



## Master of Arts in Education: Natural Science and Environmental Education

### ***Science Education Strand***

The Master of Arts in Education: Natural Science and Environmental Education (MAEd: NSEE) program is pleased to offer an optional focus strand for science teachers and specialists in K-12 education. Science teachers have unique interests and challenges in content, curriculum and pedagogy. Science-specific pedagogies and a deep understanding of the nature of science are essential tools for teachers of science. The NSEE science strand option is most appropriate for those whose primary responsibility is **elementary, middle or high school science**.

The NSEE *Science Education Strand* allows teachers of science to enrich their understanding of science teaching and learning within the context of CGEE's environmental mission. This is an **optional** area of concentration in the NSEE program. Successful candidates will receive the MAEd: NSEE degree, with *Science Education Strand* acknowledged on the diploma and transcript. The NSEE masters program focuses on the environment as a unifying context in education. The *Science Education Strand* emphasizes science teaching and learning theory and practice.

Participants in *Science Education Strand* enroll in three core **courses** (that take the place of three core courses) in the standard NSEE program. The credits required for completion is the same 35 total. Science strand students may take other NSEE core courses as electives.

NSEE 8011 History and Nature of Science (in place of NSEE 8010 Natural History of the Environment)  
2 credits Offered first in fall 2008

Fundamental to effective science teaching is a deep understanding of the culture of science – how science works, its challenges through history, and its impact on those we call “scientists”. Explore science through cultural and historical perspectives; share examples of scientists, scientific advancements, and their impacts on society; and design plans for making the history and nature of science standards more inclusive in your curriculum.

NSEE 81XX Science Teaching and Learning (in place of NSEE 8100 Teaching and Learning in the Environment)  
3 credits Offered first in spring 2009

Science classrooms are exciting environments. The combination of hands-on exploration, laboratory activities, vocabulary, and research makes science teaching complex and challenging. Science-specific instructional strategies will be actively investigated in this course, including the classroom environment, impact of state and national standards, inquiry as process and pedagogy, effective questioning, misconceptions and gaps in understanding, use of science notebooks/journals, curriculum design, assessment models, state science testing, science literacy, and cultural perspectives.

NSEE 84XX Science Research Project (in place of NSEE 8490 Field-Based Research)  
2 credits Offered first in fall 2010

Experience scientific inquiry, and its implications for science teaching and learning. Focus on experimental design and science processes as you experience science research firsthand. Each participant develops a manageable research question in an area of interest, designs a protocol, collects data, and presents results. The class will meet three times during the semester for question development, research updates/critiques, and poster presentations, with remaining class time online.

Science strand participants use electives to enrich their specific science background or interest with courses from the MnSTEP program or other science/environmental courses. As noted, the *Science Education Strand* courses replace NSEE 8010 Natural History of the Environment, NSEE 8100 Teaching and Learning in the Environment and NSEE 8490 Field-based Research. These excellent courses may be used as electives in the MAEd: NSEE program.

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