

Secondary Education/Science Education, M.Ed.

COLLEGE OF EDUCATION (<http://education.temple.edu>)

Learn more about the Master of Education in Secondary Education (<https://www.temple.edu/academics/degree-programs/secondary-education-med-ed-sece-med>).

About the Program

The Secondary Education graduate program's Science Education specialization, endorsed by the National Science Teachers Association (NSTA), requires a strong foundation in at least one science discipline with supporting expertise in mathematics, as appropriate. Students graduate with an understanding of the nature of science and its complex relationship to the society in which it functions and which it serves. The program offers concentrations in Biology, Chemistry, Earth Science, General Science, and Physics.

The Secondary Education graduate program with a concentration in Science Education may be completed for certification only or certification plus a master's degree. All applicants are initially admitted to the master's program. After successfully completing the minimum requirements for certification, students may choose to leave the program with certification-only or may elect to continue in the program and complete the additional credit hours and requirements to receive certification and a master's degree. The program requires a minimum of 25 credits for certification-only and 31 credits for certification plus a master's degree.

Time Limit for Degree Completion: 4 years

Campus Location: Main

Full-Time/Part-Time Status: The degree program can be completed on a full- or part-time basis. Evening classes on Main campus start at 5:00 p.m.

Accreditation: The program is approved as a teacher certification program by the Pennsylvania Department of Education and is accredited by the Teacher Education Accreditation Council (TEAC).

Areas of Specialization: The Science Education specialization of the Secondary Education graduate program offers concentrations in Biology, Chemistry, Earth Science, General Science, and Physics.

Job Prospects: Graduates typically pursue teaching positions in middle and secondary school settings in grades 7 to 12.

Licensure: Upon successful completion of the degree requirements and passing all required licensure examinations, candidates may apply for a Pennsylvania Instructional I Teaching Certificate.

Non-Matriculated Student Policy: Students may take up to, but not more than, 9 credits of graduate study in the program before being admitted to the program. The credits transfer into the program, if the student is admitted. ***Students completing non-matriculated courses before being admitted to the program are NOT guaranteed admission.***

Financing Opportunities: Financial support opportunities may include scholarships, tuition remission, and other financial aid such as grants, loans, and federal work study.

Admission Requirements and Deadlines

Application Deadline:

Fall: March 1

Spring: November 1

Applicants should submit all required admissions documents by the application deadline to receive priority consideration for admission and financial support.

APPLY ONLINE to this graduate program.

Letters of Reference:

Number Required: 2

From Whom: Letters of recommendation should be obtained to provide insight regarding the applicant's academic competence. References from college/university faculty are recommended.

Coursework Required for Admission Consideration: Prerequisites for admission to the Secondary Education M.Ed. program in Science include a major or the equivalent with completion of approximately 30 credits taken at the undergraduate level with a grade of "C" or better earned in a scientific

discipline such as biology, chemistry, earth science, and physics. General science majors must show evidence of coursework covering at least three science areas with a year course plus a concentration in any area.

A prerequisite evaluation is conducted upon receipt of the application and all official transcripts. All required prerequisites must be fulfilled before an applicant is eligible for admission.

Bachelor's Degree in Discipline/Related Discipline: A bachelor's degree is required. A minimum UGPA of 3.0 is expected.

International applicants should also submit an official document that validates completion and conferral of a degree, diploma, and/or certificate. While not required, international applicants are encouraged to submit transcript(s) to the World Education Services (WES) for evaluation.

Statement of Goals: In 500 to 1,000 words, outline your interest in seeking a master's degree with a specific focus on the career to which you aspire, your interests, and your academic and job-related experiences that are relevant to the program.

Standardized Test Scores: The official score report must demonstrate a passing score on the *Praxis II*® in at least one of these disciplines:

- *Praxis II*® Test Code 5235 — Biology: Content Knowledge
- *Praxis II*® Test Code 5245 — Chemistry: Content Knowledge
- *Praxis II*® Test Code 5265 — Physics: Content Knowledge
- *Praxis II*® Test Code 5435 — General Science: Content Knowledge
- *Praxis II*® Test Code 5571 — Earth Science: Content Knowledge

Applicants whose native language is not English must provide scores from a TOEFL, IELTS, or PTE Academic exam. Scores must meet the following minimums:

TOEFL: 79 iBT or 550 PBT

IELTS: 6.5

PTE Academic: 53

Resume: Current resume required.

Transfer Credit: Courses may be transferred from an accredited institution provided they were completed less than five years ago and are relevant to the program. The academic advisor makes the decision about the relevancy of the courses that the student desires to transfer. The maximum number of credits a student may transfer is 6.

Coursework Waivers: Each student is assigned a faculty advisor at the time of admission. The advisor reviews the student's credentials and determines which, if any, of the required courses can be waived. In general, this waiver covers the beginning-level courses in the program. Waiving a specific requirement, however, does not reduce the total number of credits needed to graduate.

