Psychology	4 sh
Total		35 sh

EDU 211. INTRODUCTION TO EDUCATION WITH PRACTICUM **4 sh**

This introduction to the concepts of teaching and the teacher's role as a decision maker uses a combination of classroom instruction and practical experiences. Prospective teachers gain greater understanding of the teaching profession and develop an awareness of students' characteristics and needs. Offered fall, winter and spring.

**EDU 311. PRINCIPLES OF LEARNING AND TEACHING I:
LANGUAGE ARTS AND SOCIAL STUDIES METHODS AND MATERIALS** **8 sh**

Students learn how to investigate, evaluate and select content, methods and materials used in organizing and teaching language arts and social studies in elementary school. They develop appropriate curricula and examine personal beliefs and dispositions. They design and implement differentiated lessons based on state standards and develop technology-enhanced, project-based learning units. They gain a sound pedagogical knowledge base, an understanding of the importance of inquiry and professionalism and have opportunities to participate in a community of learners. A concurrent practicum offers opportunities to apply concepts and skills. Prerequisites: EDU 211, PSY 321, CIS 220. Prerequisite or corequisite: EDU 321. Admission to Teacher Education Program.

**EDU 312. PRINCIPLES OF LEARNING AND TEACHING I:
MATHEMATICS AND SCIENCE METHODS AND MATERIALS** **8 sh**

Students learn how to investigate, evaluate and select content, methods and materials used in organizing and teaching mathematics and science in the elementary school. They develop appropriate curricula and examine personal beliefs and dispositions. They design and implement differentiated lessons based on state standards and develop technology-enhanced, project-based learning units. They gain a sound pedagogical knowledge base, an understanding of the importance of inquiry and professionalism and have opportunities to participate in a community of learners. A concurrent practicum offers opportunities to apply concepts and skills. Prerequisites: EDU 211, MTH 210, PSY 321, CIS 220. Admission to Teacher Education Program.

EDU 321. READING IN THE ELEMENTARY SCHOOL **4 sh**

Study focuses on developing the philosophical framework, knowledge and methodology necessary for planning learning experiences to enhance students' language development. Key course components include theory and process, pedagogy, assessment, the learner and professional development. Prerequisites: EDU 211, PSY 321. Admission to the Teacher Education Program. Offered fall and spring.

EDU 322. READING IN THE CONTENT AREAS **2 sh**

The focus of this course is on reading strategies to guide middle school and high school instruction. Prospective teachers apply readability formulas to content area readings and design activities to promote vocabulary development, comprehension, study skills and writing. Prerequisites: EDU 211, PSY 321. Offered fall and spring.

EDU 342. FOUNDATIONS OF SPECIAL EDUCATION **3 sh**

This course addresses the evolution of the field of special education, its philosophical and theoretical foundations, legal underpinnings, and current trends and controversies. Emphasis is on acquiring a broad knowledge base regarding the characteristics of students with exceptional learning needs and the process and procedures for providing special education. Consideration is given to how issues of human diversity impact families, cultures, and schools and how these issues affect delivery of special education services. Offered fall.

**EDU 345. PLANNING AND MANAGING THE LEARNING ENVIRONMENT FOR
STUDENTS WITH EXCEPTIONAL LEARNING NEEDS** **4 sh**

This course provides teacher candidates with the competencies and skills to use positive behavioral supports to establish a classroom environment that promotes the academic and social development of students with exceptional learning needs. Candidates will learn to use strategies such as social skills training, functional behavioral assessment, cognitive problem solving, and self-regulation of behavior. The needs of families, and how to involve families in educational programming for their children, are considered. Offered fall.

EDU 347. NATURE AND NEEDS OF STUDENTS WITH LEARNING DISABILITIES **3 sh**

A course designed to consider the specific area of disability in depth, including etiology, prevalence and characteristics. This course will review and analyze current practice and research on issues relating to the education of students with learning disabilities. Historical and legal aspects pertaining to the particular area of disability will be reviewed as well. Offered winter.

