

# SECONDARY EDUCATION AND TEACHING, BACHELOR OF SCIENCE IN EDUCATION (B.S.Ed.) WITH A CONCENTRATION IN ENGINEERING EDUCATION

The purpose of the B.S.Ed. in Secondary Education and Teaching with a concentration in engineering education is to prepare students to serve as initially licensed teachers in grades 6-12, as well as to serve as educators and leaders in schools and community-based settings. The program will focus on providing students with a solid foundation in secondary education, engineering, mathematics and sciences to meet the requirements for licensure. Through the core education curriculum, students will become knowledgeable about professional roles and workplace responsibilities while learning basic abilities in the planning and implementation of engineering lessons for students in grades 6-12. The core curriculum instills fundamental knowledge and skills, with opportunities for observation and application in a variety of engineering settings. Through the core engineering, science and mathematics curriculum, students will develop the content knowledge and skills of those fields in order to deliver relevant and rigorous lessons in engineering and integration of other content areas with engineering. Graduates will be prepared to work in public and private middle and high schools across Virginia, with particular focus in urban and other high-need areas. Graduates will be capable of working with diverse learners and adapting instructional programs based on the needs of their students and clients. Successful completion of the program will result in licensure in secondary engineering education (6-12).

See Admission to undergraduate programs (<http://bulletin.vcu.edu/undergraduate/education/admission-baccalaureate/>) for admission requirements to this program.

## Student learning outcomes

- Learner and learning:** Students will understand human development and learning theory appropriate to the age group they will teach and acquire an awareness of the diversity of the school-age population in cultural backgrounds and styles of learning.
- Content:** Students will demonstrate knowledge of the subjects they will teach.
- Instructional practice:** Students will demonstrate an ability to plan and implement effective teaching and measure student learning in ways that lead to sustained development and learning.
- Professional responsibility:** Students will develop an understanding of purposes for education and a defensible philosophical approach toward teaching and demonstrate professional dispositions.

## Special requirements

- Students must have received a minimum grade of C in all required education courses (CLED, ECSE, EDUS, SEDP and TEDU).
- Students must have received a minimum grade of C in all prerequisite courses for all required upper-level education courses (CLED, ECSE, EDUS, SEDP and TEDU).
- Required education courses (CLED, ECSE, EDUS, SEDP and TEDU) in which students earn a grade of D or F must be repeated.

- Students must achieve a 2.8 GPA to be admitted to teacher preparation and a 3.0 GPA to be admitted to clinical internship.

## Degree requirements for Secondary Education and Teaching, Bachelor of Science in Education (B.S.Ed.) with a concentration in engineering education

Course	Title	Hours
General education ( <a href="http://bulletin.vcu.edu/undergraduate/undergraduate-study/general-education-curriculum/">http://bulletin.vcu.edu/undergraduate/undergraduate-study/general-education-curriculum/</a> )		
Select 12 credits from general education foundations and 18 credits from areas of inquiry.		30
<b>Major requirements</b>		
• Major core requirements		
EDUS 202	Diversity, Democracy and Ethics	4
EDUS 301	Human Development and Learning	3
EDUS 304	Educational Psychology for Teacher Preparation	2
SEDP 330	Survey of Special Education	3
SEDP/EDUS 401	Assessment in Diverse Settings	3
TEDU/SEDP 410	Building a Community of Learners: Classroom Management	3
TEDU 413	Curriculum Methods and Instructional Models	3
TEDU 452	Teaching English Language Learners	2
TEDU 510	Instructional Technology in PK-12 Environments	2
• Concentration requirements		
Science and math		
CHEM 102 & CHEZ 102	General Chemistry II and General Chemistry Laboratory II	4
MATH 201	Calculus with Analytic Geometry II	4
PHYS 207	University Physics I	5
PHYS 208	University Physics II	5
STAT 441	Applied Statistics for Engineers and Scientists	3
Engineering		
Select from:		3-4
CLSE 101	Introduction to Engineering	
EGRB 102 & EGRB 104	Introduction to Biomedical Engineering and Introduction to Biomedical Engineering Laboratory	
EGRE 101	Introduction to Engineering	
EGMN 103 & EGMN 190 & EGMN 203	Mechanical and Nuclear Engineering Practicum I and Introduction to Mechanical and Nuclear Engineering and Mechanical and Nuclear Engineering Practicum II	
CLSE 115	Introduction to Programming for Chemical and Life Science Engineering	4
EGMN 102	Engineering Statics	3
EGMN 202	Mechanics of Deformables	3

