MS Earth and Space Science, Semester A

Course Overview

Middle School Earth and Space Science delivers instruction, practice, and review to help students develop scientific literacy, deepen conceptual understanding, and apply scientific practices. Students explore concepts including Earth's systems, engineering design, the nature of the universe, and the interaction between humans and the environment.

The two-semester course is arranged in themed units, each with two to three lessons. In each unit, activities make complex ideas accessible to students as they discover the nature of science through focused content, interactive mini-investigations, multi-modal representations, and personalized feedback. Each lesson includes a variety of activities such as direct instruction, application of skills, performance tasks, and formative and summative assessments. Students engage with the subject matter in an interactive, feedback-rich environment as they progress through standards-aligned content and demonstrate their learning through computer- and teacher-scored assignments.

This course is built to state standards.

Instructional Features

Course Components	Description
Unit overview	A unit overview is an engaging introduction to the topics students will study in that unit.
Lesson overview	A lesson overview is an introduction that gives students an overview of the topics to be studied in the lesson. It summarizes the knowledge and skills students can look forward to gaining as the lesson progresses by providing the lesson's learning objectives. The lesson overview also provides a link to the key terms used in the lesson.
Study	Each study is an interactive instructional activity that presents new information, ensures student comprehension of materials encountered earlier in the lesson, and prepares students for coming materials. Studies include textual, visual, audio, and video instruction as well as frequent use of embedded tools and checkpoint opportunities to confirm and underscore student comprehension.

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Course Components	Description
Checkup	A checkup activity provides students additional practice and feedback.
Lab	A lab is a hands-on investigatory activity that can be completed in a couple of class periods. It includes virtual labs, modeling exercises, and engineering design activities.
Explore	An explore activity gives students the opportunity to conduct research, evaluate source materials, and synthesize information.
Practice	A practice activity provides instruction similar to that found in a study so that students can practice or review skills necessary to complete their assignment with mastery.
Mastery test	A mastery test is a computer-scored lesson-level summative assessment.
Review (lesson)	A lesson review is an engaging review that summarizes the main concepts in the lesson in the form of a video or interactive activity.
Review (unit)	A unit review provides students the opportunity to review the vocabulary and objectives from the lessons in the unit to prepare for the unit test.
Review (semester)	A semester review provides students the opportunity to review the vocabulary and objectives from the lessons in the semester to prepare for the end-of-semester test.
Post test	A post test is a computer-scored unit-level summative assessment.
End of semester test	An end of semester test is a computer-scored semester exam.

Interactive Tools

- **Videos** explain real-world examples to make concepts relatable or use animations to break down processes**.**
- **Study guides** are note-taking tools that help students organize important concepts and vocabulary as they progress through a study**.**
- **Word assists** provide point-of-use vocabulary instruction**.**
- **Pop-ups** are used to provide students with reference information they need at point of use.
- **Simulations** provide students with inquiry-based learning opportunities through interactive mini-investigations.

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COURSE STRUCTURE

UNIT 1: SCIENCE AND ENGINEERING

Lesson and Duration	Description
Science and Engineering: Unit Overview *1 minute*	Read the unit overview.
LESSON 1: WHAT IS SCIENCE?	
What Is Science?: Lesson Overview *5 minutes*	Read the lesson overview.
What Is Science?: Study *1 hour*	Learn what science is and how scientific laws and theories are formed.
What Is Science?: Checkup *20 minutes*	Check your understanding of the lesson.
What Is Science?: Review *5 minutes*	Review important ideas and skills from this lesson.
What Is Science?: Mastery Test *20 minutes*	Take a quiz to assess your understanding of the material.
Practice: What Is Science? *20 minutes*	Submit your work for a set of practice problems.
LESSON 2: TYPES OF INVESTIGATIONS	
Types of Investigations: Lesson Overview *5 minutes*	Read the lesson overview.
Types of Investigations: Study *1 hour*	Learn how to conduct different types of scientific investigations.
Types of Investigations: Checkup *20 minutes*	Check your understanding of the lesson.
Types of Investigations: Review *5 minutes*	Review important ideas and skills from this lesson.

