
Mastering Science for the FTCE Elementary Education K–6 Exam

Course Syllabus
EmpowerED Professional Learning

Course Overview

Course Title: Mastering Science for the FTCE Elementary Education K–6 Exam

Course Type: Self-Paced Online Test Preparation

Estimated Completion Time: Approximately 6–7 hours

Delivery Format: Online, self-paced

Prerequisites: None

Passing Score: 70% on each graded lesson quiz and the cumulative final assessment

Course Description

Mastering Science for the FTCE Elementary Education K–6 Exam is a self-paced test-preparation course designed to help teacher candidates strengthen the science knowledge and instructional understanding addressed on the Science subtest of the FTCE Elementary Education K–6 Exam.

The course combines science content knowledge with the pedagogical knowledge elementary educators need to teach science effectively. Participants explore effective science instruction, the nature and practices of science, physical science, Earth and space science, and life science.

Five focused lessons provide narrated instruction, examples, practice opportunities, and assessment. Lessons 1–4 include graded quizzes, and the course concludes with a cumulative final assessment covering content from all five lessons.

The course is designed to support independent study while helping candidates identify areas of strength and topics that may require additional review before taking the FTCE Science subtest.

Course Learning Outcomes

By the end of this course, participants will be able to:

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1. Apply developmentally appropriate instructional and assessment practices for elementary science, including inquiry, differentiation, classroom safety, scientific tools, and integration with literacy and mathematics.

2. Explain how scientific knowledge is developed, tested, evaluated, and revised through scientific and engineering practices, investigations, models, evidence, and data.
3. Apply foundational physical science concepts involving matter, energy, heat, electricity, forces, mixtures, atoms, elements, molecules, and compounds.
4. Apply foundational Earth and space science concepts involving Earth's systems, rocks and minerals, soil, weather and atmospheric processes, natural resources, the Sun-Earth-Moon system, the Solar System, and space exploration.
5. Apply foundational life science concepts involving cells, organisms, classification, body systems, heredity, evolution, ecosystems, plants, infectious agents, and life cycles.

Course Structure

Lesson 1: Effective Science Instruction

This lesson focuses on the instructional knowledge needed to support effective elementary science learning.

Topics include:

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- Developmentally appropriate science instruction
 - Scientific inquiry and active learning
 - Manipulatives, models, equipment, and representations
 - Identifying and addressing student misconceptions
 - Integrating literacy and mathematics with science
 - Differentiating science instruction and assessment
 - Classroom organization and science safety
 - Scientific tools and measurement
 - Diagnostic, formative, and summative assessment
 - Responsible and culturally responsive science instruction
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Learning Activities:

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- Narrated lesson content
 - Untimed practice set
 - Graded lesson quiz
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Lesson 2: The Nature of Science

This lesson examines how scientific knowledge is developed and how scientific evidence is interpreted.

Topics include:

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- Nature of scientific knowledge

- Scientific models, laws, mechanisms, and theories
 - Science and engineering practices
 - Scientific investigations and experiments
 - Scientific thinking and reasoning
 - Measurement tools and units
 - Interpreting charts, tables, graphs, and other representations
 - Connections among science, technology, engineering, and mathematics
 - Science, technology, and society
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Learning Activities:

- Narrated lesson content
 - Untimed practice set
 - Graded lesson quiz
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Lesson 3: Physical Sciences

This lesson reviews foundational physical science concepts relevant to elementary science instruction.

Topics include:

- Properties of matter
 - Physical and chemical changes
 - States and phase changes of matter
 - Homogeneous and heterogeneous mixtures
 - Atoms, elements, molecules, and compounds
 - Potential and kinetic energy
 - Forms and transformations of energy
 - Temperature and heat
 - Heat transfer
 - Electrical circuits
 - Conductors and insulators
 - Contact and noncontact forces
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Learning Activities:

- Narrated lesson content
 - Untimed practice set
 - Graded lesson quiz
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Lesson 4: Earth and Space

This lesson focuses on foundational concepts involving Earth's systems and space science.

