Mission Statement

The mission of the Teacher Education Unit is to inspire, educate and prepare facilitators of active learning for diverse and inclusive communities of learners in environments that are technologically advanced.

Programs of the Department and Declaring Secondary Education

The Department of Secondary and Middle School Education (https://www.towson.edu/coe/departments/secondary) offers the following programs of study: the major in Middle School Education (grades 4–9) and certification programs in secondary education (grades 7–12) subject areas of English, history and social science.

Programs for teaching pre-kindergarten through grade 12 in Art, Dance, Health, Music, Physical Education, Spanish and French are offered by those academic departments.

All Teacher Education programs are approved by the Maryland State Department of Education. Upon graduation in one of these programs, students are eligible for certification to teach in Maryland.

The programs of education for middle and high school teachers are designed to bring about close integration between theory and practice. Students are required to apply directly to the Department of Secondary and Middle School Education. A Secondary Education adviser is required in addition to an adviser in the major for the following majors:

- English Education
- History Education
- World Language Education
- Social Science Education.

For the Middle School Education Program, students are required to meet every term with the adviser assigned after admission.

For information, go to Hawkins Hall 404.

Declaring the Middle School Education Major

Students interested in becoming Middle School Education majors must first gain admission to Towson University. Admission to TU does not guarantee admission to the Middle School Education program. Students declare majors online (https://www.towson.edu/registrar registrazione/major.html).

All students enrolled in a Teacher Education program are required to undergo a criminal background check before participating in any internship placement.

Pre-Kindergarten through 12th Grade Teacher Education Programs

Students may obtain certification to teach the following subjects at both the elementary, middle school and secondary levels: art, dance, music, physical education, Spanish and French.

Teacher Education programs exist in the following areas:

- Art Education
- Dance Education
- Music Education
- Physical Education
- World Languages

For required courses and special program information, consult the section of this catalog dealing with the specific department and the requirements for those majors.

Master of Arts in Teaching—Secondary

Director: Dr. Pamela Wruble
Psychology Building 102
Phone: 410-704-4935
Email: pwruble@towson.edu

The Master of Arts in Teaching program is designed to prepare highly qualified post-baccalaureate students for teaching certifications in grades 7 through 12. Consult the Graduate Catalog for more information.

Admission Requirements for Teacher Education

The Teacher Education Executive Board, representing all initial teacher education programs at Towson University, utilizes the following minimum requirements as conditions for admission into teacher education programs, maintaining candidate status and formal entry into the capstone internship. Programs may include additional requirements for admission into the program and/or the capstone internship.

Admission Requirements for Teacher Education

The College of Education admits students either as freshmen or as undergraduate transfer students from accredited, post-secondary institutions. During the freshman and sophomore years, students are generally engaged in pre-professional courses or courses that fulfill Core Curriculum requirements, as well as all identified prerequisites (e.g., specific and sequential courses in Core Curriculum) for admission to COE screened majors and programs.

All College of Education undergraduate programs are screened majors. As an integral part of the teaching/learning experience, students work with advisers in a strategic planning process across all years at TU. Accordingly, to support student success, all COE students are required to confer prior to registration each term with their assigned advisers.

1. PROCEDURES AND REQUIREMENTS FOR ADMISSION TO ALL TEACHER EDUCATION PROGRAMS

   1. Complete a notarized self-disclosure criminal background form to be filed in the major department, with a written application. For Secondary Education content programs, the criminal background forms will be filed in the Secondary and Middle School Education Department.
2. Submit a written application for formal admission to the program. Students seeking admission to teacher education programs must contact their department chairperson or program coordinator by 45 credit hours for program-specific procedures and requirements for admission to professional education programs.

3. Document a minimum GPA of at least 3.0 during the most recent two years of the candidate’s general education. A grade of PS (Pass) is not accepted for courses required in the major/minor per the undergraduate catalog. AP credits can be applied towards requirements in the major/minor, but not towards the GPA.

4. Provide documentation of meeting the MSDE Basic Skills Assessment Requirement (http://marylandpublicschools.org/about/Pages/DEE/Certification/testing_info/praxis1.aspx).

