Odysseyware®

CURRICULUM OVERVIEW

Introduction to STEM

Career and Technical Education Series

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Introduction to STEM Course Overview

This course introduces students to the four areas of Science, Technology, Engineering, and Mathematics through an interdisciplinary approach that will increase awareness, build knowledge, develop problem solving skills, and potentially awaken an interest in pursuing a career in STEM. Students will be introduced to the history, fundamental principles, applications, processes, and concepts of STEM. Students will explore some of the great discoveries and innovations in STEM and review and analyze some of the world's problems that still exist today. Students are introduced to several computer applications used to analyze and present technical or scientific information. They will also gain a higher understanding of the uses for images and measurement in everyday life. Finally, students will explore the kinds of strategies frequently used to solve problems in these disciplines. Throughout the course, students will have the opportunity to discover their strengths through practical applications and awareness of the various STEM careers.

- **On Whose Shoulders are We Standing?** Students learn about the history and importance of STEM education in the United States, the qualities of STEM students, self-assessment and career interest inventory instruments, and some traditional and non-traditional STEM careers. You also learned about the use of outlines and mind maps to plan and manage STEM projects.

- **A Picture is Worth a Thousand Words**: Students explore the use of images to communicate data and STEM careers that utilize imaging. They also learn about STEM careers in graphic design, animation, gaming, and medical imaging. Also covered are careers that implement data and images, such as radiologic technologists, medical equipment repairers, aerospace engineers, atmospheric scientists, and geographers.

- **How Much is Enough?** In this unit, students learn about the history of measurement; how measurement was defined by the United States; and the uses, importance, and significance of measurement in STEM.

- **How to be a Detective**: Students investigate the scientific method, scientific theories, scientific laws, problem-solving skills, critical thinking skills, and creative thinking methods. They are also introduced to STEM careers that utilize these skills and methods.

- **STEM is Everywhere!** In this unit, students explore the different ways that STEM influences politics, sports, art, music, fashion, and law enforcement fields. They also review the duties, responsibilities, education and training requirements, and outlook for various STEM careers relating to politics, sports, art and design, and law enforcement.

Unit 1: On Whose Shoulders Are We Standing?	
Assignments	
1. Course Overview	10. Get Organized: Mind Maps and Mind Mapping!
2. What is STEM Education?	11. Education and Training in STEM
3. The Great Discoverers and Discoveries	12. Project: Mind Map of Personal STEM Education and Career Plan
4. Project: Timeline of Great Discoverers and Discoveries in the STEM Field	13. Quiz 2: What Lies Ahead?
5. Identify Careers in Science, Technology, Engineering, and Mathematics	14. Special Project*
	15. Test
6. Project: Exploring Careers in the STEM Field	16. Course Project Part 1: Information on STEM, STEM Careers, and Education*
7 Quiz 1: Introduction	
8. Get Organized: Outlines and Outliners!	17. Glossary and Credits
9. Project: Create a Google Website	

Intro. to STEM

Unit 2: A Picture is Worth a Thousand Words

Assignments

1. A Picture is Worth a Thousand Words
2. Project: Math is Everywhere
3. Seeing is Believing?
4. Project: STEM Campaign!
5. Images Saving Lives!
6. Quiz 1: Images, Images, Everywhere
7. Satellite Imagery: Space and Beyond
8. Project: NASA Internship Application Paper
9. Satellite Imagery: Observing Earth
10. Project: Saving the Planet
11. Satellite Imagery: The Eyes of the Military
12. Quiz 2: Fun with Images
13. Special Project*
14. Test
15. Course Project Part 2: Create an Original Drawing, Avatar, or Animation*
16. Glossary and Credits

Unit 3: How Much is Enough?

Assignments

1. Terms of Measurement
2. Project: Room Makeover
3. Measuring the Really Big
4. Project: Metric Recipe
5. How Big are These?
6. Quiz 1: How BIG are Things?
7. Term Review
8. Project: Measuring Tall Structures
9. Small Things Need Measurement, Too
10. Project: Air Quality Index
11. Thinking about Measuring
12. Quiz 2: How Small are Things?
13. Special Project*
14. Test
15. Course Project Part 3: Create a Walking/Running/Cycling Path*
16. Glossary and Credits

Unit 4: How to Be a Detective

Assignments

1. The Scientific Method
2. Project: Scientific Method and STEM Career Exploration
3. Scientific Theory
4. Project: Scientific Laws and STEM Careers
5. Scientific Laws
6. Quiz 1: How Might I Solve a Problem?
7. Critical Thinking
8. Thinking Like a Detective
9. Project: Uncovering the World's Mysteries
10. Thinking Outside the Box
11. Project: Fibonacci Sequence
12. Quiz 2: What if I Fail?
13. Special Project*
14. Test
15. Course Project Part 4: Create an Optical Illusion Drawing*
16. Glossary and Credits

Unit 5: Stem is Everywhere

Assignments

1. STEM and Politics
2. Project: Develop and Conduct a Survey
3. STEM and Sports
4. Project: Running with Proper Biomechanics
5. STEM and Art
6. Quiz 1: STEM and Politics, Sports, and Art
7. STEM and Music
8. Project: Music Editing
9. STEM and Fashion
10. STEM and Law Enforcement
11. Project: Forensic Footprinting
12. Quiz 2: STEM and Music, Fashion, and Law Enforcement
13. Special Project*
14. Test
15. Course Project Part 5: Create Eco-Friendly Fashion*
16. Glossary and Credits

Unit 6: Course Project, Review, and Exam	
Assignments	
1. Course Project Part 6: Create a Google STEM Educational Website*	2. Review 3. Exam

(*) Indicates alternative assignment