Clearances: A Pennsylvania criminal background check, a federal criminal history check, a child abuse clearance, and a TB test are required upon enrollment.

Other Requirement: Official undergraduate and graduate transcripts from all accredited institutions attended and/or from which credit was earned must be submitted.

Program Requirements

General Program Requirements:

Number of Didactic Credits Required Beyond the Baccalaureate: 31

Required Courses:

Code	Title	Credit Hours
Core Courses		
EDUC 5255	Tech in Classrooms: TPCK	3
EDUC 5402	Child and Adol Develop	3
EDUC 5605	Models of Teaching	3
SCES 5415	Tchg Sci Sec Sch Tchrs	3
SCES 5713	L&T Hi Sch Bio/Phys/Chem	3
SECE 5471	Literacy and Differentiation in the Academic Areas, 7-12	3
SPED 5666	Inclusive School Practices	3
TESL 5631	Foundations of Language Teaching: Meeting the Needs of English Language Learners	3

Student Teaching and Seminar

EDUC 5409	Research Methods and Induction Capstone	3
EDUC 5888	Supervised Teaching	4
Total Credit Hours		31

Culminating Events: Student teaching and its related seminar are the culminating events for this program.

Contacts**Program Web Address:**

<https://www.temple.edu/academics/degree-programs/secondary-education-med-ed-sece-med>

Department Information:

Dept. of Teaching and Learning
College of Education
1301 Cecil B. Moore Avenue
Philadelphia, PA 19122-6091
educate@temple.edu
215-204-0999

Submission Address for Application Materials:

<http://apply.temple.edu/coe>

Department Contacts:

Admissions:
Office of Enrollment Management
educate@temple.edu
215-204-0999

Education Courses

EDUC 5010. Special Topics in Education. 1 to 4 Credit Hour.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EDUC 5011. Entrepreneur Thking-Ed. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5101. Critical Understanding of Social Science Research. 3 Credit Hours.

This is an introductory course in understanding research for graduate students who will primarily be consumers of research, such as Masters and Specialist students. It will also serve as an introduction to research for doctoral students in applied fields (EdD and PsyD), who may go on to do applied research and take other research courses such as Program Evaluation or Single-Subject Research. It introduces students to the principles of social scientific research and the components of the research process. We also discuss the ethical issues inherent within any research involving human subjects. Conceptual, procedural, and analysis issues from quantitative, qualitative, and mixed methods research traditions will be covered, ranging from clinical trials and experimental designs to ethnographies in real-life settings. Because the scope of the course is quite broad, it will not be possible to cover all of the details of every design and method used in educational research. Nevertheless, by the end of the course you should be aware of a range of procedures that may be applied to different types of educational studies. You will also be aware of the guidelines that should be used in selecting a set of appropriate research methods and in evaluating research. You will also learn about the role of theory in educational research and how theoretical and conceptual frameworks inform research questions and the choice of data and methods.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5115. The Context of Education. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5203. Effective Teaching: Theory and Practice. 3 Credit Hours.

Provides theoretical and research basis for effective teaching strategies and affords the opportunity to practice the skills in simulated classroom conditions. Emphasizes the mastery of each skill. Exposure to a variety of teaching procedures and to a choice of the most appropriate strategy in a given educational situation.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5204. Literacy N-6. 3 Credit Hours.

Examines theoretical models in reading and language arts and their applications to early childhood/elementary and classroom practices, K-6. Provides opportunities for students to focus on developmental and application issues in literacy learning, the integration of reading and language arts, and alternative assessment techniques.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5205. Numeracy N-12. 3 Credit Hours.

A study of how numeric concepts and computational logic contribute to science, social studies, English language arts, and other subject areas. Students in various disciplines learn how to apply these concepts and logic to their own classrooms.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5207. Early Childhood/Elementary Environments and Learning. 3 Credit Hours.

Guides students as prospective early childhood/elementary teachers in establishing and maintaining learning environments for children. Research based principles for effective teaching and developmentally appropriate curriculum practices are presented and supported with authentic classroom based examples. Helps students utilize proven systematic approaches that will enable them to organize, conduct, and evaluate instructional practices in preschool and elementary settings. Guided by two beliefs: (1) that students need to engage actively with the concepts presented in the course outline, and (2) that students should be exposed first hand to the realities of teaching in urban settings.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5211. Creating a High School Learning Community. 3 Credit Hours.

Utilizes the natural and social sciences jointly as the vehicle to exemplify to the student (1) the processes associated with stimulating the learners' integration of thinking skills toward higher order problem resolution, and (2) the strategies aimed at socialization of the learners into a learning community

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5212. Curriculum, Instruction, and Technology in Education. 3 Credit Hours.

