

# Science Education M.A.

## Science Education Major

Students interested in this program must submit a completed Application for Admission to Graduate Study and should refer to their MyUNiverse Student Center To-Do list or contact the Science Education Graduate Coordinator. Graduate information and application for graduate admission can be found at <https://admissions.uni.edu/application>.

The Graduate Record Examination (General Test) **is not** required for admission to the program.

This major requires as a prerequisite a bachelor's degree (teaching degree preferred) with a major or minor/emphasis in Science or in a specific science discipline. Teacher licensure is a prerequisite for completing the program approval process for this major.

**Only graduate courses (course numbers 5000 or above) will apply to a graduate degree, even if the undergraduate course number (4999 or less) is listed. No exceptions will be made.**

This major is available on the **thesis** and **non-thesis** options. A **minimum of 30 semester hours**, including 6 hours of SCI ED 6299 for thesis research and writing, **and presentation**, is required for the **thesis** option; a **minimum of 30 semester hours**, including completion and presentation of a creative component, is required for the **non-thesis** option. **A minimum of 17 hours of 6000-level course work is required for the thesis option. A minimum of 14 hours of 6000-level course work is required for the non-thesis option.**

### Required

Measurement and Research:		
SCI ED 6500	Research Methods in Science Education	4
Science and Science Education:		
SCI ED 6600	Contemporary Science Curricula	3
SCI ED 6700	The History, Philosophy, and Nature of Science	3
SCI ED 6800	Teaching-Learning Models in Science Education	3
SCI ED 6900	Trends and Issues in Science Education	3
Thesis or non-thesis option research and electives		14
Total hours thesis or non-thesis option		30

### Thesis Option

Research:		
SCI ED 6299	Research	6
Science content courses		6
Electives from education or science education		2
<b>Total Hours</b>		<b>14</b>

### Non-Thesis Option

Research:		
SCI ED 6299	Research	3
Science content courses		6
Electives from education or science education		5
<b>Total Hours</b>		<b>14</b>

Inquiries for additional information concerning this major, including assignment of an advisor and advisory committee, should be made to the Science Education Graduate Program Coordinator.

## Learning Outcomes

### Science Education, M.A.

**Goal 1: Educate practicing science teachers in science education theories, philosophies of science, educational research methods, and curriculum development in science education to influence change in teaching practice.**

#### Outcomes:

- **1.1** – Students will analyze how a selected historical philosophical framework has changed to a philosophical framework that guides their science teaching practices, the form of scientific method they use and their working definition of science. These are measured by Rubric Score on Final Paper assignment in SCI ED 6700.
- **1.2** – Students will identify a science teaching technique informed by behaviorism, a separate science teaching technique informed by constructivism, provide examples of the use of these techniques, and demonstrate how the major ideas of behaviorist and constructivist models of teaching and learning inform these approaches. These are measured by rubric scores on the Observation and Planning Assignment options in SCI ED 6800.
- **1.3** – Students will synthesize the existing literature to develop and propose one or more research questions in science education and design a study that will answer the stated research question(s). These are measured by completion and rubric evaluation of final paper/project proposal in SCI ED 6500.
- **1.4** – Students will explain the inside and outside influences acting in curriculum development, subject matter, pedagogy & learning, and assessment/evaluation during the past 100 years and the resulting science education framework. These are measured by Rubric Scores on course-long project in SCI ED 6900.
- **1.5** – Students will be able to apply the Next Generation Science Standards (NGSS) in teaching with phenomena, using Storylines to map three-dimensional, student-centered learning, and the translation of NGSS Performance Expectations into learning performances and performance assessment tasks. These are measured by combined rubric scores for the Developing a Storyline project in SCI ED 6600.

**Goal 2: Make and communicate a scholarly contribution to science education, demonstrating their ability to reflect on the impact of this contribution and its connection to significant knowledge**

## **Science Education M.A.**

**acquired in the master's program and relevant science education research.**

### **Outcomes:**

- **2.1** – Students will design, conduct/produce, and analyze a scholarly endeavor in science education.
- **2.2** – Students will discuss results of their scholarly endeavor in the context of existing science education literature and to reflect on the potential impact of these results on the science teaching practitioner and/or science education professional community. Both Goal 2 outcomes measured by: Completion, presentation and acceptance (via an average score of 3) on the Cumulative Scholarly Work rubric of the thesis or non-thesis paper.

## **Related Programs**

- Biology - Teaching B.A.
- Chemistry - Teaching B.A.
- Comprehensive Secondary Science - Teaching B.A.
- Earth Science - Teaching B.A.
- Middle Level Science Dual Major - Teaching B.A.
- Physics - Teaching B.A.