**EDU 411. PRINCIPLES OF LEARNING AND TEACHING II:
LANGUAGE ARTS AND SOCIAL STUDIES METHODS AND MATERIALS** **8 sh**

Students learn how to investigate, evaluate and select content, methods and materials used in organizing and teaching language arts and social studies in the elementary school. They develop appropriate curricula and examine personal beliefs and dispositions. Building on knowledge acquired in PLT I, students design and implement integrated technology-enhanced, problem-based learning units, incorporating the elements of Universal Design (UD). National standards provide the context. They gain a more

in-depth pedagogical knowledge base, a deeper understanding of the importance of inquiry and professionalism and have additional opportunities to participate in a community of learners. A concurrent practicum offers opportunities to apply concepts and skills. Prerequisites: EDU 211, PSY 321, CIS 220, EDU 312. Prerequisite or corequisite: EDU 321. Admission to Teacher Education Program.

**EDU 412. PRINCIPLES OF LEARNING AND TEACHING II:
MATHEMATICS AND SCIENCES METHODS AND MATERIALS** **8 sh**

Students learn to investigate, evaluate and select content, methods and materials used in organizing and teaching mathematics and science in the elementary school. They develop and implement appropriate curricula and examine personal beliefs and dispositions. Building on knowledge acquired in PLT I, students design and implement integrated technology-enhanced, problem-based learning units, incorporating the elements of Universal Design (UD). National standards provide the context. They gain a more in-depth pedagogical knowledge base, a deeper understanding of the importance of inquiry and professionalism and have additional opportunities to participate in a community of learners. A concurrent practicum offers opportunities to apply concepts and skills. Prerequisites: EDU 211, PSY 321, CIS 220, EDU 311, MTH 210. Admission to Teacher Education Program.

**EDU 421. MATERIALS AND METHODS OF TEACHING MIDDLE GRADES
AND HIGH SCHOOL ENGLISH** **4 sh**

In this study of the content and organization of the English curriculum with emphasis on methods and materials used in teaching literature, language skills and composition, students review print and nonprint media, create lesson and unit plans, lead classroom discussions and conduct teaching demonstrations. Public school classroom observation and assistance are required. Prerequisites: EDU 211, PSY 321. Offered fall semester.

**EDU 422. MATERIALS AND METHODS OF TEACHING MIDDLE GRADES AND
SECONDARY MATHEMATICS** **4 sh**

Students study the objectives and content of the mathematics curriculum in grades 6-12, including the materials, techniques and methods of evaluation used in teaching mathematics in middle and high school grades. A practicum in the public schools is required. Prerequisites: EDU 211, PSY 321. Offered fall semester.

EDU 423. MATERIALS AND METHODS OF TEACHING PHYSICAL EDUCATION **4 sh**

This course covers the methods, materials and techniques of teaching physical education, including organization and planning of the total curriculum and daily programs. Students also observe and conduct activity classes. Public school practicum required. Prerequisites: EDU 211, PSY 321. Offered fall semester.

**EDU 424. MATERIALS AND METHODS OF TEACHING MIDDLE GRADES AND
SECONDARY SCIENCE** **4 sh**

Students develop, select and evaluate content, methods and materials used in teaching science at the middle- or high- school level. Study examines current trends in teaching the natural sciences and addresses safety concerns. Observations and practicum in middle and/or high schools required. Prerequisites: EDU 211, PSY 321. Offered fall semester.

**EDU 425. MATERIALS AND METHODS OF TEACHING MIDDLE GRADES
AND HIGH SCHOOL SOCIAL STUDIES** **4 sh**

This study of the materials and methods of teaching social studies emphasizes planning, organization, objectives and evaluation. Public school practicum required. Prerequisites: EDU 211, PSY 321. Offered fall semester.

EDU 427. MATERIALS AND METHODS OF TEACHING HEALTH AND SAFETY **4 sh**

This course emphasizes methods of curriculum planning, analyzing and developing content area, unit plans and teaching approaches for all levels of school (K-12). Public

school practicum required. Prerequisites: EDU 211, PSY 321. Offered fall semester, even-numbered years.

EDU 428. MATERIALS AND METHODS OF TEACHING FOREIGN LANGUAGES 4 sh

This study of the content and organization of the foreign language curriculum in the public schools emphasizes methods and materials used in teaching at all levels (K-12) and covers how teaching the four basic skills and the target culture varies at each level. Students discuss theories of planning, instruction, choice of materials and evaluation, and gain practical experience by participating in a public school classroom. Prerequisites: EDU 211, PSY 321. Offered fall semester.