EGMN 215	Engineering Visualization and Computation	3
EGRE 206	Electric Circuits	4
EGRE 245 or CMSC 255	Engineering Programming Introduction to Programming	4
EGRE 246 or CMSC 256	Advanced Engineering Programming Data Structures and Object Oriented Programming	3-4
<b>Secondary education</b>		
TEDU 381	Middle School Practicum for Engineering Education	2
TEDU 382	High School Practicum for Engineering Education	1
TEDU 420	Teaching Middle and High School Engineering	3
TEDU 478	Internship I for Engineering Education	4
TEDU 479	Internship II for Engineering Education	4
TEDU 480	Investigations and Trends in Teaching: Engineering	3
TEDU 562	Reading Instruction in the Content Areas	3
<b>Ancillary requirements</b>		
BIOL 103	Global Environmental Biology (satisfies general education BOK for natural sciences and AOI for scientific and logical reasoning)	4
CHEM 101 & CHEZ 101	General Chemistry I and General Chemistry Laboratory I (both satisfy general education AOI for scientific and logical reasoning)	4
MATH 200	Calculus with Analytic Geometry I (satisfies general education quantitative foundations)	4
<b>Total Hours</b>		<b>123</b>

The minimum number of credit hours required for this degree is 123.

What follows is a sample plan that meets the prescribed requirements within a four-year course of study at VCU. Please contact your adviser before beginning course work toward a degree.

**Freshman year**

		<b>Hours</b>
<b>Fall semester</b>		
CHEM 101 & CHEZ 101	General Chemistry I and General Chemistry Laboratory I (both satisfy general education AOI for scientific and logical reasoning)	4
MATH 200	Calculus with Analytic Geometry I (satisfies general education quantitative foundations)	4
UNIV 111 Play course video for Focused Inquiry I	Focused Inquiry I (satisfies general education UNIV foundations)	3
Select one of the following:		3-4
CLSE 101	Introduction to Engineering	-

EGRB 102 & EGRB 104	Introduction to Biomedical Engineering and Introduction to Biomedical Engineering Laboratory	-
EGRE 101	Introduction to Engineering	-
EGMN 103 & EGMN 190 & EGMN 203	Mechanical and Nuclear Engineering Practicum I and Introduction to Mechanical and Nuclear Engineering and Mechanical and Nuclear Engineering Practicum II	-

Term Hours: 14-15

**Spring semester**

BIOL 103	Global Environmental Biology (satisfies general education BOK for natural sciences and AOI for scientific and logical reasoning)	4
MATH 201	Calculus with Analytic Geometry II	4
PHYS 207	University Physics I	5
UNIV 112 Play course video for Focused Inquiry II	Focused Inquiry II (satisfies general education UNIV foundations)	3

Term Hours: 16

**Sophomore year**

**Fall semester**

CHEM 102 & CHEZ 102	General Chemistry II and General Chemistry Laboratory II	4
EDUS 202	Diversity, Democracy and Ethics	4
EGMN 102	Engineering Statics	3
UNIV 200	Inquiry and the Craft of Argument (satisfies general education UNIV foundations)	3

General education course 3

Term Hours: 17

**Spring semester**

2.8 GPA required for admission to teacher preparation

EDUS 301	Human Development and Learning	3
EGMN 215	Engineering Visualization and Computation	3
EGRE 245 or CMSC 255	Engineering Programming or Introduction to Programming	4
STAT 441	Applied Statistics for Engineers and Scientists	3

General education course 3

Term Hours: 16

**Junior year**

**Fall semester**

CLSE 115	Introduction to Programming for Chemical and Life Science Engineering	4
EGMN 202	Mechanics of Deformables	3
EGRE 246 or CMSC 256	Advanced Engineering Programming or Data Structures and Object Oriented Programming	3-4
TEDU/SEDP 410	Building a Community of Learners: Classroom Management	3

General education course		3-4
Term Hours:		16-18
<b>Spring semester</b>		
3.0 GPA required for admission to clinical internship		
EDUS 304	Educational Psychology for Teacher Preparation	2
EGRE 206	Electric Circuits	4
PHYS 208	University Physics II	5
SEDP 330	Survey of Special Education	3
TEDU 510	Instructional Technology in PK-12 Environments	2
Term Hours:		16
<b>Senior year</b>		
<b>Fall semester</b>		
SEDP/EDUS 401	Assessment in Diverse Settings	3
TEDU 381	Middle School Practicum for Engineering Education	2
TEDU 382	High School Practicum for Engineering Education	1
TEDU 413	Curriculum Methods and Instructional Models	3
TEDU 420	Teaching Middle and High School Engineering	3
TEDU 562	Reading Instruction in the Content Areas	3
Term Hours:		15
<b>Spring semester</b>		
TEDU 452	Teaching English Language Learners	2
TEDU 478	Internship I for Engineering Education	4
TEDU 479	Internship II for Engineering Education	4
TEDU 480	Investigations and Trends in Teaching: Engineering	3
Term Hours:		13
Total Hours:		123-126

The minimum number of credit hours required for this degree is 123.