II. ADDITIONAL PROGRAM REQUIREMENTS

Students should apply for formal admission into the Middle School or Secondary Education Program when they have completed at least 45 college units.

Once a completed application is received, students in Secondary Education and Middle School Education are permitted to enroll in Principles of Secondary Education or Principles of Middle School Education, and Using Reading and Writing in the Secondary or Middle School. Prior to program admission, students are permitted to take only Introduction to Special Education, Historical and Contemporary Perspectives on America’s Urban Schools; Teaching and Learning in a Diverse Society; Education, Ethics and Change; Adolescent Learning, Development and Diversity; and Integrating Instructional Technology from the education program.

Notes for prospective Secondary Education Students:

1. Students interested in obtaining Maryland State Teaching Certification (Grades 7-12) in one of the following subject areas: English, French, History, Social Science, and Spanish should contact the Department of Secondary Education Chair, Dr. Heather Haverback (hhaverback@towson.edu)

2. Students interested in Mathematics or Science and leading to Maryland State Teacher Certification in Secondary Education (Grades 7-12) can select from one of the following subject areas: Biology, Chemistry, Earth-Space Science, Mathematics of Physics. The students should contact the TU U-Teach Program director, Dr. Linda Cooper (lcooper@towson.edu), or the Master Teacher, Christine Roland (croland@towson.edu).

Major in Secondary Education

- Major in Middle School Teacher Education (http://catalog.towson.edu/undergraduate/education/secondary-education/middle-school-education)
- Secondary Teacher Education Requirements (http://catalog.towson.edu/undergraduate/education/secondary-education/secondary-education-program)

Secondary Education Courses

SCED 200 FOUNDATIONS OF EDUCATION (3)
Sociological, philosophical, psychological, and historical foundations of Western education. Perspectives in these areas as they relate to current educational issues and practices.

SCED 270 SPECIAL TOPICS IN SECONDARY ED (1-3)
In-depth study of a selected topic in Secondary Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 301 FIELD EXPERIENCES IN SECONDARY EDUCATION (3)
Experiences in observing and studying school activities directly related to classroom instruction and pupil learning; observing and analyzing teacher roles, student roles and instructional environment. Emphasis is placed on direct experience in a variety of school settings. Prerequisite: PSYC 201.

SCED 304 EDUCATION, ETHICS AND CHANGE (3)
Examines the nature of ethics, social justice and related critical issues with implications for teacher education majors and those interested in education, human services, ethics and change. Prerequisites: ENGL 102, Towson Seminar, Metropolitan Perspective Core course, and EDUC 203. Core: Ethical Issues & Perspectives.

SCED 305 ADOLESCENT LEARNING, DEVELOPMENT, AND DIVERSITY (3)
Classic and contemporary theories of learning with explicit connections to the ways learning theories affect students and teachers. Current research into brain development and function will be investigated, with an emphasis on classroom applications. The course will also address the complexity introduced by the extraordinary diversity of today’s adolescent population. Prerequisite: PSYC 101.

SCED 319 SURVEY OF EDUCATIONAL PROGRAMS (3)
Combines theoretical aspects of ELED 311, The Child in the Elementary School Curriculum, and SCED 341, Principles of Secondary Education. A field experience to schools is required. Open only to those students in art, dance, music, physical education, health, or media specialists, whose majors lead directly to certification in elementary and secondary education. Prerequisites: PSYC 201 (may be taken concurrently), and permission of SCED department chairperson.

SCED 341 PRINCIPLES OF SECONDARY EDUCATION (4)
Philosophy and purposes of secondary education; nature of secondary education programs; principles of teaching and learning; basic techniques in instruction. A field experience to schools is required and will necessitate travel time before and after class. Individualized grade level experiences for specific content areas will be provided. To be taken the term prior to the methods course. Prerequisites: junior standing, SCED 305, and permission of the SCED chairperson.

SCED 353 TEACHING MODERN FOREIGN LANGUAGE (3)
Aims and purposes of foreign language instruction; current curricular trends, including the importance of modern language teaching practices. Open only to seniors who plan to teach foreign language, with consent of instructor. Prerequisites: 2.50 GPA in major field, SCED 341, SCED 460 and permission of SCED chair.