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Lesson and Duration	Description
Types of Investigations: Mastery Test *20 minutes*	Take a quiz to assess your understanding of the material.
Practice: Types of Investigations *20 minutes*	Submit your work for a set of practice problems.
LESSON 3: WHAT IS ENGINEERING?	
What Is Engineering?: Lesson Overview *5 minutes*	Read the lesson overview.
What Is Engineering?: Study *1 hour*	Learn about engineering.
What Is Engineering?: Checkup *20 minutes*	Check your understanding of the lesson.
What Is Engineering?: Review *5 minutes*	Review important ideas and skills from this lesson.
What Is Engineering?: Mastery Test *20 minutes*	Take a quiz to assess your understanding of the material.
Practice: What Is Engineering? *20 minutes*	Submit your work for a set of practice problems.
UNIT 1 WRAP-UP: SCIENCE AND ENGINEERING	
Science and Engineering: Review *30 minutes*	Prepare for the unit test by reviewing key concepts and skills.
Post Test: Science and Engineering *30 minutes*	Take a computer-scored test to assess what you have learned in this unit.

UNIT 2: TOOLS OF INQUIRY

Lesson and Duration	Description
Tools of Inquiry: Unit Overview *1 minute*	Read the unit overview.
LESSON 1: USING MODELS	

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Lesson and Duration	Description
Using Models: Lesson Overview *5 minutes*	Read the lesson overview.
Using Models: Study *1 hour*	Learn about different kinds of models and how they are used by scientists.
Using Models: Checkup *20 minutes*	Check your understanding of the lesson.
Using Models: Review *5 minutes*	Review important ideas and skills from this lesson.
Using Models: Mastery Test *20 minutes*	Take a quiz to assess your understanding of the material.
Practice: Using Models *20 minutes*	Submit your work for a set of practice problems.
LESSON 2: TOOLS AND MEASUREMENT	
Tools and Measurement: Lesson Overview *5 minutes*	Read the lesson overview.
Tools and Measurement: Study *1 hour*	Learn about appropriate tools and SI units for collecting, recording, and analyzing data.
Tools and Measurement: Checkup *20 minutes*	Check your understanding of the lesson.
Tools and Measurement: Review *5 minutes*	Review important ideas and skills from this lesson.
Tools and Measurement: Mastery Test *20 minutes*	Take a quiz to assess your understanding of the material.
Practice: Tools and Measurement *20 minutes*	Submit your work for a set of practice problems.
LESSON 3: DISPLAYING AND INTERPRETING DATA	

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Lesson and Duration	Description
Displaying and Interpreting Data: Lesson Overview *5 minutes*	Read the lesson overview.
Displaying and Interpreting Data: Study *1 hour*	Learn different ways to organize, display, and analyze data.
Displaying and Interpreting Data: Checkup *20 minutes*	Check your understanding of the lesson.
Displaying and Interpreting Data: Review *5 minutes*	Review important ideas and skills from this lesson.
Displaying and Interpreting Data: Mastery Test *20 minutes*	Take a quiz to assess your understanding of the material.
Practice: Displaying and Interpreting Data *20 minutes*	Submit your work for a set of practice problems.
UNIT 2 WRAP-UP: TOOLS OF INQUIRY	
Tools of Inquiry: Review *30 minutes*	Prepare for the unit test by reviewing key concepts and skills.
Post Test: Tools of Inquiry *30 minutes*	Take a computer-scored test to assess what you have learned in this unit.

UNIT 3: PLANET EARTH

Lesson and Duration	Description
Planet Earth: Unit Overview *1 minute*	Read the unit overview.
LESSON 1: MODELS OF EARTH	
Models of Earth: Lesson Overview *5 minutes*	Read the lesson overview.