**TEDU 101. Introduction to Teaching. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Provides undergraduate students with an introduction to teaching and learning in elementary settings. Students will explore current educational reforms and their influences on elementary schools and students. Service-learning activities will enable students to gain firsthand experiences in urban elementary classrooms.

**TEDU 102. Health Education as a Discipline. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. This course is designed to provide students with a basic understanding of health behavior theories, valid sources of information and tools for assessing school health needs. Community health issues and health advocacy are also examined.

**TEDU 103. Lifetime Fitness, Wellness and Nutrition for the Health and Physical Educator. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. This course is designed to provide health and physical educators the foundational knowledge specific to concepts related to the health- and skills-related components of fitness, functional fitness, energy balance and overall well-being. The course will provide an overview of the necessary skills needed to develop smart goals for personal fitness, nutrition and wellness.

**TEDU 200. Motor Learning and Performance. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Students will be introduced to the major concepts of motor control and motor learning and influencing conditions. The course will provide a framework for understanding the structure and function of the nervous system in relation to perception and motor control. Other topics include the general nature of skill acquisition and how learners interact with the environment while performing motor tasks. The theoretical framework underlying learning and memory are related to the acquisition of motor skills.

**TEDU 201. Assessment and Technology in Health and Physical Education. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. This course provides students with the theoretical foundation for assessment in health and physical education. Students will utilize multiple data sources, develop rubrics and analyze available technologies for assessment within each of the domains of K-12 health and physical education. Students will design lessons utilizing technology with the purpose of enhancing the curriculum.

**TEDU 202. Health Education Content. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. This course focuses on health promotion and the prevention of injury and disease. Students will also examine healthy relationships as well as mental and emotional health.

**TEDU 203. Focus on Choice. 1-3 Hours.**

Semester course; variable hours. 1-3 credits. May be repeated for a maximum of 3 credits. A career planning experience for adults focusing on discontinuity in life patterns and a review of current educational and occupational opportunities. Consideration of the world of work, fields of education and volunteer service, and the development of one's own potential will be featured.

**TEDU 204. Outdoor Education. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. This course is designed to examine the principal philosophical foundations of adventure theory and outdoor educational leadership. Concepts of judgment, decision-making, leadership and environmentally correct practices are introduced. Cooperative and team-building practices will be emphasized as a way to promote increased collaboration, communication, critical-thinking and creativity while in the health and physical education environment. Students will learn pedagogical skills needed to teach a number of outdoor education activities, including a variety of teaching styles, the development of lesson plans, assessment in the four domains of physical education and the use of basic class management skills.

**TEDU 205. History and Philosophy of Health and Physical Education. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. This course has been designed to provide an overview of the professional aspects of health and physical education. Specifically, the course provides students with knowledge of the historical role of health and physical education; acquaints them with the different domains that fit under the "physical education" umbrella and within the health professions; informs them of opportunities present at VCU and in the greater community in the health and physical education fields; and provides information about the full spectrum of career choices in physical education and health. Students will also spend one hour a week in a public school setting.

**TEDU 207. Urban Awareness and Urban Education. 3 Hours.**

Semester course; 3 lecture hours (delivered in hybrid format). 3 credits. This course is designed to enhance students' knowledge of urban schools through the examination of historical, economic, political and socio-cultural frameworks that explore how issues of race, class, gender and immigration status have affected the distribution of equal educational opportunities in urban schools in the United States. Diversity in human experiences will be examined within urban cultures and educational settings. Students will engage with research and various literature about inequities in urban schools but also investigate the complexity and challenges of providing excellent education in urban school contexts. The research projects and class book discussions will provide an understanding of communities, their resources, demographics and economy in urban settings that affect education in various ways.

**TEDU 210. Debunking Classroom Myths: How and Why Do We Learn Ideas Incorrectly?. 3 Hours.**

Semester course; 3 lecture hours (delivered in hybrid format). 3 credits. Ever wonder why concepts are taught over and over and are still difficult to explain? This course explores misconceptions commonly learned in K-12 math, science, humanities and social sciences. Students will investigate these ideas through the lens of their own experiences and what is known about how people learn. This course builds understanding of best practices in learning through reading, discussion, reflection and presentation.

**TEDU 300. Adapted Physical Education. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. This course is designed to prepare future teachers and professionals to meet the needs of persons with disabilities in organized health, physical education and activity programs in the school and/or recreational and sport setting. It provides an overview of those disabilities found most frequently in public schools. The course will also help students become critically reflective learners.

