

### Ph.D. in Curriculum and Instruction-Specialization in Science Education

The science education Ph.D. program provides breadth and depth of knowledge regarding the current status of science education in the U.S. and globally. Students select their own areas of foci and the advisor that best matches their emphasis to support their work. Students receive a minor in a science discipline, further strengthening their degree both from a science education and science perspective. The qualifying exam is comprised of a written portfolio that enables the student to demonstrate breadth of knowledge of the field and depth of knowledge in the chosen area of emphasis. The dissertation topic is selected with the advisor who will support the student in writing the dissertation proposal and final dissertation. Students in the Ph.D. science education program are encouraged to obtain a variety of teaching and research experience while in the program.

#### Degree Requirements (90 cr.)

#### Major Requirements (396 cr.)

##### *Science Education (12 cr.)*

Q612 Topical Seminar in Science Education (2-4 cr., taken for a total of 12 cr.)

##### *Science Methods (6 cr.)*

Select two courses from the following:

- ~~E548 Advanced Study in the Teaching of Science in the Elementary Schools (3 cr.)~~
- J762 Topical Seminar in Curriculum and Instruction: Teaching Introduction to Scientific Inquiry (3 cr.)
- ~~J762 Topical Seminar in Curriculum and Instruction: Developing as Math/Science Teacher Educator (3 cr.)~~
- Q528 Demonstration and Field Strategies in Science (1-6 cr.)
- Q540 Teaching Environmental Education (3 cr.)
- Q610: Developing as Teacher Educators for Science or Mathematics
- Q620 University Science Teaching (3 cr.)

##### *Science Education Support Area (9 cr.)*

~~A cohesive set of courses to support the students research interests and professional agenda. These courses may be chosen from science content departments, philosophy of science, educational psychology, IST, or another area determined by the student's committee.~~

##### *Content Support -Graduate Level Science Courses (12 cr.)*

- As decided by the program committee to fit the needs of the student. They can be taken in one disciplinary area of science or be from across various disciplines of science, including multidisciplinary science programs)

##### *Proseminars (3 cr.)*

- Q601 Professional Seminar in Science Education (1-3 cr., taken for a total of 3 cr.)

##### *Early Inquiry Experience and Inquiry Linkage Requirements (6 cr.)*

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- J705 Seminar: Inquiry in Curriculum and Instruction (3 cr.)
- Q690 Advanced Research in Science Education (1-6 cr., taken for 3 cr.)

#### **Inquiry Requirements (15 cr.)**

- Introductory Course (3 cr.) (e.g.) [Y520Y521: Strategies for Educational Inquiry](#)  
[Methodological Approaches to Educational Inquiry](#)
- Statistical Techniques (3-9 cr., minimum 3 credits)
- Qualitative Inquiry Approaches (3-9 cr., minimum 3 credits)
- Measurement, Evaluation, and Design (0-3 cr.)

#### **Minor Requirements (12 cr.)**

The minor must have integrity in its own right and must complement the major. The minor field must demonstrate wholeness within itself and contribute to the student's overall doctoral program. Minors are normally formulated within a single program area. However, an interdisciplinary or individualized minor is also possible. Interdisciplinary or individualized minors require a written description of the minor's underlying theme along with a rationale for each course's contribution to that theme through the Minor Justification form. This form should be submitted and approved by the Graduate Studies Office prior to enrolling in the minor courses.

~~The minor for science education needs to be outside the School of Education and taken in a science content area.~~

#### **Elective Requirements (~~9~~12 cr.)**

Selected in consultation with advisory committee. Elective courses are chosen to fill out the major and to contribute to the integrity of the student's program. These courses are taken in the student's area of interest, within or outside the department, in order to fulfill the total program requirement of 90 credit hours.

#### **Dissertation Requirements (15 cr.)**

J795 Dissertation Proposal Preparation (3 cr.)

J799 Dissertation-Curriculum/Instruction (12 cr.)

19.36

**Department Vote**

21 department members voted to support the change. 12 did not vote. There were no votes in opposition.