EDU 430. FOUNDATIONS OF EDUCATION 3 sh

This foundations course is a study of the historical development and philosophical basis for public education in the U.S., including the role and influence of schools in society and the teacher's role as it has emerged from the philosophies, practices and policies of public education. Offered fall and spring.

EDU 435. ASSESSMENT METHODS AND INTERPRETATION IN SPECIAL EDUCATION 4 sh

This course provides teacher candidates with knowledge required to design assessment plans for students with exceptional learning needs. Consideration is given to legal policies and ethical principles in regard to the administration and interpretation of assessment procedures. Candidates learn to evaluate standardized assessment instruments in terms of reliability, validity and adequacy of norm sample and to collaborate with families and other professionals to gather information and share assessment results. Offered spring.

EDU 441. CURRICULUM AND INSTRUCTION IN THE MIDDLE GRADES 3 sh

This study of historical and contemporary curricula and instruction in middle and junior high schools emphasizes the special curricular and instructional needs of the pre- and early adolescent and explores various programs to teach 11- to 14-year-olds academic and personal skills and concepts. Prerequisite: EDU 211. Offered fall semester.

EDU 443. SPECIALIZED INSTRUCTIONAL METHODS AND MATERIALS 3 sh

Current literature on effective instructional practice is used as the basis for developing advanced skills necessary to plan and implement instruction for special needs students. Materials are examined and evaluated in terms of their usefulness for exceptional students. Ways to adapt materials and modify curriculum will be investigated. An emphasis is placed on the utilization of assessment results in planning instruction. Offered spring.

EDU 444. LANGUAGE, LITERACY AND MATHEMATICS METHODS IN SPECIAL EDUCATION 4 sh

In this course teacher candidates become familiar with the theory and research base on effective instructional techniques for children with exceptional learning needs. They learn how to apply specific methods that involve explicit, systematic and intensive instruction to help children with learning difficulties acquire foundational skills in reading, language arts and mathematics. Candidates learn to use curriculum-based assessment as a basis for planning, monitoring and modifying instruction. Offered fall.

EDU 445. TEACHING AND LEARNING STRATEGIES FOR STUDENTS WITH EXCEPTIONAL LEARNING NEEDS 4 sh

This course focuses on effective teaching and learning strategies for adolescents with mild to moderate learning needs. The course emphasizes strategies that reflect a cognitive/metacognitive instructional approach to learning. Consideration is given to the use of technology as a tool for learning and to the assessment of strategy effectiveness by monitoring student progress. Teacher candidates learn to consider learning environments, cultural, linguistic and socio-economic factors in addition to student abilities in their selection and use of strategies. Offered spring.

EDU 450. MEETING SPECIAL LEARNING NEEDS OF CHILDREN**3 sh**

This course prepares teachers for using individualized programs for students with special learning needs. Students survey the literature related to instruction of these students, including assessing individual needs and modes of learning with implications for mainstreamed classroom teaching. Admission to the Teacher Education Program. Offered fall and spring.

EDU 480. STUDENT TEACHING SEMINAR**2 sh**

This seminar focuses on classroom management strategies, legal aspects of teaching, the teacher as decisionmaker and creating a professional development plan. Must be taken concurrently with EDU 481. Offered fall and spring.

EDU 481. SUPERVISED OBSERVATION AND STUDENT TEACHING**10 sh**

Students experience the classroom full-time for one semester, with periodic conferences with the university supervisor(s) and classroom teacher(s). The student becomes acquainted with the duties and observes the methods and activities of an experienced teacher, with gradual induction into full-time teaching responsibilities. Corequisite: EDU 480. Prerequisites: EDU 211 and grade of C or better in appropriate methods course(s). Offered fall and spring.

EDU 499. RESEARCH**1-4 sh**

Students engage in undergraduate research under the direction of an education department faculty member. Maximum of eight semester hours total credit. Prerequisites: eligibility as determined by the undergraduate research guidelines of Elon University and approval by the department.