This 3 semester hour graduate course provides an introduction to the concepts, theories, and practices that address the linkages between the curriculum, instruction and technology. In particular, this course focuses on the implementation, management, and administration of technology infrastructure (hardware and software) at the building, school, and district levels.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5215. Standards & Tchg Pract. 1 to 3 Credit Hour.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5221. English for Foreign Students. 3 Credit Hours.

The focus of this course is on English skills needed for instructional purposes. The course offers students opportunities to develop communicative skills necessary for successful teaching and information about teaching in U.S. institutions of higher education (e.g., syllabi, instructional formats, and legal issues, such as sexual harassment and plagiarism). Note: This course is for ITA students.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5229. Crit Thk Val Clar & Inq. 1 to 3 Credit Hour.

This course examines the tension that exists between curriculum requirements (especially as measured by high stakes testing) and the need to teach students critical thinking and responsibility. Participants will incorporate classroom climate techniques (character education, anti-bullying programs, etc.) into their curriculum development and their instructional planning.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5231. Col Studies AT2 (CSAT 2). 1 to 3 Credit Hour.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5232. Col Studies AT3 (CSAT 3). 1 to 3 Credit Hour.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5241. Comp Rdg Instruction. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5242. Lit for Mid Level Learnr. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5243. Col Studies AT1 (CSAT1). 1 to 3 Credit Hour.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5244. Class Discourse. 3 Credit Hours.

The purpose of this course is to provide doctoral students with the theory and framework to study classroom discourses. According to Gee (1989), discourse "integrates words, acts, values, beliefs, attitudes, and social identities as well as gestures, glances, body positions, and clothes" (p. 7). In this broad context, we will examine student discourses in reading/language arts, mathematics and science in both in school and out-of school contexts. We use vignettes from Courtney Cazden's text as a model to critique classroom discourses among teachers and students. We also examine transcribed texts to find linguistic patterns in reading, mathematics and science classrooms. Finally, we use rubrics to judge the quality of classroom discourses to illustrate content knowledge.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5254. Characteristics of Computer-Based Instruction. 3 Credit Hours.

Application of computer technology in instructional programs. Discusses prospects and problems of the uses of computers and other technologies (e.g., interactive whiteboards) in support of direct instruction, management, and testing. Hands-on experience is included.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5255. Tech in Classrooms: TPCK. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5257. Elem Sch Rdg Instr. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5258. Second Sch Read Inst. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5259. Tch Rdg & Lang to Spec. 3 Credit Hours.

This course focuses on understanding a) reading, b) reading problems, c) assessment strategies, and d) effective, research-based, teaching practices for students with special needs. "Students with special needs" includes but is not limited to those with poor reading, writing, and speaking skills, learning disabilities, and cultural, economic, and language differences. The goal of the course is provide each student with first-hand knowledge, skills, and solutions to address children's reading problems. Questions that guide this course include: What are the causes of low language and literacy abilities among students? How do we assess students with poor reading and writing skills? What reading and language arts strategies are most effective with students with special needs? What education and psychology of reading theories inform these practices? How can we practice inclusion during reading and language art lessons? What additional services are available to support all children's success in the classroom?

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5261. Beginning Rdg Instructn. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5262. Introduction to Qualitative Research. 3 Credit Hours.

Several qualitative research designs will be reviewed, including discussions of phenomenology, grounded theory, interpretive paradigm, narratives, histories, and ethnography. Research strategies/methods will be critiqued, including interviewing, participant-observation, and textual/content analysis. Important concepts for this course are appropriate research questions, study design, data collection methods, data management, managing the study, data analysis, interpretation of results, and presenting the study to peers. Qualitative data analysis will be introduced, but the emphasis is on research design and data collection. Combining qualitative and quantitative data will also be discussed.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5272. Instl Pract Middle Class. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5275. Seminar in Supervised Teaching. 3 Credit Hours.

Describes basic principles of human behavior in relation to managing classrooms and the teaching of academic skills. Examples of successful applications of the principles are provided. Students required to use the principles and procedures in their classrooms and to report the outcomes to the participants in the class.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5287. Practicum in Teaching. 3 Credit Hours.

Introduces students to the process of teaching children in an elementary or high school environment. Under the direction of a Temple University faculty member, the student observes elementary or high school students in a variety of situations. Classroom discussions are held in conjunction with observed events and suggestions are made as to how to deal with a variety of management and academic problems. The course is a prerequisite to ED 406 and 412, and is taken in conjunction with ED 403 at the start of the student's program.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EDUC 5321. Instructional Innovation and Entrepreneurship. 3 Credit Hours.

This course in advanced teaching methods will focus on cutting edge pedagogy and new trends in teaching and learning. The course will be inquiry-based so that teachers across grade levels and disciplines can research and report on promising new methods, including but not limited to methods that take advantage of new technologies. Each student will create a unit of instruction using innovative new pedagogy and present that unit to the class. The course will encourage and nurture innovative and entrepreneurial thinking, creating a model for teacher innovation and entrepreneurship. It will also focus on creative strategies for enabling all students to meet learning goals.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5325. Introduction to Statistics and Research. 3 Credit Hours.