SCED 355 TEACHING SOCIAL STUDIES IN THE SECONDARY SCHOOL (3)
Objectives, curriculum, materials, and instructional procedures in the teaching of social studies. Open only to seniors immediately prior to internship and to others with equivalent backgrounds and objectives. Prerequisites: 2.50 GPA in major; SCED 341, SCED 460 and permission of SCED chairperson.

SCED 357 TEACHING ENGLISH IN THE SECONDARY SCHOOL (3)
Language arts as taught in secondary schools. Open only to seniors immediately prior to internship and to others with equivalent backgrounds and objectives with consent of instructor. Prerequisites: 2.50 GPA in major field, SCED 341, SCED 460 and permission of SCED chair.
SCED 383 INTERNSHIP IN SECONDARY EDUCATION- ENGLISH (12)
Practical experience in observation, participation and internship in public school classrooms under the guidance of master teachers, and a University supervisor. Prerequisites: PSYC 201, SCED 341, SCED 460, ISTC 301, SPED 301 and SCED 499, SCED 357 and EDUC 401, satisfactory completion of Praxis I tests and Speech and Hearing screening, completion of GPA requirements, and permission of student’s major department and CPP Office. All SCED students and baccalaureate students will teach at both middle and high school levels in the same semester. Graded S/U.

SCED 384 INTERNSHIP IN FRENCH EDUCATION (12)
Practical experience in observation, participation and student teaching in public school classrooms under the guidance of mentor teachers, and a University supervisor. Students will teach in a variety of grade levels in the same semester. Prerequisites: PSYC 201, SCED 341, SCED 460, ISTC 301, SPED 301, SCED 499, SCED 357 and EDUC 401, satisfactory completion of Praxis I tests and Speech and Hearing screening, completion of GPA requirements, and permission of student’s major department and CPP Office. All SCED students and baccalaureate students will teach at both middle and high school levels in the same semester. Graded S/U.

SCED 385 INTERNSHIP IN SECONDARY EDUCATION- GEOGRAPHY (12)
Practical experience in observation, participation and student teaching in public school classrooms under the guidance of master teachers, and a University supervisor. Prerequisites: PSYC 201, SCED 341, SCED 460, ISTC 301, SPED 301, SCED 499, SCED 355 and EDUC 401, satisfactory completion of Praxis I tests and Speech and Hearing screening, completion of GPA requirements, and permission of student’s major department and CPP Office. All SCED students and baccalaureate students will teach at both middle and high school levels in the same semester. Graded S/U.

SCED 386 INTERNSHIP IN SECONDARY EDUCATION- GERMAN (12)
Practical experience in observation, participation and student teaching in public school classrooms under the guidance of master teachers, and a University supervisor. Graded S/U. Prerequisites: PSYC 201, SCED 341, SCED 460, ISTC 301, SPED 301, SCED 499, SCED 357 and EDUC 401, satisfactory completion of Praxis I tests and Speech and Hearing screening, completion of GPA requirements, and permission of student’s major department and CPP Office. All SCED students and baccalaureate students will teach at both middle and high school levels in the same semester. Graded S/U.

SCED 389 INTERNSHIP IN SECONDARY EDUCATION- HISTORY (12)
Practical experience in observation, participation and student teaching in public school classrooms under the guidance of master teachers, and a University supervisor. Prerequisites: PSYC 201, SCED 341, SCED 460, ISTC 301, SPED 301, SCED 499, SCED 357 and EDUC 401, satisfactory completion of Praxis I tests and Speech and Hearing screening, completion of GPA requirements, and permission of student’s major department and CPP Office. All SCED students and baccalaureate students will teach at both middle and high school levels in the same semester. Graded S/U.

SCED 394 INTERNSHIP IN SPANISH EDUCATION (12)
Practical experience in observation, participation and student teaching in public school classrooms under the guidance of mentor teachers, and a University supervisor. Students will teach in a variety of grade levels in the same semester. Graded S/U. Prerequisites: PSYC 201, SCED 341, SCED 460, ISTC 301, SPED 301, SCED 499, SCED 357 and EDUC 401, satisfactory completion of Praxis I tests and Speech and Hearing screening, completion of GPA requirements, and permission of student’s major department and CPP Office.

