

## Elementary Education Licensure Requirements in Undergraduate and Second Major Certificate Programs

**Beginning Fall 2009**, all Elementary Education Licensure Candidates in the Undergraduate and Second Major Certificate programs must meet Minnesota Board of Teaching requirements associated with the teaching of science and scientific inquiry. This requirement applies to any elementary education licensure candidate who has not been formally admitted to the Education Department (Note: Admission to the College does not include formal admission to the Education Department.). To meet the licensure requirements, students **must** complete the following STEM Certificate courses:

**BIOL 1110: Environmental Biology (4 credits):** A study of the nature of scientific inquiry and basic biological, chemical, ecological and earth science principles in the context of environmental issues. Areas of study may include: biodiversity, global climate change, acid rain, agriculture and the environment, air and water pollution, and the role of economics, politics and ethics in environmental concerns. Three hours of class and two hours of laboratory per week. Designed for non-majors and the STEM minor. *Typically offered fall semester. Also, typically offered in Weekend College in the winter term.* (Course meets liberal arts lab science requirements)

**CHEM 1000: Chemistry of Life (4 credits):** Principles associated with the chemistry of the human body and its environment are discussed in this course, including food, radiation, energy, textiles, polymers, dyes, water, air, drugs, medications, cosmetics and cleaning agents. The focus is on physical, social and environmental concerns of modern society. The class time block includes both lecture and lab work. *Typically offered in winter semester in even academic calendar years. Also, typically offered in Weekend College in the winter/spring term in even academic calendar years.* (Course meets liberal arts lab science requirements)

**PHYS 1200 (FORMERLY INDI 1110): Makin' and Breakin' - Engineering in Your World (4 credits):** Most of the world we experience everyday is human-made or engineered. From indoor plumbing to airplanes, engineers create products that make our lives more comfortable and convenient. This course is an introduction to the engineering concepts associated with products in your everyday life, including concepts regarding structures, machines and mechanisms, hydraulics and pneumatics, and electricity. Classes are a mixture of mini-lectures about concepts and associated calculations, experiments to solidify concepts, discussions to generalize concepts to other technologies, and projects to apply the concepts to new problems. This course meets the liberal arts core requirement for lab science. *Typically offered in winter semester in odd academic calendar years. Also, typically offered in Weekend College in the fall term in odd academic calendar years.* (Course meets liberal arts lab science requirements)

### Benefits

**The completion of the required courses result in a STEM certificate for elementary education licensure candidates that will:**

- Increase STEM content knowledge and skills, and enhance confidence levels in the use of effective instructional strategies in the teaching of STEM in PK-6. Studies indicate that elementary majors in particular are not well prepared or have strong confidence in teaching STEM.
- Provide preparation for changes in the Minnesota Academic Standards in Science that will incorporate more STEM content and skills with an increased **focus on engineering**.
- Enhance employment opportunities in elementary schools with a STEM focus. St. Kate's is the only state-wide institution offering an engineering course for elementary education majors and STEM certificate.

**Courses are taught using:**

- More hands-on activities.
- New technology including scientific equipment.
- Up-to-date teaching methods directly correlating with the content studied and interdisciplinary nature.
- Outdoor field investigations.
- Fieldtrips and guest speakers.
- STEM courses are team taught by science and education professors.

If you have questions about your program of study, please contact your advisor.