An introductory course which focuses on basic research and statistical concepts. The course will cover both descriptive and inferential statistics from the perspective of an informed consumer of empirical research. There are no prerequisites for the course. The purpose of this course is to enable students to interpret and use a variety of descriptive and inferential statistical procedures that are commonly used in education and the social sciences. Topics covered in the course include an introduction to research design, sampling, descriptive statistics, t-test, Pearson correlation, univariate analysis of variance, and non-parametric statistical tests. Emphasis will be on the proper use and interpretation of these statistical procedures. The course does not emphasize the calculation of statistics, and mathematical sophistication is not assumed.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5327. Teacher Leadership and the Teaching Profession: A Guide for Action. 3 Credit Hours.

This course provides an historical perspective on the teaching profession as well as a close look at the status of teaching today, including the development of associations and teacher unions, content-based organizations of teachers like the National Council of Teachers of English, the formation of teacher networks, and national organizations like the National Board for Professional Teaching Standards. It will look at all aspects of teaching including teacher preparation, teacher professional development, teacher advocacy, and the future of the teaching profession. In this context, the course will raise questions about the role and status of teachers in contemporary American society, how teaching fares in public policy debates, and the assumptions about teaching that underlie new federal and state requirements for teacher preparation and professional development. We will examine recent proposals to assess teachers using various frameworks and to include student test scores as a measure of teacher quality and teacher success. Designed for teacher leaders, school leaders, and other education professionals, this course will place teaching and teacher quality at the center of any discussion about the goals of education, student achievement, and school success. It will focus on the conditions necessary for good teaching and learning to occur and how teachers can help to create those conditions in their own classrooms and in collaboration with their peers and administrators.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5401. Intro to Middle School. 3 Credit Hours.

This course will introduce you to the middle school concept. Characteristics of middle schools will be discussed, including teaming, interdisciplinary units, and literacy across the content areas. Important aspects of the middle school environment, such as collaborating with specialists and creating a learning environment in the classroom, will be emphasized. Field experiences will be in the form of focused observations and interviews.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5402. Child and Adol Develop. 3 Credit Hours.

This course will focus on issues of child and adolescent development that are relevant for educators. Development (e.g., physical, cognitive, social) and learning theories will be examined through discussions of theory and research. Particular attention will be paid to the early adolescent. Field-based experiences, in the form of focused observations and interviews, will support these discussions. Group and individual differences will be emphasized.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5403. Diverse Lrns in Class. 3 Credit Hours.

Through this course, students will gain expertise in applying best practices to ensure access, equity, and quality education for all students. This course will introduce you to the characteristics and special needs of students having disabilities and of students who are culturally and linguistically diverse. The complex and critical issues surrounding inclusive and heterogeneous schooling will be examined along with the establishment of collaborative relationships with fellow colleagues, members of the school community and families. This course provides an overview of theory, research and practice in teaching culturally and linguistically diverse students in the middle grades. Students will learn about the socio cultural characteristics of ELLS and how the process of acquiring multiple languages and literacy skills affects students' learning of academic content. Students will be introduced to approaches for adapting science and math content for English language learners.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5406. Teach Math Middle Gr II. 3 Credit Hours.

This course is part of a sequence of courses within the e=mc² Transition to Teaching graduate certification program. This course will be taught in the third semester for those in the mathematics track. This course will focus on geometry, measurement, and data, as appropriate for the middle grades. This continuation course will again focus on the particular mathematical and pedagogical knowledge needed for teaching, including issues of planning, instruction, and assessment. Field experience will be in the form of student teaching, and this course will allow for reflection on this experience. Support will be provided for student motivation, classroom management, and other realities of teaching.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5407. Teach Sci Middle Gr II. 3 Credit Hours.

This course is part of a sequence of courses within the e=mc² Transition to Teaching graduate certification program. This course will be taught in the third semester for those in the science track. This continuation course will again focus on the particular pedagogical knowledge needed for teaching including issues of planning, instruction, and assessment. Field experience will be in the form of student teaching and this course will allow for reflection this experience. Support will be provided for student motivation, classroom management, and other realities of teaching. Whereas the first methods course was focused on the big ideas in the various disciplines in science, this course will focus on the cross-cutting themes in science as identified in the National Science Education Standards: systems, order, and organization; evidence, models, and a explanation; change, constancy, and measurement; evolution and equilibrium; form and function.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5409. Research Methods and Induction Capstone. 3 Credit Hours.

This course will provide a vehicle to synthesize learning, reflect on experiences throughout the program, and consider issues related to the first year of teaching. Special topics include behavior problems, teacher stress, first year of teaching, professional development, and action research.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5488. St Tchg in Middle Grade. 3 Credit Hours.