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Lesson and Duration	Description
Models of Earth: Study *1 hour*	Learn how to interpret maps and other models of Earth.
Models of Earth: Checkup *20 minutes*	Check your understanding of the lesson.
Models of Earth: Review *5 minutes*	Review important ideas and skills from this lesson.
Models of Earth: Mastery Test *20 minutes*	Take a quiz to assess your understanding of the material.
Practice: Models of Earth *20 minutes*	Submit your work for a set of practice problems.
LESSON 2: EARTH'S STRUCTURE AND CYCLES	
Earth's Structure and Cycles: Lesson Overview *5 minutes*	Read the lesson overview.
Earth's Structure and Cycles: Study *1 hour*	Learn about Earth's structure and how materials move between Earth's different parts.
Earth's Structure and Cycles: Checkup *20 minutes*	Check your understanding of the lesson.
Earth's Structure and Cycles: Review *5 minutes*	Review important ideas and skills from this lesson.
Earth's Structure and Cycles: Mastery Test *20 minutes*	Take a quiz to assess your understanding of the material.
Lab: Earth's Structure and Cycles *3 hours*	Model Earth's structure.
UNIT 3 WRAP-UP: PLANET EARTH	
Planet Earth: Review *30 minutes*	Prepare for the unit test by reviewing key concepts and skills.

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Lesson and Duration	Description
Post Test: Planet Earth *30 minutes*	Take a computer-scored test to assess what you have learned in this unit.

UNIT 4: THE GEOSPHERE

Lesson and Duration	Description
The Geosphere: Unit Overview *1 minute*	Read the unit overview.
LESSON 1: MINERALS	
Minerals: Lesson Overview *5 minutes*	Read the lesson overview.
Minerals: Study *1 hour*	Learn what minerals are, how they form, and some of the ways we use them.
Minerals: Checkup *20 minutes*	Check your understanding of the lesson.
Minerals: Review *5 minutes*	Review important ideas and skills from this lesson.
Minerals: Mastery Test *20 minutes*	Take a quiz to assess your understanding of the material.
Practice: Minerals *20 minutes*	Submit your work for a set of practice problems.
Lab: Minerals *3 hours*	Identify mineral samples and grow your own crystals.
LESSON 2: THE ROCK CYCLE	
The Rock Cycle: Lesson Overview *5 minutes*	Read the lesson overview.
The Rock Cycle: Study *1 hour*	Learn how different types of rock form.
The Rock Cycle: Checkup *20 minutes*	Check your understanding of the lesson.
The Rock Cycle: Review *5 minutes*	Review important ideas and skills from this lesson.

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Lesson and Duration	Description
The Rock Cycle: Mastery Test *20 minutes*	Take a quiz to assess your understanding of the material.
Practice: The Rock Cycle *20 minutes*	Submit your work for a set of practice problems.
LESSON 3: SOIL	
Soil: Lesson Overview *5 minutes*	Read the lesson overview.
Soil: Study *1 hour*	Learn what soil is made of and how it forms.
Soil: Checkup *20 minutes*	Check your understanding of the lesson.
Soil: Review *5 minutes*	Review important ideas and skills from this lesson.
Soil: Mastery Test *20 minutes*	Take a quiz to assess your understanding of the material.
Practice: Soil *20 minutes*	Submit your work for a set of practice problems.
UNIT 4 WRAP-UP: THE GEOSPHERE	
The Geosphere: Review *30 minutes*	Prepare for the unit test by reviewing key concepts and skills.
Post Test: The Geosphere *30 minutes*	Take a computer-scored test to assess what you have learned in this unit.

