



Graduate Certificate

# STEM Certificate: Science, Technology, Engineering and Mathematics

• CIP code 131316 • 12 credits, 2 terms or more part-time

**Program Description** — The Stem Certificate in Science, Technology, Engineering and Mathematics provides early childhood, elementary, special education and middle school educators with the core background skills and content knowledge necessary to become highly-qualified mathematics, science and engineering educators serving our younger students.

The courses combine math, science and engineering content with methodology at the elementary and middle school levels. The 12 graduate credits include both seated and online courses, making for a very user friendly learning experience.

**Learning Outcomes** — Participating teachers will:

- Gain significant mastery of science content, preparing their students for the Massachusetts grade 5 and 8 MCAS exams and for science and technology challenges into their future.
- Integrate earth, life and physical science concepts to solve engineering problems.
- Apply design process steps to solving engineering and science problems.
- Recognize and use connections, relationships and patterns among mathematical ideas; and use representations to model and interpret physical and technical phenomena.
- Gain the necessary mathematical skills in order to become highly qualified and competent teachers of elementary and middle school mathematics.

**Careers** — After the completing the STEM certificate program, teachers may wish to add a Massachusetts state certification in Mathematics (1-6), Mathematics (5-8), General Science (5-8), or Mathematics/Science (combo 5-8) by taking and passing the appropriate Massachusetts MTEL exam.

## Science and Engineering Courses .....6 credits

- ELE653 Teaching Science & Technology in Early Childhood & Elementary Curriculum
- SCI619 Teaching Project Based Science (online, 1 credit)

Choose two science content courses (online, @1 credit):

- SCI 601 Aquatic Ecology
- SCI 613 Earth in the Universe
- SCI 617 Earth's History
- SCI 603 Electricity & Magnetism
- SCI 607 Structure of the Earth

## Mathematics Courses .....6 credits

- MAT605 Technology in Math Learning & Teaching
- MAT613 Discrete Math

COURSE SCHEDULE — All courses offered at least once/year.

**Satisfactory academic progress** — All students must maintain a minimum GPA of 3.0 or be placed on academic probation.

**Program subject to change.**

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