SCED 396 INTERNSHIP IN SECONDARY EDUCATION- SOCIAL SCIENCE (12)
Practical experience in observation, participation and student teaching in public school classrooms under the guidance of master teachers, and a University supervisor. Prerequisites: PSYC 201, SCED 341, SCED 460, ISTC 301, SPED 301, SCED 499, SCED 355 and EDUC 401, satisfactory completion of Praxis I tests and Speech and Hearing screening, completion of GPA requirements, and permission of student’s major department and CPP Office. All SCED students and baccalaureate students will teach at both middle and high school levels in the same semester. Graded S/U.

SCED 399 DIFFERENTIATED INTERNSHIP - SECONDARY (1-8)
Student teaching experiences in addition to those in ECED 398 or student teaching in special subject areas, according to needs and interests of the student. Prerequisites: Consent of both SCED Chairperson and the Center for Professional Practice. Graded S/U.

SCED 401 ANALYZING THE INTERNSHIP EXPERIENCE (3)
Analysis of and development of solutions for problems in pupil behavior, curriculum, evaluation and instructional procedures. Teaching philosophies and strategies based upon identified needs determined as a result of the internship experience will be explored in depth. Taken concurrent with internship. Prerequisite: SCED 499.

SCED 419 YOUNG ADULT LITERATURE (3)
Examination of literature as an expression of basic needs and ideas of youth through wide independent reading; studying criteria and aids for selection of books and other media; evaluating in terms of forces affecting society and the adolescent.

SCED 457 METH TCHG ESOL (3)
Methods of teaching English as a second language. Attention is given to the use of visuals, contrastive analysis, drill techniques, and other methods and resources.

SCED 458 WRIT LNRG TOOL (3)
Strategies for using written language to develop reading in all disciplines; examination of the writing process – diagnosis, pre-writing, drafting, revision, evaluation and publication.

SCED 460 USING READING AND WRITING IN THE SECONDARY SCHOOLS (4)
Developmental reading and writing assessment; vocabulary building; comprehension; special needs adaptations; clinical practice. Individualized grade level experiences for specific content areas will be provided. Prerequisite: SCED 341 (may be taken concurrently).

SCED 461 TEACHING READING IN THE SECONDARY CONTENT AREAS (3)
Application and assessment of reading strategies and instructional frameworks in secondary content classrooms. Individualized grade level experiences for specific content areas will be provided. Prerequisites: SCED 460 and currently teaching or student teaching.

SCED 463 DEV RDG ADOLESC (3)
Methods of designing and teaching developmental reading programs for the middle or junior high school student. Attention to the following: providing for individual differences, teaching students to read critically, developing and extending reading interests.

SCED 470 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.
SCED 471 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 472 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 473 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 474 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 475 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 476 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 477 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 478 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 479 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 480 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 481 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 482 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 483 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 484 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 485 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 486 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 487 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 488 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 489 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 490 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 491 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 492 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 493 SPECIAL TOPICS IN SECONDARY EDUCATION (1-3)
In-depth study of a selected topic in Secondary or Adult Education. The specific requirements and prerequisites will vary with each topic and will be designated by the department each time a topic is scheduled. May be repeated for a maximum of 6 units provided a different topic is covered.

SCED 494 TRAVEL AND STUDY IN SECONDARY EDUCATION (1-6)
Study abroad of educational facilities, programs or practices, or selected projects in education topics. By special arrangement with program chair and sponsoring instructors.

SCED 495 INDEPENDENT STUDY IN EDUCATION: SECONDARY (1-4)
An opportunity for especially qualified students to undertake research problems or study projects relevant to their interest and training under the direction of a staff member. Prerequisite: Consent of SCED chairperson.

SCED 496 DIRECTED READINGS IN SECONDARY EDUCATION (1-4)
Independent reading in selected areas of Secondary Education in order to provide for the individual a comprehensive coverage or to meet special needs. By invitation of the department to qualified students. Prerequisite: Consent of SCED chairperson.
SCED 499 INTERNSHIP IN EDUCATION (6)
Clinical experience in a professional development school the term immediately prior to the full-time internship; focus on classroom management and discipline, technology utilization, student diversity and reflective practices. Prerequisites: SCED 341, SCED 460 and permission from SCED Chairperson. Graded S/U.