**TEDU 301. Biomechanics of Teaching Movement Skills. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Students will participate in learning experiences that will lead to the development of fundamental movement skills, i.e., manipulative, locomotor and nonlocomotor. Utilization of basic biomechanical principles will be infused in all topics.

**TEDU 302. Elementary Methods of Physical Education. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. This course is designed to enhance student knowledge of and preparation for the teaching of elementary physical education through lecture, practical experience, small-group work and projects. Students will learn how to plan and conduct an elementary program, control the learning environment, effectively discipline children and analyze children's behavior. Students will also learn the characteristics of a good teacher as well as methods to change personal teaching behaviors to increase classroom effectiveness. Students will design and conduct activities which integrate literacy with physical education. To become a more reflective teacher, students will write self-evaluations throughout the semester.

**TEDU 303. Teaching Team and Individual Sports for Lifetime Fitness. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Students will develop educational skills and methodology for instruction of team and individual lifetime sports and activities in the gymnasium and outdoor settings. They will learn the pedagogical skills needed to teach these activities, including the use of a variety of teaching styles, the development of lesson plans, the assessment of student knowledge and skill acquisition, and the use of basic class management skills. These pedagogical skills will be applied within the realm of specific sports such as flag football, soccer, tchoukball, team handball, badminton, pickleball and golf.

**TEDU 304. Secondary Methods of Physical Education. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. This course is designed to prepare students for student teaching. Students will learn pedagogical skills including the use of a variety of teaching styles, the development of lesson plans and unit plans, the assessment of student knowledge and skill acquisition, and the use of classroom management skills. In addition, students will gain insight into the development of a physical education curriculum as influenced by philosophies, models, issues and trends. Elementary, middle and high school levels are included in discussions. Students will also learn how to integrate literacy into the physical education curriculum. A major emphasis will be to prepare students as critical reflective practitioners by learning how to evaluate the teaching/learning situation and make appropriate changes. In that regard, students will learn how to design and analyze instruments that help them in this evaluation.

**TEDU 310. Elementary School Practicum A. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Corequisites: TEDU 410, TEDU 414 and TEDU 426. Restricted to students admitted to the Extended Teacher Preparation Program. A field placement that precedes student teaching/internship. Includes planned observations, tutorials and small-group involvement. Graded pass/fail.

**TEDU 311. Middle School Practicum. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Corequisite: TEDU 537. Restricted to students admitted to the Extended Teacher Preparation Program. A field placement that precedes student teaching/internship. Includes planned observations, tutorials and small-group involvement. Graded pass/fail.

**TEDU 312. High School Practicum. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Pre- or corequisite: TEDU 311; corequisite: TEDU 540, 545, 547 or 548. Restricted to students admitted to the M.T. program with concentrations in secondary education. A field placement that precedes student teaching/internship. Includes planned observations, tutorials and small-group involvement. Course graded as pass/fail.

**TEDU 313. Elementary School Practicum B. 2 Hours.**

Semester course; 2 practicum hours. 2 credits. Prerequisite: TEDU 310. Corequisites: TEDU 517, TEDU 522 and TEDU 591. Enrollment is restricted to students admitted to the M.T. program with a concentration in early and elementary education. A field placement that precedes student teaching/internship. Includes planned observations, tutorials and small-group and whole class involvement. Graded as pass/fail.

**TEDU 314. Practicum for Health and Physical Education. 2 Hours.**

Semester course; 2 practicum hours. 2 credits. Prerequisite: TEDU 302. Corequisites: TEDU 304 and TEDU 403. Enrollment is restricted to students admitted to teacher preparation in the B.S.Ed. in Health and Physical Education program. A field placement in health and physical education that precedes student teaching/internship. This field placement includes planned observations, tutorials and small-group and whole class involvement. Graded as pass/fail.

**TEDU 381. Middle School Practicum for Engineering Education. 2 Hours.**

Semester course; 2 practicum hours. 2 credits. Corequisites: TEDU 382, TEDU 413 and TEDU 420. Enrollment is restricted to students in the B.S.Ed. in Secondary Education and Teaching with a concentration in engineering education program. A field placement that precedes student teaching/internship. Includes planned observations, tutorials and small-group involvement. Graded as pass/fail.

**TEDU 382. High School Practicum for Engineering Education. 1 Hour.**

Semester course; 1 practicum hour. 1 credit. Corequisites: TEDU 381, TEDU 413 and TEDU 420. Enrollment is restricted to students in the B.S.Ed. in Secondary Education and Teaching with a concentration in engineering education program. A field placement that precedes student teaching/internship. Includes planned observations, tutorials and small-group involvement. Graded as pass/fail.

