



Graduate Certificate

Elementary Science Specialist (1-6) • CIP code 131316

17* credits, 3 terms • Add a (1-6) science license for elementary classroom teachers

Program Description — The Elementary Science Specialist Certification in General Science is designed for classroom teachers who hold an initial license in elementary teaching, or another relevant field, who want to “add-on” an endorsement in General Science, 1-6. The program addresses the subject matter knowledge competencies in science content and scientific practices required for endorsement in General Science, grades 1-6 and integrates essential science content with best practices in hands-on, inquiry-based science education. The program includes a blend of seated and online content science courses. This certificate is firmly rooted in the Massachusetts 2016 Science/Technology and Engineering Standards. Students are required to submit completed coursework to the Massachusetts Department of Elementary and Secondary Education for the license endorsement.

Learning Outcomes — Teachers understand basic principles and concepts of the life sciences appropriate to the elementary school curriculum; basic principles and concepts of the physical sciences appropriate to the elementary school curriculum; philosophical theories in science, and identify common misconceptions; identify socially important issues including the impact of technology on our environment. They design and conduct scientific inquiries to test scientific hypotheses, using appropriate tools and techniques to gather, analyze, and interpret data; develop descriptions, explanations, predictions, and models using evidence, communicate scientific procedures and explanations; and know how science, technology, and math inform each other and serve as mechanisms for inquiry into the nature of the universe. They teach science content through engaging learners in the scientific practices and the engineering design process. They use “best practices” in teaching inquiry-based science and develop a balanced approach to hands-on science instruction using appropriate methodology and appropriate safety procedures as described in state standards.

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.

Courses required may vary based on transcript analysis.

Science Methods..... 14 credits

ELE653 Teaching Science & Technology in Early Childhood & Elementary CurriculumFall, Spring

Methods & Materials for Teaching:

SCI686 Physical Science. Fall
SCI690 Teaching Engineering & Technology (2 credits). Fall
SCI682 Life Science Spring
SCI684 Earth Science Spring

Science Content.....3 credits

Online courses @ 1 credit

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|---------------------------|--------|-------------------------------|
| Select one course: | SCI601 | Aquatic Ecology |
| | SCI600 | Cell Biology |
| Select one course: | SCI603 | Electricity & Magnetism |
| | SCI609 | Transfer of Energy |
| | SCI615 | Forces & Motion |
| Select one course: | SCI607 | Structure of the Earth |
| | SCI613 | Earth's Place in the Universe |
| | SCI629 | Practical Meteorology |

Admission requirements:

- Earned bachelor’s degree and other School of Education requirements.
- Valid Massachusetts elementary PK-2 or 1-6 initial license. No MTEL is required for General Science, Grades 1-6.

Transcript analysis: Subject Matter Competency for General Science will be evaluated through transcript analysis by the program chair, following the Subject Matter Knowledge Standards for the Massachusetts 1-6 Science Specialist License (see www.doe.mass.edu). Only coursework completed within the last seven years, with grades of B or better will be considered.

***Program credits:** Additional credits may be required for competencies not satisfied before enrollment; credits may be reduced if any competencies have already been covered acceptably.

Program subject to change.

Program chair: John Papadonis, MS
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(All courses @ 3 credits except as noted.)