

Master of Education Leading to Massachusetts INITIAL LICENSURE



# General Science (1-6 or 5-8)

For licensure: 35 credits, 5-6 terms full-time • Non-licensure : 32 credits, 3 terms full-time

• Program approved by the Mass. Dept. of Elementary & Secondary Education

The **GENERAL SCIENCE EDUCATION** program provides essential science content, integrated with best practices in hands-on, inquiry-based science education. The curriculum is firmly rooted in the Massachusetts science education model with a balance of earth, life, physical and engineering sciences. Students experience a blend of seated and online content science courses.

**Learning Outcomes** — Students will understand the principles guiding modern scientific thought, and master science content knowledge. They will design and conduct scientific inquiries to test scientific hypotheses, using appropriate tools and techniques to gather, analyze, and interpret data. They will develop descriptions, explanations, predictions, and models using evidence, communicate scientific procedures and explanations. Students will know how science, technology, and math inform each other and serve as mechanisms for inquiry into the nature of the universe. Students will understand historical and philosophical theories in science, and identify common misconceptions. They will identify socially important issues including the impact of technology on our environment.

Teachers will use professional “best practices” in teaching inquiry-based science. They will develop a balanced approach to hands-on science instruction using appropriate methodology. They will learn to engage students of varied learning styles and abilities.

**Careers** — Elementary science specialist, grades preK-5; middle school general science teacher/earth, life, physical and engineering sciences, grades 5-8; science museum educator, nature center specialist/guide, aquarium and zoo educator.

## Professional Seminar & Project .....7 credits

ESE691-692 Professional Seminar (2 terms @ 2 credits)

ESE800 Independent Learning Project (3 credits)

## Science Methods.....15 credits ... 12 credits

Licensure courses @ 3 credits **grades 1-6** **grades 5-8**

MAT623 Teaching Numerical & Geometric Structures.....●

SCI680 Attaining Science Literacy.....●

**option for 1-6:** SCI680 or ELE653 Teaching Sci & Technol in Early Childhood & Elem Curric

### Methods & Materials for Teaching:

SCI682 Life Science.....●

SCI684 Earth Science.....●

SCI686 Physical Science.....●

## Science Content.....8 credits.....11 credits

Online courses @ 1 credit **grades 1-6** **grades 5-8**

SCI591 Intro to Online Science Learning.....●

SCI601 Aquatic Ecology.....●

SCI603 Electricity & Magnetism.....●

SCI605 Water Quality.....●

SCI607 Structure of the Earth.....●

SCI609 Transfer of Energy.....●

SCI611 Ocean Science.....●

SCI613 Earth in the Solar System.....●

SCI615 Forces & Motion.....●

SCI617 Earth's History.....●

SCI619 Teaching Project-Based Science.....●

SCI600 Cell Biology (elective).....●

SCI627 Teaching Chemistry Through Inquiry (elective).....●

SCI629 Practical Meteorology (elective).....●

**In-class course option @ 3 credits** (replaces three 1-credit courses)

SCI688 Methods & Materials for Teaching

Middle School Chemistry.....●

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

## Practicum Prerequisites

- Pass all teacher tests required by the state for this license. Massachusetts: Communication & Literacy test and:  
1-6: Successful completion of coursework  
5-8: General Science 5-8 MTEL exam
- SEI605 Sheltered English Immersion (3 additional credits) or MA DESE-endorsed course or SEI MTEL.
- Pre-Practicum — 75 hours in diverse settings (0 credit).
- Pass all required courses.

## Practicum (licensure students only).....5 credits

**SCI790 Practicum** – 300 hrs in an elementary (1-6) or middle school (5-8) science classroom (3 credits) . . . . Fall, Spring  
Guided and evaluated by a licensed/certified general science teacher in the classroom and a Cambridge College general science supervisor. Practicum locations are subject to MA DESE regulations and must be approved by the program chair. Students are responsible for discussing options for practicum with the program chair.

SCI790A Practicum 1-6 • SCI790B Practicum 5-8

**SCI791 Practicum Seminar** (2 credits) . . . . . Fall, Spring  
Exit Performance Portfolio required for credit.

**Non-licensure option:** All program components are required except the Practicum, Practicum Seminar and teacher tests. Non-licensure students must complete all pre-practicum hours embedded in the courses. Two more credits of graduate level science content electives are chosen in consultation with program chair. MAT623 may be replaced with science content electives.

**Program subject to change.**

**Admissions requirements:** Bachelor's degree and other general requirements.

**Matriculation:** All new students must register for the non-licensure option until they pass the MA Communication & Literacy Test (MTEL).

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



Graduate Certificate

# STEM: Science, Technology, Engineering and Mathematics

12 credits, 2 terms or more part-time

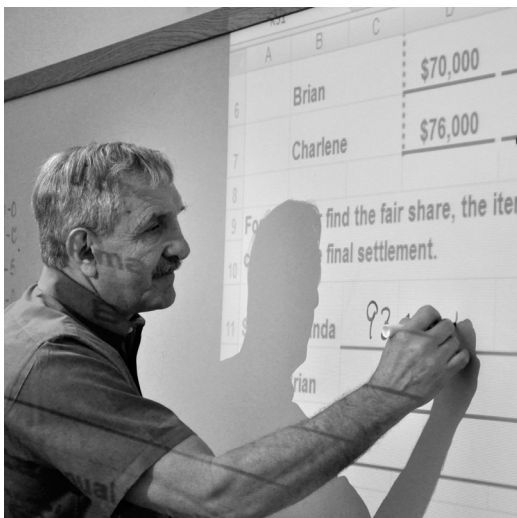
The **STEM CERTIFICATE in SCIENCE, TECHNOLOGY, ENGINEERING and MATHEMATICS** provides early childhood, elementary, special education and middle school educators with the core background skills and content knowledge necessary to become highly-qualified mathematics, science and engineering educators serving 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 (in class) . . . . .3
- SCI619 Teaching Project Based Science (online) . . . . .1

Choose two science content courses (online) @1 credit each: . . . . .2

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

**Mathematics Courses** .....6 credits

- MAT603 Arithmetic to Algebra: Developing Math Patterns & Ideas . . .3
- MAT708 Diagnosis & Remediation of Learning Problems in Math . . .3

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

**Admissions requirements:** Bachelor's degree and other general requirements.

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

**Program subject to change.**

**Tuition discount:** Candidates must enroll for the entire 12-credit program to receive a tuition discount of 30%. (Full tuition is charged for part-time enrollment, and the discount is applied in the final term retroactively to all 12 credits.)

**For more information please contact:**

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