**TEDU 385. Teaching Writing Through Children's Literature. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. This course will focus on the art of teaching writing through the use of quality children's literature. The course is designed to give students an appreciation of the value of children's literature, examine current trends and explore the use of literature across the genres as tools for developing readers and writers. In addition, students will learn to construct a successful community of writers in PK and elementary classrooms. Students will critically examine theory, techniques and strategies in the context of how children learn to think and write. A focus on pedagogical and rhetorical theory will include an examination of personal writing processes.

**TEDU 386. Children's Literature I. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Designed to give students an appreciation of children's literature; includes biography, fable, myth, traditional and modern fanciful tales and poetry, as well as a survey of the history of children's literature. Crosslisted as: ENGL 386.

**TEDU 387. Literature for Adolescents. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGL 201, 202, 203, 204, 205, 206, 211, 215, 236, 291 or 295. Designed to acquaint the prospective middle and secondary school English teacher with the nature, scope and uses of adolescent literature. The student is acquainted with reading materials for meeting the varied needs and interests of adolescents.

**TEDU 389. The Teaching of Writing Skills. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Studies the theory and methods for teaching writing to students in middle and secondary schools. Teaches strategies for prewriting, composing, peer revision, evaluation and topic construction. Includes extensive journal and essay writing. Crosslisted as: ENGL 389.

**TEDU 390. Movement Education. 3 Hours.**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: TEDU 101. This service-learning course will examine the physiological changes that occur in the brain as a result of moderate physical activity and the relationship to increased cognition. Students will also examine how to develop movement-based lessons to complement existing curricula across all content areas. Students enrolled in this course will receive a movement education certification upon completion of the course requirements.

**TEDU 400. Independent Study. 1-6 Hours.**

Semester course; 1-6 hours. 1-6 credits. Opportunities are provided for supervised research and independent study in selected areas. Designed for advanced students. All work offered on an individual basis with the approval of instructor and departmental chair.

**TEDU 402. Becoming a Health and Physical Education Professional. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. This course is designed to prepare the teacher candidate to bridge from student to student teacher. Activities focus on professional experiences and behaviors.

**TEDU 403. Teaching Health Education. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. This course has been designed to prepare students to think critically and become independent problem-solvers and decision-makers by applying previously acquired professional knowledge to curriculum design and instruction in multiple settings. Students will learn pedagogical skills including the use of a variety of teaching styles, the development of lesson plans and unit plans, the assessment of student knowledge and skill acquisition, and the use of classroom management skills. Students will also gain insight into the development of a health education curriculum as influenced by philosophies, models, issues and trends. Elementary, middle and high school levels are included in discussion.

**TEDU 405. Seminar for Student Teaching. 1 Hour.**

Semester course; 1 lecture hour. 1 credit. Corequisites: TEDU 493 and TEDU 495. This seminar is "attached" to the student teaching internship in the schools and is intended as a companion piece to that semester experience. Issues, including those which have been identified by members of the seminar, as well as issues that arise in the classroom and those that are of perennial concern to teachers of health and physical education are the basis for this class. The teacher as the critically reflective educator is the focus of this seminar: what choices the teacher has in the classroom and what effect those choices have upon student learning.

**TEDU 410. Building a Community of Learners: Classroom Management. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Prerequisite: EDUS 301, PSYC 301 or PSYC 304 with a minimum grade of C. The course is designed to encompass pre-K through grade 12 classroom management theory and application, motivation theory and application, diversity, socio-emotional development, trauma-informed care, and restorative justice for regular education and special education students. Crosslisted as: SEDP 410.

**TEDU 411. Integrating the Arts in Curriculum for Young Children. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Provides pre-service teachers with an understanding of how experiences in visual art, music, drama and movement can be used to support the growth and development of children ages 3 to 8. Students will learn of the importance of all of the arts for children's cognitive, socio-emotional and psychomotor development. Emphasis will be given to integrating developmentally appropriate experiences in the arts into early childhood curriculum.

**TEDU 413. Curriculum Methods and Instructional Models. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Prerequisites: EDUS 202; and EDUS 301, PSYC 301 or PSYC 304, both with a minimum grade of C. A study of developmentally appropriate curriculum and instructional models for PK-12 children. The course includes the study of curriculum, a variety of instructional models, Virginia Standards of Learning, Virginia's Foundation Blocks for Early Learning, diversity, assessment, planning and creating positive learning environments.

**TEDU 414. Curriculum and Methods for Early/Elementary Children. 4 Hours.**

Semester course; 4 lecture hours. 4 credits. Prerequisite: admission to teacher preparation program. Corequisites: TEDU 310 (Practicum A) and 426. A study of developmentally appropriate curriculum and methods for early/elementary children, including diversity, assessment, behavior guidance and management, planning instruction and creating positive learning environments. Includes an overview of the history of early/elementary education and issues currently facing the profession.