Topics include:

- Earth's geologic features and processes
 - Rocks and minerals
 - Soil formation and composition
 - Solar energy and Earth's systems
 - Atmospheric processes and conditions
 - Renewable and nonrenewable resources
 - Conservation
 - The Sun-Earth-Moon system
 - Day and night
 - Moon phases
 - Tides
 - Seasons
 - Objects within the Solar System
 - Space exploration and its influence on society
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Learning Activities:

- Narrated lesson content
 - Untimed practice set
 - Graded lesson quiz
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Lesson 5: Life Science

This lesson reviews foundational concepts involving living organisms and their interactions with the environment.

Topics include:

- Characteristics of living and nonliving things
- Cell theory
- Levels of biological organization
- Plant and animal cells
- Classification of organisms
- Animal organ systems
- Infectious agents and transmission
- Heredity
- Natural selection and evolution
- Ecosystems and interdependence
- Plant structures and functions
- Photosynthesis and transpiration
- Plant reproduction and responses
- Life cycles and growth

Learning Activities:

- Narrated lesson content
 - Untimed practice set
 - Content assessed through the cumulative final assessment
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These five lessons correspond to the five competency areas identified in the source syllabus. Because FLDOE does not provide percentage weighting for the individual competencies in the cited specifications, the course treats the five areas equally for instructional planning and coverage.

Assessment

Participants demonstrate their understanding through practice activities, lesson quizzes, and a cumulative final assessment.

Practice Sets

Each lesson includes an untimed practice set containing **8 original multiple-choice questions**. Immediate explanatory feedback is provided to support learning and review.

Practice sets are formative and may be revisited for additional practice.

Lesson Quizzes

Lessons 1–4 include a graded quiz containing **8 multiple-choice questions**.

A score of **70% or higher** is considered passing.

Lesson 5 does not include a separate graded lesson quiz. Its content is assessed through the practice activity and cumulative final assessment.

Cumulative Final Assessment

After completing all five lessons, participants complete a **20-question cumulative final assessment**.

The assessment includes questions drawn from all five areas covered throughout the course.

A score of **70% or higher** is considered passing.

The assessment structure and completion requirements above preserve those in the source syllabus.

Recommended Approach

For the best learning experience, participants should:

1. Complete the lessons in order.
 2. Take notes during the narrated instruction.
 3. Complete each practice set before attempting the graded quiz.
 4. Review explanations for both correct and incorrect responses.
 5. Identify concepts that require additional study.
 6. Revisit lesson materials as needed.
 7. Complete the cumulative final assessment after finishing all five lessons.
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Because the Science subtest covers a broad range of content, participants are encouraged to focus on understanding concepts and relationships rather than relying solely on memorization.

Materials Provided

Participants receive access to:

- Five narrated lesson-content modules
 - Five untimed practice sets
 - Four graded lesson quizzes
 - One cumulative final assessment
 - Explanatory feedback throughout the course
 - Course syllabus
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The source specifies that the instructional materials and assessments are delivered as SCORM 1.2 learning activities.

Course Completion

Participants should complete:

- All five lessons
 - All five practice sets
 - All four graded lesson quizzes
 - The cumulative final assessment
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A score of at least **70%** is required on each graded lesson quiz and the cumulative final assessment.

Where a district or program uses the corresponding EmpowerED Professional Learning completion process, a certificate of completion may be issued after the required course components have been successfully completed.

FTCE Alignment

This course is designed to align with the competencies and skills addressed on the **FTCE Elementary Education K–6 Science subtest**.

The five lessons organize instruction around the five science competency areas identified in the course source materials:

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1. Effective Science Instruction
 2. The Nature of Science
 3. Physical Sciences
 4. Earth and Space Science
 5. Life Science
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For instructional planning, EmpowerED Professional Learning provides approximately equal emphasis to the five competency areas. This weighting is a **course-design decision** and should not be interpreted as an official percentage weighting established by the Florida Department of Education.

Important FTCE Disclaimer

Mastering Science for the FTCE Elementary Education K–6 Exam is an independent test-preparation resource.

EmpowerED Professional Learning is **not affiliated with, endorsed by, or sponsored by the Florida Department of Education or the FTCE/FELE testing program**.

All practice questions, examples, instructional materials, and assessments included in this course are original educational materials developed for test-preparation purposes. They are not official FTCE questions and are not reproduced from an actual FTCE examination.

Completion of this course does not guarantee a passing score on the FTCE or fulfillment of any Florida certification or licensure requirement.

Candidates should consult official FTCE/FELE resources for current test specifications, registration procedures, fees, testing policies, passing requirements, and other official information.

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