This field experience involves 9 weeks of full-time student teaching. Prospective teachers will be placed in a middle grades mathematics or science classroom, where they will work under the guidance of a mentor teacher. Experiences include observing, assisting, and delivering whole class instruction. NOTE: All coursework must be completed before taking this course.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

College Restrictions: Must be enrolled in one of the following Colleges: Education.

Student Attribute Restrictions: Must be enrolled in one of the following Student Attributes: Clearance for Education.

Cohort Restrictions: Must be enrolled in one of the following Cohorts: EDCNDCY.

Repeatability: This course may be repeated for additional credit.

EDUC 5605. Models of Teaching. 3 Credit Hours.

Models of teaching are studied to better understand their goals and strategies, and to support new teachers in developing broader perspectives regarding teaching practice and their implications for student learning.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 5888. Supervised Teaching. 3 or 4 Credit Hours.

Involves full-time placement in an elementary or secondary school for the entire semester. Students with paid teaching positions may use the school site; others are placed in a school and work with a cooperating teacher. All students supervised by Temple University faculty member.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EDUC 8102. Ethnographic Research Methods. 3 Credit Hours.

This class will use an in-depth study of ethnographic methods to develop qualitative data collection skills. Ethnography is one type of qualitative research. It uses the study of people in their natural settings to attempt to understand their social world, culture, and the meanings they make of their experiences in social contexts. According to LeCompte and Schensul, "ethnography takes the position that human behavior and the ways in which people construct and make meaning of their worlds and their lives are highly variable and locally specific...[Thus,] ethnographic researchers learn through systematic observation in the 'field,' by interviewing and carefully recording what they see, hear, and observe people doing, while also learning the meanings that people attribute to what they do and the things they make" (LeCompte and Schensul, pp. 1-2). Because ethnographic research is intensive and involves a variety of data collection techniques - observations, interviews, and document analysis - learning ethnography is a good way to explore all of these techniques.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8103. Contemporary Trends in Educational Research. 3 Credit Hours.

The purpose of the course is to provide a fundamental step in the development of a research orientation of educational phenomena through introducing students to the domain of educational research and to the kind of research questions asked by educational researchers when assuming disciplinary as well as interdisciplinary perspectives.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8104. Epistemology and Method in Educational Research. 3 Credit Hours.

The purpose of the course is to provide a fundamental step in the development of a research orientation of educational phenomena through introducing students to the epistemological foundations and research methods of educational research.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8232. Technology, Teaching, and Learning. 3 Credit Hours.

Focuses on educational technologies and the ability of technology to enhance both program administration and teaching and learning for youth and adults in school and non-school settings. The ethical, social, and scientific ramifications of technological developments in education and how these developments affect the teaching and learning process are discussed. Application of instructional technologies in education, business, and industry presented.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8251. Teacher Development: The Reflective Teacher. 3 Credit Hours.

Designed for practitioners interested in enhancing their skills of reflection with an eye on improving classroom practice. The fundamental components of teaching and learning will provide the foci for discussion, inquiry and reflection. The course will be largely experiential, providing participant's ample opportunity to participate directly in activities designed to provoke introspection and critical analysis.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8252. Cultural Diversity and Learning Styles. 3 Credit Hours.

This course rests on three premises: (1) Because differences among learners affect learning, those differences should inform teaching, (2) Master teachers make informed judgments about learners' needs and interests, and (3) Master teachers use both these judgments and student performance data to inform instruction. This course aims to encourage teachers to consider the usefulness of these three premises for improving student performance.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8253. Accom Tch: Nbpts Process. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8271. Program Planning and Evaluation. 3 Credit Hours.

Program planning and evaluation are viewed and discussed from a lifespan perspective that incorporates program planning and evaluation for school, post-secondary and higher education, continuing education, community-based, and training and development settings. Students are encouraged to apply program planning content and processes in real educational settings, which may be school or community based.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8272. Adv Classroom Mgt. 3 Credit Hours.

Students will study many of the teacher-controlled environmental variables which influence learning in the classroom. Particular emphasis will be placed on discovering and assessing practical and theoretical instructional strategies related to behavior management, classroom organization, differentiated and adapted teaching techniques, lesson design, motivation, and assessment. Techniques used will include teacher presentations, discovery learning, panel discussions, cooperative learning structures, group and individual projects. Assessment will be based on course participation and a summative portfolio.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8273. Adv Coop Learning. 3 Credit Hours.

Through readings, lectures, class discussion and instructor-led activities, students enrolled in this course will be able to (1) describe research-based outcomes achievable through cooperative learning and (2) design and implement a number of practical, cooperative learning models for achieving specific learning objectives.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8274. Currnt Issu/Curr & Instruc. 2 to 3 Credit Hours.