Engineering

Coordinator: Associate Professor D'Amato

Engineers have the opportunity to be of profound service to humanity. Engineering means problem solving. Through the application of mathematics and science, an engineer may be solving problems dealing with energy, space exploration, environmental issues, product manufacturing, construction or any number of interesting areas of study. Possible engineering degrees include: aerospace engineering, biomedical engineering, chemical engineering, civil engineering, computer engineering, electrical engineering, environmental engineering, industrial engineering, materials science and engineering, mechanical engineering, nuclear engineering, and textile engineering.

The unique dual degree engineering programs at Elon support students in working toward two degrees: one from Elon and one from an engineering university. Elon currently has affiliations with North Carolina State University (NCSU), Virginia Tech, Columbia University, Washington University (St. Louis) and North Carolina A&T State University. The student will complete three years at Elon. These years will include a full array of science, mathematics, computer science and general studies courses along with their discipline-specific courses. Also included will be foundational engineering courses every fall and spring taught by engineering faculty. After these three years at Elon, the student will transfer to an affiliated engineering university normally for two more years. Upon completion of these five years (three at Elon and two at an affiliated engineering university), a student will receive a B.S. degree from Elon in engineering physics, environmental studies/environmental engineering or engineering mathematics or a B.A. degree in chemistry/chemical engineering or computer science/engineering, and a B.S. degree from the engineering school in an engineering area of choice. Students must complete Elon's General Studies Program requirements, the engineering core, and one of the options listed below.

All dual degree engineering programs require the following core courses:

CHM 111	General Chemistry I	3 sh
CHM 113	General Chemistry I Lab	1 sh
CHM 112	General Chemistry II	3 sh
CHM 114	General Chemistry II Lab	1 sh
PHY 113	General Physics I with Calculus w/lab	4 sh
PHY 114	General Physics II with Calculus w/lab	4 sh
MTH 121	Calculus and Analytic Geometry I	4 sh
MTH 221	Calculus and Analytic Geometry II	4 sh
MTH 321	Calculus and Analytic Geometry III	4 sh
MTH 421	Differential Equations	4 sh
CSC 130	Introduction to Computer Science	4 sh

TOTAL **36 sh**

Engineering Foundations

EGR 101	Introduction to Engineering	1 sh
EGR 102	Introduction to Engineering Graphics and Design	2 sh
EGR 206	Engineering Mechanics - Statics	3 sh
EGR 208	Engineering Mechanics - Dynamics	3 sh
EGR/PHY 211	Circuit Analysis	3 sh
EGR/PHY 212	Circuit Analysis Lab	1 sh
EGR/PHY 310	Engineering Thermodynamics	4 sh

TOTAL **17 sh**

The student will select one of the following five options:

I. Engineering Physics

PHY 213	Introduction to Modern Physics	4 sh
PHY 311	Classical Electrodynamics	4 sh
8 sh of physics at the 300-400 level (excluding PHY 305)		8 sh

TOTAL **16 sh**

II. Engineering Mathematics

MTH 231	Mathematical Reasoning	4 sh
MTH 311	Linear Algebra	4 sh
MTH 312	Abstract Algebra	4 sh
MTH 341	Probability Theory and Statistics	4 sh
MTH 415	Numerical Analysis	4 sh
CSC 230	Algorithm Development	4 sh

TOTAL **24 sh**

III. Computer Science/Engineering

MTH 241	Discrete Structures	4 sh
CSC 230	Algorithm Development	4 sh
CSC 331	Algorithm Analysis	4 sh

CSC 342	Computer Organization	4 sh
CSC 351	Theory of Computation	4 sh
CSC 441	Computer Architecture & Operating Systems	4 sh
TOTAL		24 sh

In addition, one upper-level course in programming languages at another institution (if electrical or computer engineering). For another engineering degree, an additional upper level CSC course is required.

