MSSE - Master of Science Education

MSSE 501 Inquiry Sci Eng Prac: 2 Credits (2 Lec)
Offered Spring, Fall, Summer.
This course provides a focus on inquiry instruction through the use of Science and Engineering Practices for grade K to 16 teachers in science education. Students will identify the components of inquiry in the context of Science and Engineering Practices as described in the NGSS Framework for K-12 Science Education. Course goals include development and implementation of inquiry-based instruction and classroom research; and increased understanding of the role of assessment in an inquiry-based science classroom. Offered Fall, Spring, Summer.

MSSE 502 Emerging Technology and the Science Classroom: 2 Credits
(1 Lec, 1 Other)
Offered Spring, Fall, Winter.
This course introduces skills and techniques to deepen students’ understanding of technology enriched instruction in the science classroom. Students in this course are practicing teachers of science. The focus is on emerging technology trends in the K-12 classroom with an emphasis on blended learning techniques, including flipped classrooms and gamification. Students will also explore how to use scientific data sets with their students. The assignments in this course are intended to be practical and have direct utility in the science classroom. Offered Summer.

MSSE 503 Integrating Literature into the Biology/Life Science Classroom: 3 Credits (1 Lec, 1 Lab, 1 Other)
Offered Summer.
This course is designed for elementary, middle and high school teachers of biology/life science. The course provides effective strategies to integrate literature in the biology/life science classroom. Students will share cross-level instruction and constructive ideas with each other. The goal of this course is to engage and support the integration of reading and science instruction. Offered Spring.

MSSE 504 Formative Assess in Sci Ed: 3 Credits (2 Lec, 1 Other)
This course is designed to train teachers in the implementation of formative assessment in the K-12 classroom. It includes the use of classroom assessment studies. The results of the assessments provide immediate feedback on both teacher effectiveness and student learning. Offered Fall and Spring.

MSSE 505 Foundations of AR in Sci Ed: 3 Credits (2 Lec, 1 Other)
Offered Fall, Spring, Summer.
This course presents an overview of action research for practicing teachers and informal science educators. Students will explore the conceptual underpinnings of action research in science education as they relate specifically to curriculum, teaching and learning of science. Students will gain experience in data collection and analysis and prepare an action research proposal based on their individual teaching situation. Offered Fall and Spring.

MSSE 506 Crime Scene Investigators: Forensic Science for Teachers: 2 Credits (1 Lec, 1 Lab)
Offered Fall, Spring.
This course is designed to provide grade school and middle school teachers with the knowledge and skills to teach forensic science. Students will learn about the basics of crime scene investigation and the use of forensic evidence in the classroom. Offered Fall, Spring.

MSSE 507 Capstone Data Analysis: 2 Credits (1 Lec, 1 Lab)
Offered Fall, Spring, Summer.
This course is designed to provide graduate students in science education with a background in basic descriptive and inferential statistics. The course will cover data collection, analysis, and interpretation. Students will learn how to use statistical software to analyze data. Offered Fall, Spring, Summer.

MSSE 508 Statistics Bootcamp for MSSE Capstone Projects: 1 Credits (1 Lab)
Offered Fall, Spring.
This course provides a crash-course in how to present a story using data that are commonly collected during Capstone Research projects for the MSSE program. Offered Fall, Spring.

MSSE 509 Implementing Action Research in Science Education: 3 Credits (2 Lec, 1 Other)
This course is designed for the implementation of action research for practicing teachers. Students will learn how to effectively conduct research based on the action research model. Prerequisites are MSSE 504 Formative Assessment in Science and MSSE 505 Foundations of Action Research in Science Teaching and Learning. Offered Fall.

MSSE 510 STEM Methods for Teachers: 2 Credits (1 Lec, 1 Other)
This course is designed to introduce the concepts of science, technology, engineering and mathematics (STEM) instructional design to equip teachers of science to meet and exceed emerging standards of teaching STEM. A balanced approach of content knowledge in the STEM areas and educational pedagogy will be the cornerstone of the course.

MSSE 511 Master Teaching Strategies for Science Teachers: 3 Credits (1 Lec, 1 Lab, 1 Other)
Offered Spring.
This course is designed to provide an overview of the master teaching strategies for science teachers. Students will learn about the key components of effective teaching strategies and how to implement them in the classroom. Offered Spring.

MSSE 536 Construction Curriculum in Science Education: 2 Credits (1 Lec, 1 Other)
This course is designed to provide an overview of the construction curriculum in science education. Emphasis is placed on using the National Science Education Standards as a framework for curriculum development. Offered Fall, Spring.

MSSE 537 The 3 D's of NGSS: 2 Credits (1 Lec, 1 Other)
Offered Summer.
This course is designed to provide an overview of the Next Generation Science Standards (NGSS). Students will learn about the three dimensions of NGSS and how to implement them in the classroom. Offered Summer.

MSSE 538 The 3 D's of NGSS: 2 Credits (1 Lec, 1 Other)
Offered Summer.
This course is designed to provide an overview of the Next Generation Science Standards (NGSS). Students will learn about the three dimensions of NGSS and how to implement them in the classroom. Offered Summer.
MSSE 575 Capstone Paper and Symposium in Science Education: 1-3 Credits (1-3 Other)
PREREQUISITE: MSSE 501, MSSE 504, MSSE 505, MSSE 509. (Su) Each Master of Science in Science Education (MSSE) student, with the cooperation of her or his graduate committee, identifies and completes a science education capstone project. The results of each student’s capstone project are summarized in a written, professional paper completed by mid-term of the final summer session. In addition, during the final summer session of a student’s graduate program each student presents their capstone project to their committee, their classmates, and other interested persons at the Symposium in Science Education. Offered Summer Repeatable up to 3 credits.

MSSE 589 Graduate Consultation: 1-3 Credits (1-3 Other)
PREREQUISITE: Master’s standing and approval of the Dean of Graduate Studies. (Su) This course may be used only by students who have completed all of their coursework (and thesis, if on a thesis plan) but who need additional faculty or staff time or help Repeatable up to 3 credits.

MSSE 591 Special Topics: 1-4 Credits (1-4 Lec)
PREREQUISITE: Upper division courses and others as determined for each offering. Courses not required in any curriculum for which there is a particular one time need, or given on a trial basis to determine acceptability and demand before requesting a regular course number Repeatable up to 12 credits.

MSSE 592 Independent Study: 1-3 Credits (1-3 Other)
PREREQUISITE: Bachelor degree, consent of instructor, and admission to MSSE program. () Offered on demand. Directed research and study on an individual topic Repeatable up to 6 credits.