This course invites students to thoughtfully review what is currently considered best instructional practices. Special emphasis will be given to the organization, management, and evaluation of instruction.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8275. Research Design in CITE. 3 Credit Hours.

Students are provided with practical experience in formulating research problems and designing appropriate methods to address those problems within a lifelong perspective of education and learning. An overview of various research designs, including both qualitative and quantitative designs are conducted. Students are expected to learn how to design research.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8276. International Ed Seminar. 1 to 9 Credit Hour.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8278. Found Theor Res Reading. 3 Credit Hours.

This course will examine influential theories and research that address the psychological, cognitive, sociocultural, literary and linguistic foundations of reading. During the first part of the course we will consider how leading and often competing reading theories developed over time as well as how seminal research studies were conducted and considered by scholars, practitioners and policy makers. From there we will then focus on research propelling current conversations in the literacy field in

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8279. Found Theor Res Writing. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8289. Capstone Seminar Cur Iss. 3 Credit Hours.

This course, taken near the end of the program, will focus on current educational issues and the research surrounding them. In addition, it will include an experiential activity that will form a bridge between the student's career and the coursework of this program, especially the student's specialization or focus.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8401. Philosophical Foundations of Educational Research. 3 Credit Hours.

This course asks students to grapple with a questions that will be foundational to their development as scholars in the field of education. At the most basic level, the course asks, "Why do we conduct research in education?" To help students answer these questions, the course surveys the broad variety of philosophical and scholarly traditions underlying educational research. Each of these traditions makes fundamental assumptions about the nature of knowledge and knowing, the role of education in society and human life, and the purposes and consequences of educational research. Throughout the course, students will explore these fundamental assumptions and determine their connection to various research agendas in education. In addition, students will grapple with their own reasons for conducting educational research, the impact they hope to have, and the connections between these and the College's commitment to equity and social justice. We will give special consideration to the philosophical assumptions inherent within various disciplines and debate the merits of each for conducting well-designed investigations that have the potential to improve the lives of others.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8402. Policy Analysis. 3 Credit Hours.

Should we get rid of neighborhood schools and allow a system of full choice? Should higher education be free for all students? Should the government expand access to subsidized housing? These are but a small set of the complex and important questions facing government today. This course is designed to help you learn how to identify underlying causes and explore potential solutions to problems facing public schools, institutes of higher education, and other complex organizations. Using the tools of policy analysis, our focus will be on understanding the problems these policies are trying to solve, the success of existing policies, and the potential alternative policies that might be available to solve them. Throughout the semester you will learn to evaluate the evidence for and against various policies and develop concise reports of your findings and recommendations. While it is impossible to provide an in-depth analysis of such a broad topic as "policy", we will cover many of the major current initiatives including market-based reforms of K-12 education. While the content for the first four sessions is set, specific topics for the remaining sessions will be determined at the beginning of the semester to reflect the interests of enrolled students.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8403. Understanding Social Science. 3 Credit Hours.

The purpose of the course is to provide a foundation in the core ideas of social science research of a research orientation through introducing students to epistemological foundations and research methods in educational research. More specifically, we will be working together to promote the following major goals: Understand and grapple with the types of questions that are addressed by social science researchers, particularly in the field of education; Review the major concepts, theoretical perspectives, and practical lenses of sociology and their application in an educational context; Explore relationships among the questions social science researchers ask, the methods they employ, the epistemologies they invoke, and the conclusions they draw; Collaborate with students from other concentrations to understand how different questions, methodologies, and epistemologies play out in different fields of study; Consider our own questions, interests, methodological preferences, and epistemological beliefs and the implications of these assumptions for our emerging research questions and design choices.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8404. Quantitative Analysis, Part I. 3 Credit Hours.

Student attitudes toward statistics run the gamut from extreme interest to apathy to dread. You will learn in this course that it is possible to improve your thinking and make better decisions when you are facile in some fundamental statistical concepts and skills. When you "mathematize" your professional and personal world, you can reduce uncertainty, make better predictions, and understand the difference between (a) real and illusory differences among people and (b) real and illusory correlations (e.g., gender and depression; gender and risk-taking). This is true regardless of whether you are training to be a researcher, training to be a counselor, and learning stats for a variety of other fields. All methods for improving the lives of children and adults rely on research; major organizations (e.g., AERA, APA, ACA, AMA, etc.) emphasize evidence-based decision-making or choosing techniques that have been shown to be effective. Understanding statistics is a key component of evidence-based decision-making. One reason people hate or fear statistics is that their prior mathematics instructors were so bad that they became turned off to any kind of math or even doubted their math ability. Another reason is that some stats professors think that the mathematical (computational) aspect of stats is the only and most important thing rather than viewing computations as a means to an end, and aid in making decisions or drawing conclusions.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8405. Quantitative Analysis, Part II. 3 Credit Hours.

