

DRAFT CHANGES TO SUBJECT MATTER KNOWLEDGE REQUIREMENTS FOR EDUCATOR LICENSURE

PUBLIC COMMENT: WWW.SURVEYGIZMO.COM/S3/3620828/DRAFT-PUBLIC-COMMENT-SMK-UPDATES

Subject matter knowledge requirements (SMKs) outline the minimum level of content and pedagogical skills Massachusetts educators are expected to hold. SMKs establish the content assessed in Massachusetts Tests for Educator Licensure ([MTEL](#)) and guide content-area coursework for educator preparation programs. SMKs are aligned to [Massachusetts curriculum frameworks](#).

Massachusetts regulation [603 CMR 7.06](#) requires a public comment period of at least thirty days prior to any changes to the guidelines where SMKs are published. More information on the 2017 proposed changes is available at www.doe.mass.edu/edprep.

GENERAL SCIENCE

CURRENT SUBJECT MATTER KNOWLEDGE REQUIREMENTS 2011-2016

GENERAL SCIENCE, LEVELS 1-6, 5-8

(a) The following topics will be addressed on a subject matter knowledge test for the **1-6 level**:

1. Basic principles and concepts of the life sciences appropriate to the elementary school curriculum.
2. Basic principles and concepts of the physical sciences appropriate to the elementary school curriculum.
3. History and philosophy of science.
4. Safety issues related to science investigations.

(b) The topic set forth in 603 CMR 7.06 (11) (a) 3. and the following topics will be addressed on a subject matter knowledge test for **the 5-8 level**:

1. Intermediate knowledge of biology, chemistry, physics, earth/space science, and related mathematics.
 2. Methods of research in the sciences, including laboratory techniques and the use of computers.
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DRAFT CHANGES TO SUBJECT MATTER KNOWLEDGE REQUIREMENTS 2017

GENERAL SCIENCE, 1-6, 5-8

The following topics will be addressed on a subject matter knowledge test for **the 1-6 level**:

(a) The eight essential science and engineering practices:

1. Asking questions and defining problems

2. Developing and using models
 3. Constructing explanations and designing solutions
 4. Obtaining, evaluating and communicating information
 5. Planning and carrying out investigations
 6. Analyzing and interpreting data
 7. Using mathematical and computational thinking
 8. Constructing arguments from evidence
- (b) Basic Principles of Understanding Life Science:
1. Molecules to Organisms: Structure and Processes
 2. Ecosystems: Interactions, Energy, and Dynamics
 3. Heredity: Inheritance and Variation of Traits
 4. Biological Evolution: Unity and Diversity
- (c) Basic Principles of Understanding Earth and Space Science:
1. Earth's Place in the Universe
 2. Earth's Systems
 3. Impact of Human Activity on Earth
- (d) Basic Principles of Understanding Physical Science:
1. Matter and Its Interactions: Structure of Matter
 2. Motion and Stability: Forces and Interaction
 3. Energy
 4. Waves and Their Applications in Technologies for Information Transfer
- (e) Basic Principles of Understanding Technology/Engineering:
1. Engineering and Design
 2. Materials, Tools and Manufacturing
 3. Technological Systems

The following topics will be addressed on a subject matter knowledge test for **the 5-8 level**:

- (a) The eight essential science and engineering practices:
1. Asking questions and defining problems
 2. Developing and using models
 3. Constructing explanations and designing solutions
 4. Obtaining, evaluating and communicating information
 5. Planning and carrying out investigations
 6. Analyzing and interpreting data
 7. Using mathematical and computational thinking
- (b) Intermediate Knowledge and Understanding of Earth and Space Science:
1. Earth's Place in the Universe
 2. Earth's Systems
 3. Impact of human activity on the Earth
- (c) Intermediate Knowledge and Understanding of Life Science:
1. Structures and Processes of Molecules and Organisms
 2. Ecosystems: Interactions, Energy, and Dynamics
 3. Heredity: Inheritance and Variation of Traits

- 4. Biological Evolution: Unity and Diversity
- (d) Intermediate Knowledge and Understanding of Physical Science:
 - 1. Matter and Its Interactions: Structure of matter
 - 2. Motion and Stability: Forces and Interactions
 - 3. Energy
 - 4. Waves and Their Applications in Technologies for Information Transfer
- (e) Intermediate Knowledge and Understanding of Technology/Engineering:
 - 1. Engineering Design
 - 2. Material, Tools and Manufacturing
 - 3. Technological Systems