Secondary Education in Mathematics and Science Courses
SEMS 110 INTRODUCTION TO STEM TEACHING I: INQUIRY APPROACHES TO TEACHING (1)
A first exploration into teaching as a career, emphasizing inquiry-based science and constructivist mathematics. Field experience with upper elementary grades includes two classroom observations and three teaching experiences.

SEMS 120 INTRODUCTION TO STEM TEACHING II: INQUIRY-BASED LESSON DESIGN (1)
A second exploration into teaching as a career, focusing on the development of SE lesson plans aligned to district curricula; attributes of adolescent students; utilization of technology; questioning strategies; and formal and informal methods of assessment. Middle school field experience in either mathematics or science includes classroom observations and three teaching experiences. Credit will not be given for both SEMS 120 and SEMS 130. Prerequisite: SEMS 110.

SEMS 130 INTRODUCTION TO STEM TEACHING I & II COMBINED (2)
A first exploration into teaching as a career, emphasizing inquiry-based science and constructivist mathematics. The focus is on the development of SE lesson plans aligned to district curricula; attributes of adolescent students; utilization of technology; questioning strategies; and formal and informal methods of assessment. Middle school field experience in either mathematics or science includes two classroom observations and four teaching experiences. Credit will not be given for both SEMS 120 and SEMS 130. This course is available to juniors, seniors, and transfer students.

SEMS 230 KNOWING AND LEARNING (3)
For prospective mathematics and science teachers to construct the model of knowing and learning that they will take with them into their classrooms. Focuses on issues of what it means to know and learn science and mathematics: What are the standards for knowing? How are knowing and learning structured? How does what we know change and develop? Prerequisite: SEMS 120 or SEMS 130 (may be taken concurrently).

SEMS 240 CLASSROOMS INTERACTIONS (3)
Centered around a close examination of the interplay between teachers, students, and content, and how such interactions enable students to develop deep conceptual understanding, students design and implement instructional activities informed by their understanding of knowing and learning mathematics and science. Focus is given to building awareness and understanding of equity issues and their effects on learning and developing strategies for teaching students of diverse backgrounds equitably. Prerequisites: SEMS 120 or SEMS 130; SEMS 230 (may be taken concurrently).

SEMS 250 PERSPECTIVES IN SCIENCE AND MATHEMATICS (3)
Explores a selection of topics and episodes in the history of science and mathematics. Illustrates how knowledge has often emerged through torturous struggles against obstinate resistance and within cultural, religious, and social structures. Students are brought to understand that science and mathematics are not merely bodies of facts, theories, and techniques; they involve diverse processes by which they are continually generated and formulated. Prerequisite: MATH 115 or MATH 119 or MATH 211 (may be taken concurrently) or MATH 273 (may be taken concurrently). Core: Arts & Humanities.

SEMS 360 RESEARCH METHODS (3)
Students develop and practice skills that are fundamental to the scientific enterprise in a laboratory setting and use mathematics / statistics to model and explain both the natural and man-made worlds. Four student-produced written inquiries are evaluated as examples of scientific writing. Requires grade of C or better to fulfill Core or GenEd requirement. Prerequisites: ENGL 102 or ENGL 190; SEMS 230 and SEMS 250. Core: Advanced Writing Seminar.

SEMS 370 PROJECT-BASED INSTRUCTION (3)
Course has three essential components: a theory-driven perspective about how people learn and how project-based instruction may be among our most informed classroom learning environments; a technological component that will assist students in developing their own project-based unit; a field experience of observation and teaching of well-implemented project-based instruction in local schools. Prerequisites: SEMS 230 and SEMS 240.

SEMS 498 INTERNSHIP IN MATHEMATICS AND SCIENCE SECONDARY EDUCATION (3)
Clinical experience in a professional development school the term immediately prior to the full-time student teaching internship. Focus on classroom management, technology utilization, and reflective practices. Prerequisites: SEMS 230, SEMS 240, SEMS 250, SEMS 360 (may be taken concurrently), and SEMS 370 (may be taken concurrently). Graded S/U.