The world is a complex place, particularly in the arena of education. Rarely are phenomena related to developing, learning, teaching, remembering, or forgetting rooted in a single source or explained by a lone cause. This course is designed to train future educational researchers to untangle these complex, multifaceted interconnections between predictor(s) and outcome(s) through multivariate statistics. The emphasis for this course is on understanding and using educational statistics, not on memorization. Particular attention is dedicated to mastering when and why particular techniques would be useful, and what specific windows into reality they offer relative to other analytic strategies.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8501. Motivation in Education. 3 Credit Hours.

The purpose of the course is to provide students the opportunity to develop deep, critical, and personally relevant understanding of theoretical concepts and processes, methodological considerations, and practical implications of contemporary motivation theories as they are applied in educational settings. Particularly, the course aims to help students develop knowledge and skills that would allow the critical and constructive application of motivational theory to designing investigations of educational phenomena of interest.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8502. Social Contexts of Learning. 3 Credit Hours.

This three-credit hour course examines research from both social cognitive and sociocultural perspectives on learning in education in classrooms, schools, and informal contexts. We will investigate research on students' everyday practices and its connection to learning various subjects in schools; the relationships between culture, language, teaching and learning; and issues of race, social class, ability, and gender in education. Finally, we will examine how national, state, and local policies influence the social contexts of teaching and learning, with particular attention placed on issues of equity and access in classrooms.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8503. Learning to Read. 3 Credit Hours.

The purpose of this course is to provide students with the opportunity to learn about the most current research and practices of how children learn to read. We will discuss the importance of early language and literacy experiences and discuss techniques used to teach phonics and reading comprehension. Each topic will focus on an issue in learning to read and how it impacts special populations and English Learners (ELs). The course will take a developmental approach and discuss how foundational skills begin from birth and are developed through four grade. The class will discuss how foundational language and emergent literacy skills impact learning to read. We will then discuss how beginning readers and writers need to develop an understanding of the alphabetic principle (in order to decode words) and begin to use their knowledge of how letters represent sounds and how those letters and sounds make up words. We will also learn how children transition from learning to read to reading to learn as children begin to develop comprehension strategies. In each class, we will discuss how each topic relates to children who are having difficulty learning and children who are English Learners.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8504. Problem Solving and Reasoning in STEM Education. 3 Credit Hours.

This course will introduce you to a subset of major research lines in reasoning and problem solving, with specific contexts in science, technology, engineering and mathematics (STEM) education. We will use research literature to explore conceptualizations of rationality and critical thinking, how students use these skills to understanding mathematics and science, and how educators teacher use these skills in mathematics and science classrooms, as well as teaching these skills to students. In addition to these topics, this course will continue building and developing the skills that doctoral students will need in order to be successful in their graduate programs and in their professional lives. In particular, this course will focus on developing skills related to analyzing, synthesizing, and reviewing educational research literature, and to write a research proposal relevant to reasoning and problem solving in STEM Education.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8505. Assessment and Evaluation of Students. 3 Credit Hours.

This is course is designed to provide students an opportunity to examine the literature related to major issues in the assessment of students with learning problems, including students with disabilities (SWD) and English Language Learners (ELL). It is assumed that students enrolling in this seminar will bring an understanding of psychometrics and knowledge of the methods used to assess these populations.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8506. Cognition and Learning in Education. 3 Credit Hours.

This course is designed to stimulate graduate students' thinking about how learning occurs in a variety of domains, and what aspects of cognition influence the ability to learn in those domains. We will read and discuss relevant review chapters and empirical articles and share findings from related articles of interest from fields such as cognitive and developmental psychology, education, and the learning sciences. Focal questions for the course include: What are the current cognitive perspectives on how learning occurs in a variety of academic domains? How might this knowledge impact instructional design in those domains? How can we study and assess learning in different settings? We will think about and discuss learning across a wide range of age groups (from early childhood through adult years), individual differences (e.g., native language, special education status), academic domains (e.g., reading, mathematics, etc.), and learning environments (e.g., classroom, out-of-school, informal learning, computer-based learning environments).

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8545. Social Cntxt Math Sci Ed. 3 Credit Hours.

This course examines research from a socio-cultural perspective on mathematics and science education. We will investigate research on students' everyday mathematics and science and its relationship to learning these subjects in schools; the relationship between culture, language, and mathematics teaching and learning; and issues of race, social class, and gender in mathematics and science education. Finally, we will examine how national, state, and local policies influence mathematics and science teaching and learning, with particular attention placed on issues of equity and access.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8727. Foundations Math Sci Ed. 3 Credit Hours.

This course will introduce students to the foundations of math and science education. It will examine trends in the history of math and science education, consider major philosophical arguments about learning math and science, and analyze the portrayal of math and science in the K-12 classroom. Simultaneously, we will focus on what it means to do math and science and on understanding the practices and habits of minds of mathematicians and scientists.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 8730. Res Topics Sci Ed. 3 Credit Hours.