**TEDU 416. Math/Science Methods for Early Childhood Education. 4 Hours.**

Semester course; 3.5 hour lecture and .5 hours field experience hours. 4 credits. A combined math and science early and elementary methods course that focuses on the teaching of mathematics and science in a PK through 3rd grade class. The course is a lecture/ hands-on course connected with a practicum experience in a local PK-3rd grade classroom. This course is designed to teach pre-service teachers how to plan, implement and assess strong student-centered mathematics and science lessons in today's diverse classrooms. Activities and assignments will focus on research-based practices, effectively using a variety of instructional strategies and hands-on experiences to help students develop their understanding of abstract math and science concepts. The class will help to position the pre-service teacher as a reflective decision-maker.

**TEDU 417. Early/Elementary Science Methods. 3 Hours.**

Semester course; 2.5 lecture and .5 field experience hours. 3 credits. Prerequisite: TEDU 413. Corequisites: TEDU 422 and TEDU 496. An undergraduate course designed to renew and/or expand teachers' knowledge and skills in the teaching of science in the elementary classroom and the community. New materials will be examined in the light of current trends, research findings and professional recommendations.

**TEDU 420. Teaching Middle and High School Engineering. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Prerequisite: EDUS 301. Enrollment is restricted to students admitted to teacher preparation or by permission of instructor. Examines the teaching strategies, materials and objectives of engineering education in middle and high schools. Emphasizes the engineering processes, engineering design cycle, integration of science and mathematics into engineering and use of design challenges to engage students in real-world applications of engineering.

**TEDU 422. Early/Elementary Math Methods. 3 Hours.**

Semester course; 2.5 lecture and .5 field experience hours. 3 credits. Prerequisites: MATH 303, MATH 361 and MATH 362; and STAT 206, STAT 208 or STAT 210. Corequisites: TEDU 417 and TEDU 496. An early and elementary mathematics methods course that focuses on the teaching of mathematics in the PK through 6th grade classroom. The course is a lecture/ hands on course with 40 hours of in class contact time and a 20 contact hour practicum experience in a local K-5 classroom. This course is designed to teach preservice teachers how to plan, implement and assess strong student-based mathematics lessons in today's diverse classrooms. Activities and assignments will focus on research-based practices, effectively using a variety of instructional strategies and using math manipulatives to help students discuss their thinking. The class will help to position the preservice teacher as a reflective decision-maker.

**TEDU 425. Emergent and Early Literacy. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. This course provides an introduction to the theories, concepts, pedagogical approaches, methods and materials used to promote early literacy acquisition and development. Within the framework of the stages of literacy development, students will develop competency in the components of emergent literacy, including language development, phonological and phonemic awareness, phonics, fluency, comprehension, vocabulary and writing. Application of course content in preschool and early elementary classrooms will encourage critical reflection on pedagogical approaches as students meet the diverse language and learning needs of young children ages birth to 8.

**TEDU 426. Teaching Reading and Other Language Arts. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Presents teaching strategies and materials in reading and the other language arts based on current theory and research. Emphasizes the interrelatedness of listening, speaking, reading and writing and the importance of naturalistic language experiences.

**TEDU 452. Teaching English Language Learners. 2 Hours.**

Semester course; 2 lecture hours. 2 credits. Prerequisite: TEDU 413. This course is designed to help teachers who plan to teach English and other content areas to PK-12 students who are speakers of other languages. The course includes attention to social and cultural contexts, the diversity of emergent bilingual students in the United States, legal and policy contexts, models of ESL programs and advocacy for students. Students will also develop skills in lesson preparation and delivery for emergent bilingual students within ESL classrooms as well as in other content area classrooms.

**TEDU 462. Internship I. 4 Hours.**

Semester course; 4 lecture hours. 4 credits. Prerequisites: TEDU 312, TEDU 410, TEDU 414 and TEDU 420. Corequisites: TEDU 464 and TEDU 481. This internship serves as the teacher candidate's culminating clinical experience. It provides students with an opportunity to demonstrate what they have learned during their professional academic preparation. It also serves as an opportunity for public school and VCU personnel to evaluate and strengthen teacher candidates' application of theory to practice in a secondary classroom.

**TEDU 464. Internship II. 4 Hours.**

Semester course; 4 lecture hours. 4 credits. Prerequisites: TEDU 312, TEDU 410, TEDU 413 and TEDU 420. Corequisites: TEDU 462 and TEDU 480. Enrollment is restricted to students who have received passing scores on VCLA and Praxis II. This internship serves as the teacher candidate's culminating clinical experience. Teacher candidates complete a full-time placement that provides them with an opportunity to demonstrate what they have learned during their professional academic preparation. It also serves as an opportunity for public school and VCU personnel to evaluate and strengthen teacher candidates' application of theory to practice in a secondary classroom.