IV. Chemistry/Chemical Engineering

CHM 125	The Chemical Literature	1 sh
CHM 205	Inorganic Chemistry I	4 sh
CHM 211	Organic Chemistry I	3 sh
CHM 213	Organic Chemistry Lab I	1 sh
CHM 212	Organic Chemistry II	3 sh
CHM 214	Organic Chemistry Lab II	1 sh
CHM 311	Quantitative Analysis	4 sh
CHM 332	Physical Chemistry I	4 sh
CHM 461	Senior Seminar	1 sh
TOTAL		22 sh

V. Environmental Studies/Environmental Engineering

POL 224	Environmental Policy and Law	4 sh
REL 348	Environmental Ethics	4 sh
ENS 461	Senior Seminar	4 sh
CHM 211/213	Organic Chemistry I w/Lab	4 sh
BIO 112/114	Intro Population Biology w/Lab	4 sh
BIO 452	General Ecology	4 sh
ENS 215	Organismal Biology and Field Techniques	4 sh
ENS 381	Internship (during summer)	2-4 sh
CE 323	Earth Systems Chemistry @ NCSU	4 sh
CE 373	Fundamentals of Environmental Engineering @ NCSU	3 sh
ST 370	Probability and Statistics for Engineers @ NCSU	3 sh
TOTAL		40-42 sh

EGR 101. INTRODUCTION TO ENGINEERING 1 sh

This course provides general information on engineering disciplines, common engineering practices, the engineering profession and history, engineering education, engineering design, engineering ethics, and engineering opportunities from the instructor and/or invited speakers. Preliminary work on a design project will be undertaken by student teams. Offered fall.

EGR 102. INTRODUCTION TO ENGINEERING GRAPHICS AND DESIGN 2 sh

This course introduces the student to graphics as used by engineers. Both hand sketching and computer graphics will develop the student's ability to communicate graphical-

ly. This course also investigates the engineering design process. Students will work in teams to acquire a client and design a solution to meet the needs enumerated by this client. This design project is a continuation of design work done in EGR 101. Each aspect of the design process will be discussed. Several exercises will attempt to develop the student's creativity, clarity and focus of thought. The semester will end with a full presentation of each team's design work which will incorporate their newly acquired graphics ability. Offered spring.

EGR 206. ENGINEERING MECHANICS - STATICS **3 sh**

This course is designed to introduce students to the effects of forces on bodies in static equilibrium and to familiarize them with mathematical techniques for finding reactive forces in bodies, frames, mechanics and trusses. Concepts covered include forces, moments, couples, equilibrium of rigid bodies, centroids, moments of inertia and friction resistance. Prerequisite: PHY 113. Corequisite: MTH 221. Offered fall.

EGR 208. ENGINEERING MECHANICS - DYNAMICS **3 sh**

Kinematics and kinetics of particles in rectangular, cylindrical and curvilinear coordinate systems; energy and momentum methods for particles; kinetics of systems of particles; kinematics and kinetics of rigid bodies in two and three dimensions; and motion relative to rotating coordinate systems are studied. Prerequisites: EGR 206 and MTH 221. Corequisite: MTH 321. Offered spring.

EGR 211. CIRCUIT ANALYSIS **3 sh**

This course is an introduction to the theory, analysis and design of electric circuits. Studies include circuit parameters and elements: voltage, current, power, energy, resistance, capacitance, inductance. Also included is the application of Kirchhoff's laws to simple and complex circuits, the study of the steady-state and transient response of circuits to pulse, step and periodic inputs and sinusoidal steady-state analysis. Prerequisites: MTH 421 and PHY 114. Corequisite: EGR/PHY 212. Offered spring.

EGR 212. CIRCUIT ANALYSIS LAB **1 sh**

This course involves laboratory application of concepts and principles discussed in EGR 211. Corequisite: EGR/PHY 211. Offered spring.

EGR 310. ENGINEERING THERMODYNAMICS **4 sh**

This course introduces the concept of energy and the laws governing the transfers and transformations of energy. Study emphasizes thermodynamic properties and First and Second Law analysis of systems and control volumes. Integration of these concepts into the analysis of basic power cycles is introduced. Prerequisites: MTH 421 and PHY 114. Offered fall.

EGR 381. INTERNSHIP IN ENGINEERING **1-4 sh**

The internship provides advanced work experiences in some aspect of engineering. It is offered on an individual basis, under the guidance of the engineering program director, when suitable opportunities can be arranged. It will typically be taken in the summer of the sophomore year. This experience will broaden the practical work experience of the student and enhance his/her classroom abilities. Prerequisite: permission of the department.