This doctoral level course will explore current research in science education. Key questions will be explored and current literature on that topic will be read and critiqued. Faculty in the program area will alternate teaching this course and the topics will vary from year to year. As a result, this course can be taken up to 3 times. Topics that this course will explore are demonstrations in the classroom, scientific inquiry, professional development, classroom-based research, technology in the science classroom among other topics.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EDUC 8731. Psych of Learning Math. 3 Credit Hours.

This doctoral seminar will focus on psychological theory and research relating to the learning and teaching of mathematics. The main emphasis will be on developing solid conceptions of what it means to know and understand mathematics from a psychological perspective.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 9255. Res.Seminar/Math/Sci Ed. 3 Credit Hours.

This three credit graduate course will introduce you to a subset of major research lines emerging in the fields of mathematics and science education. We will examine the research literature to understand the "hot topics," focusing on those that are currently in debate in the fields. While the course will be focused around topics that affect both fields, readings will help us understand how these topics are being conceptualized in the individual areas of science education and mathematics education. In addition to these topics, this course will continue building and developing the skills that doctoral students will need in order to be successful in their graduate programs and in their professional lives. In particular, this course will focus on developing skills related to writing integrated reviews of research, necessary both for your dissertation and publication. Specific skills focused on in this course will be: situating your research within a larger context (i.e., asking meaningful and answerable (!) questions), identifying focus of specific journals, and writing a critical literature review.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

EDUC 9257. Problems in Education. 1 to 6 Credit Hour.

Limited to matriculated doctoral students and those with permission of instructor. Specified problems, research, and practice in education. May be repeated for credit when approved by the instructor. Specific offering changes from semester to semester; contact advisor.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EDUC 9282. Graduate Independent Study in Curriculum, Instruction, and Technology. 1 to 6 Credit Hour.

Limited to matriculated doctoral students and those with permission of instructor. A course intended to meet the needs of students who desire to carry on individual investigation.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EDUC 9287. Practicum Corr Remed. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EDUC 9288. Instr. Pract: Corr/Remed. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EDUC 9289. Fieldwork Disabilities Sty. 1 to 6 Credit Hour.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EDUC 9487. Pract: Program Supv.. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EDUC 9489. Field Exp & Practicum. 3 to 6 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EDUC 9587. Prac Intro to Diagnosis. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EDUC 9987. Teaching Apprenticeship. 3 Credit Hours.

This course is designed to provide graduate students with hands-on teaching experience in higher education under the mentorship of a full-time faculty member. The purpose of the Teaching Apprenticeship is to prepare students for independent teaching that is central to academic careers and that will be required for many funding opportunities during graduate school. Because students' interests and expertise and the needs of the college vary, placements for the Teaching Apprenticeship will differ from student to student.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EDUC 9991. Research Apprenticeship. 1 to 3 Credit Hour.

Working under the close mentorship of a faculty member, students actively engage in research and produce a scholarly product such as a submission to an academic conference, an article or chapter or a grant proposal.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EDUC 9993. Master's Comprehensive Examination. 1 to 6 Credit Hour.

This course is for the Master's comprehensive examination in the College of Education. You should register for the section specific to your advisor.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

College Restrictions: Must be enrolled in one of the following Colleges: Education.

Repeatability: This course may be repeated for additional credit.

EDUC 9994. Preliminary Examination Preparation. 1 to 6 Credit Hour.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EDUC 9996. Thesis Credits: Masters. 1 to 6 Credit Hour.

Students complete a thesis or project under the supervision of their advisor.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EDUC 9998. Dissertation Proposal Design. 1 to 3 Credit Hour.

Proposal writing. Limited to those who have passed the Preliminary Exams. Repeatable.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.

EDUC 9999. Doctor of Education Dissertation. 1 to 6 Credit Hour.

Dissertation research. Limited to those elevated to candidacy/class 9.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Student Attribute Restrictions: Must be enrolled in one of the following Student Attributes: Dissertation Writing Student.

Repeatability: This course may be repeated for additional credit.

Science Education (Secondary) Courses

SCES 5415. Tchrg Sci Sec Sch Tchrs. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

SCES 5713. L&T Hi Sch Bio/Phys/Chem. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

SCES 5714. L&T Mid Sch Bio/Phy/Chem. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

SCES 8726. Demonstrations in Sci. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

SCES 8727. Critical Iss in Math/Sci. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

SCES 8728. Curr Pract in Math/Sci. 3 Credit Hours.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may not be repeated for additional credits.

SCES 9782. Special Projects. 1 to 4 Credit Hour.

Level Registration Restrictions: Must be enrolled in one of the following Levels: Graduate.

Repeatability: This course may be repeated for additional credit.