UNIT 5: OUR CHANGING PLANET

Lesson and Duration	Description
Our Changing Planet: Unit Overview *1 minute*	Read the unit overview.
LESSON 1: DEFORMING EARTH'S CRUST	

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Lesson and Duration	Description
Deforming Earth's Crust: Lesson Overview *5 minutes*	Read the lesson overview.
Deforming Earth's Crust: Study *1 hour*	Learn how Earth's crust can be deformed.
Deforming Earth's Crust: Checkup *20 minutes*	Check your understanding of the lesson.
Deforming Earth's Crust: Review *5 minutes*	Review important ideas and skills from this lesson.
Deforming Earth's Crust: Mastery Test *20 minutes*	Take a quiz to assess your understanding of the material.
Practice: Deforming Earth's Crust *20 minutes*	Submit your work for a set of practice problems.
LESSON 2: WEATHERING AND EROSION	
Weathering and Erosion: Lesson Overview *5 minutes*	Read the lesson overview.
Weathering and Erosion: Study *1 hour*	Learn how weathering and erosion break down and build up landforms.
Weathering and Erosion: Checkup *20 minutes*	Check your understanding of the lesson.
Weathering and Erosion: Review *5 minutes*	Review important ideas and skills from this lesson.
Weathering and Erosion: Mastery Test *20 minutes*	Take a quiz to assess your understanding of the material.
Lab: Weathering and Erosion *3 hours*	Build a model to investigate how weathering and erosion by water and ice shape Earth's surface.
LESSON 3: GEOLOGIC TIME	

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Lesson and Duration	Description
Geologic Time: Lesson Overview *5 minutes*	Read the lesson overview.
Geologic Time: Study *1 hour*	Learn what fossils are and how scientists use them to study Earth's history.
Geologic Time: Checkup *20 minutes*	Check your understanding of the lesson.
Geologic Time: Review *5 minutes*	Review important ideas and skills from this lesson.
Geologic Time: Mastery Test *20 minutes*	Take a quiz to assess your understanding of the material.
Practice: Geologic Time *20 minutes*	Submit your work for a set of practice problems.
Explore: Geologic Time *2 hours*	Research Earth's early history.
UNIT 5 WRAP-UP: OUR CHANGING PLANET	
Our Changing Planet: Review *30 minutes*	Prepare for the unit test by reviewing key concepts and skills.
Post Test: Our Changing Planet *30 minutes*	Take a computer-scored test to assess what you have learned in this unit.

UNIT 6: EARTH'S PLATES

Lesson and Duration	Description
Earth's Plates: Unit Overview *1 minute*	Read the unit overview.
LESSON 1: PLATE TECTONICS	
Plate Tectonics: Lesson Overview *5 minutes*	Read the lesson overview.
Plate Tectonics: Study *1 hour*	Learn about Earth's tectonic plates and how they interact with one another.
Plate Tectonics: Checkup *20 minutes*	Check your understanding of the lesson.

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Lesson and Duration	Description
Plate Tectonics: Review *5 minutes*	Review important ideas and skills from this lesson.
Plate Tectonics: Mastery Test *20 minutes*	Take a quiz to assess your understanding of the material.
LESSON 2: EARTHQUAKES AND VOLCANOES	
Earthquakes and Volcanoes: Lesson Overview *5 minutes*	Read the lesson overview.
Earthquakes and Volcanoes: Study *1 hour*	Learn what causes earthquakes and volcanic eruptions.
Earthquakes and Volcanoes: Checkup *20 minutes*	Check your understanding of the lesson.
Earthquakes and Volcanoes: Review *5 minutes*	Review important ideas and skills from this lesson.
Earthquakes and Volcanoes: Mastery Test *20 minutes*	Take a quiz to assess your understanding of the material.
Practice: Earthquakes and Volcanoes *20 minutes*	Submit your work for a set of practice problems.
UNIT 6 WRAP-UP: EARTH'S PLATES	
Earth's Plates: Review *30 minutes*	Prepare for the unit test by reviewing key concepts and skills.
Post Test: Earth's Plates *30 minutes*	Take a computer-scored test to assess what you have learned in this unit.

SEMESTER WRAP-UP

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Lesson and Duration	Description
Semester Review: Review *30 minutes*	Prepare for the semester exam by reviewing key concepts and skills.
End of Semester Test: Semester Exam *40 minutes*	Take a computer-scored exam to demonstrate your mastery of concepts and skills covered in this semester.

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