**TEDU 466. Literacy Assessment and Intervention in the Early/Elementary Classroom. 4 Hours.**

Semester course; 3.5 lecture and .5 field experience hours. 4 credits. Prerequisites: TEDU 425 or TEDU 426. Students will examine reading problems by focusing on reading diagnosis and intervention related to classroom settings. This course involves evaluating and tutoring individual students with reading difficulties. Emphasis is placed on making decisions based upon students' individual needs and critical reflection to improve instruction. Throughout the semester, students will develop skills as an educator who is a critically reflective practitioner using the VCU School of Education conceptual framework as a guide. Completion of a supervised practicum is a requirement of the course.

**TEDU 471. Internship I (PK-K). 4 Hours.**

Semester course; 4 field experience hours. 4 credits. Prerequisites: TEDU 416, TEDU 466 and TEDU 490. Corequisites: TEDU 475 and TEDU 481. Enrollment is restricted to students who have completed the student teaching approval process (including passing scores on VCLA and Praxis II). This internship serves as the teacher candidate's culminating clinical experience. It provides students with an opportunity to demonstrate what they have learned during their professional academic preparation. It also serves as an opportunity for public school and VCU personnel to evaluate and strengthen teacher candidates' application of theory to practice in an early childhood classroom setting. Teacher candidates complete a full-time seven-to-eight-week placement in a PK/K classroom and assume full responsibility for planning and implementing instruction under the tutelage of a cooperating teacher for a minimum of two weeks.

**TEDU 472. Elementary Internship I (PK-2). 4 Hours.**

Semester course; 4 field experience hours. 4 credits. Prerequisites: TEDU 417, TEDU 422, TEDU 466 and TEDU 496. Corequisites: TEDU 474 and TEDU 481. Enrollment is restricted to students with passing scores on VCLA and Praxis II. This internship serves as the teacher candidate's culminating clinical experience. It provides students with an opportunity to demonstrate what they have learned during their professional academic preparation. It also serves as an opportunity for public school and VCU personnel to evaluate and strengthen teacher candidates' application of theory to practice in an elementary classroom. Teacher candidates complete a full-time seven-to-eight-week placement in a pre-K/Kindergarten to 2nd grade classroom.

**TEDU 474. Elementary Internship II (Grades 3-5). 4 Hours.**

Semester course; 4 field experience hours. 4 credits. Prerequisites: TEDU 417, TEDU 422, TEDU 466 and TEDU 496. Corequisites: TEDU 472 and TEDU 481. This internship serves as the teacher candidate's culminating clinical experience. It provides students with an opportunity to demonstrate what they have learned during their professional academic preparation. In addition it serves as an opportunity for public school and VCU personnel to evaluate and strengthen teacher candidates' application of theory to practice in an elementary classroom. Teacher candidates complete a full-time seven-to-eight-week placement in a 3rd through 5th grade classroom. For this internship there is sometimes an option to be placed in a sixth grade classroom as well.

**TEDU 475. Internship II (Grades 1-3). 4 Hours.**

Semester course; 4 field experience hours. 4 credits. Prerequisites: TEDU 416, TEDU 466 and TEDU 490. Corequisites: TEDU 471 and TEDU 481. Enrollment is restricted to students who have completed the student teaching approval process (including passing scores on VCLA and Praxis II). This internship serves as the teacher candidate's culminating clinical experience. It provides students with an opportunity to demonstrate what they have learned during their professional academic preparation. It also serves as an opportunity for public school and VCU personnel to evaluate and strengthen teacher candidates' application of theory to practice in an early childhood classroom setting. Teacher candidates complete a full-time seven-to-eight-week placement in a grade 1-3 classroom and assume full responsibility for planning and implementing instruction under the tutelage of a cooperating teacher for a minimum of two weeks.

**TEDU 478. Internship I for Engineering Education. 4 Hours.**

Semester course; 4 field experience hours. 4 credits. Prerequisites: TEDU 382, TEDU 410, TEDU 413 and TEDU 420. Corequisites: TEDU 479 and TEDU 480. Enrollment is restricted to students who have received passing scores on the VCLA and Praxis II. This internship serves as the teacher candidate's culminating clinical experience. It provides students with an opportunity to demonstrate what they have learned during their professional academic preparation. It also serves as an opportunity for public school and VCU personnel to evaluate and strengthen teacher candidates' application of theory to practice in a secondary classroom.

**TEDU 479. Internship II for Engineering Education. 4 Hours.**

Semester course; 4 field experience hours. 4 credits. Prerequisites: TEDU 382, TEDU 410, TEDU 413 and TEDU 420. Corequisites: TEDU 478 and TEDU 480. Enrollment is restricted to students who have received passing scores on the VCLA and Praxis II. This internship serves as the teacher candidate's culminating clinical experience. Teacher candidates complete a full-time placement that provides an opportunity to demonstrate what they have learned during their professional academic preparation. It also serves as an opportunity for public school and VCU personnel to evaluate and strengthen teacher candidates' application of theory to practice in a secondary classroom.

**TEDU 480. Investigations and Trends in Teaching: Engineering. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Corequisites: TEDU 462 and TEDU 464. This course is a companion to the student internship in secondary education. Its major purposes are to cultivate the knowledge, dispositions and skills of a critically reflective practitioner into actual teaching practice. To do so, this class provides opportunities for interns to describe, analyze and evaluate the curricular, instructional and management decisions they make during their internship. The course also focuses on professionalism and ethical standards, as well as personal integrity in the teaching profession.

**TEDU 481. Teaching as a Profession. 3 Hours.**

Semester course; 3 lecture hours. 3 credits. Corequisites: TEDU 472 and TEDU 474; or TEDU 471 and TEDU 475. This course is a companion piece to the student internship in elementary education. Its major purposes are to cultivate the knowledge, dispositions and skills of a critically reflective practitioner into actual teaching practice. To do so, this class provides opportunities for interns to describe, analyze and evaluate the curricular, instructional and management decisions they make during their internship. The course also focuses on professionalism and ethical standards, as well as personal integrity in the teaching profession.

**TEDU 485. Directed Student Teaching I. 6 Hours.**

6 credits. Prerequisites: admission to TEDU 310 or equivalent with a minimum grade of C, recommendation of practicum supervisor and passing score on the VCLA test. A classroom teaching experience in a public school or other approved setting, which includes opportunities for increasing involvement with children. Culminates in full responsibility for planning, implementing and evaluating classroom activities.

**TEDU 486. Directed Student Teaching II. 6 Hours.**

6 credits. Prerequisites: admission to TEDU 310 or equivalent with a grade of C or better and recommendation of practicum supervisor. A classroom teaching experience in a public school or other approved setting, which includes opportunities for increasing involvement with children. Culminates in full responsibility for planning, implementing and evaluating classroom activities.

**TEDU 490. Social Studies Methods for Early Learners. 2 Hours.**

Semester course; 1.75 lecture and .25 field experience hours. 2 credits. This course's design is centered on helping the pre-service PK-3 early childhood/elementary teacher examine the purpose of social studies education, the connections between social studies and other curricular areas, and the persisting issues in social studies education, and to do it in an equitable way for all learners. The course will introduce students to an integrative reflective planning process and a variety of instructional strategies and materials. Its ultimate goal is to prepare students to understand the role of the teacher as a reflective decision-maker.

**TEDU 493. Field Experience I. 4 Hours.**

Semester course; 4 field experience hours. 4 credits. Enrollment is restricted to students who have been admitted to teacher education and have passing scores on VCLA, Praxis I and Praxis II. An in-depth field experience in a public school, health education/health promotion agency or other approved setting. Students will complete a full-time seven-to-eight-week placement teaching in the PK-5 health and physical education setting. This practical experience will lead to greater practical application of skills culminating in full responsibility for planning, implementing and evaluating the classroom. Consult with adviser to obtain a course syllabus regarding prerequisites and specific course requirements. Fulfills capstone requirement.

**TEDU 494. Topical Seminar in Education. 1-3 Hours.**

Semester course; variable hours. 1-3 credits. May be repeated for a maximum of 6 credits. A seminar intended for group study by personnel interested in examining topics, issues or problems related to the teaching, learning and development of students.

**TEDU 495. Field Experience II. 4 Hours.**

Semester course; 4 field experience hours. 4 credits. Enrollment is restricted to students who have been admitted to teacher education and have passing scores on VCLA, Praxis I and Praxis II. Addresses competencies in health and physical education. Provides experiences at an approved affiliate site under the supervision of faculty and approved site supervisors. Students will gain practical experience by completing a full-time seven-to-eight-week placement teaching in grades 6-12 in a health and physical education setting.

**TEDU 496. Early/Elementary Social Studies Methods. 3 Hours.**

Semester course; 2.5 lecture and .5 field experience hours. 3 credits. Prerequisite: TEDU 413. Corequisites: TEDU 417 and TEDU 422. This course's design is centered on helping the Pk-6 teacher examine the purpose of social studies education, the connections between the discipline of social studies and other curricular areas, and the persisting issues in social studies education in an equitable way for all learners. The course will introduce students to an integrative reflective planning process and a variety of instructional strategies and materials. Its ultimate goal is to prepare students to understand the role of the teacher as a reflective decision-maker.