## Career Exploration Module – DAY ONE

<table>
<thead>
<tr>
<th>Lesson Title</th>
<th>Objectives</th>
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<tbody>
<tr>
<td>Career Module Introduction</td>
<td>Discuss the STEM Career Cluster</td>
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<tr>
<td>Cluster Pathway All Pathways</td>
<td>Identify and explore career opportunities within the STEM Career Cluster</td>
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<td></td>
<td>Identify and discuss the eight pathways within the STEM Career Cluster</td>
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### Essential Question
What is the STEM Cluster?

### TEKS
1.A, 1.B, 2.A

### Prior Student Learning
Students should already be aware that there are 15 other career clusters

### Estimated time
45 minutes

### Materials/Equipment/Handouts Needed
- Introduction of Careers in STEM slide presentation (computer, projector, screen, etc.)
- Career Exploration Module Vocabulary List
- Career Pathway Vocabulary Activity Mat
- Career Pathway Matching Activity
- Careers in STEM Crossword Puzzle
- Lesson handouts for the next lesson if needed

### Introduction/Engage
- Initiate a class discussion by asking each student to give one example of a career in the STEM Career Cluster without repeating another student's response
- Search the Internet to find a video about careers in STEM to show during the introduction of the lesson (slide 2)

### Activities
- Lecture: Introduction of Careers in STEM slide presentation
- Discuss upcoming career module experiences and expectations
- Assignment: STEM Vocabulary Activity Mat
- Assignment: Career Pathway Matching Activity
- Assignment: Career in STEM Crossword Puzzle
- Distribute and review Career Exploration Module Vocabulary List

### Lesson Closure
- Review the eight pathways of STEM using questioning techniques
- Review and collect Career Pathway Matching Activity sheets
- Distribute handouts for the next lesson if applicable and instruct students to prepare for the following lesson
- Homework: Instruct students to begin searching for vocabulary list definitions

### Assessment
- Verbal responses to questions
- STEM Vocabulary Activity Mat
- Completion of Career Pathway Matching Activity
- Career in STEM Crossword Puzzle
**Extension**
- Challenge students to make a list of personal skills and interests

**Accommodations for Learning Differences**
- Accommodations Manual
- Guidelines and Procedures for Adapting Instructional Materials
- Sample Curriculum Customizations for Learning Differences
- Lesson Plan/Curriculum Modification Checklist
- Instructor Format for Curriculum Customization for Learning Differences
VOCABULARY LIST- DEFINITIONS

1. **Advanced Manufacturing** - a variety of activities that depend on the use and coordination of information, automation, computation, software, sensing, and networking, and/or making use of cutting edge materials and emerging capabilities enabled by the physical and biological sciences; examples would be nanotechnology, chemistry and biology. Advanced Manufacturing involves both new ways to manufacture existing products, and especially the manufacture of new products emerging from new advanced technologies.

2. **Aerospace** - involves the design and manufacturing of aircraft, rockets, missiles, spacecraft, etc., that are needed to operate in aerospace.

3. **Biotechnology** – the utilization of living organisms or other biological systems to manufacture drugs or other products needed for environmental management; an example would be waste recycling where microorganisms are used to degrade a waste or oil spill.

4. **Energy** - the many different forms of energy to power other industries, for example light, heat, mechanical, gravitational, electrical, sound, chemical, nuclear, etc.; often these different forms of energy transfer back and forth from each other.

5. **Geospatial Technology** – utilization of a range of modern tools to perform geographic mapping and analysis of the Earth and human societies.

6. **Information Technology** - development, implementation, and maintenance of computer hardware and/or software systems to organize and communicate information electronically.

7. **Nanotechnology** – creation and/or use of technology that is on a scale of less than 100 nanometers with a goal of controlling individual atoms and molecules, especially to create computer chips and other microscopic devices.

8. **Robotics** – robotics careers include anything from a robotics engineer to a behind-the-scenes designer, who is responsible for creating robots and robotic systems that are able to perform duties that humans are either unable or prefer not to complete; robots can be created that help make jobs safer, easier, and more efficient, particularly in the manufacturing industry.
VOCABULARY LIST

1. Advanced Manufacturing
2. Aerospace
3. Biotechnology
4. Energy
5. Geospatial Technology
6. Information Technology
7. Nanotechnology
8. Robotics
**CAREER PATHWAY VOCABULARY ACTIVITY MAT**

Name: ____________________________________________

Class Period: _______________ Date: _______________ Score: _______ out of 25

**Instructions**: find an image that you feel best represents the vocabulary word, define it in your own words, and then list one to two actual career titles that would fall under it that you find interesting. Explain what it is about that career that you like.

<table>
<thead>
<tr>
<th>VOCABULARY</th>
<th>Image</th>
<th>Definition</th>
<th>Careers/Jobs</th>
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<tbody>
<tr>
<td>1. Advanced Manufacturing</td>
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<tr>
<td>2. Aerospace</td>
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<td>3. Biotechnology</td>
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<td>5. Geospatial Technology</td>
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<td>6. Information Technology</td>
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<tr>
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<tr>
<td>8. Robotics</td>
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Career Pathway Matching Activity

Materials needed:
Career Pathway Worksheet

TEKS:
§127.4.(c)(1)(A)(B), (2)(A)

Approximate time:
15-20 minutes

Directions:

1. Give each student a Career Pathway worksheet and go over the directions with them.

2. Students may use computers and the internet to find information needed on the activity sheet.
CAREER PATHWAY MATCHING ACTIVITY

Group Members: ____________________________________________

Class Period: ___________ Date: ________________ Score: ________ out of 25

The STEM Career Cluster is divided into eight career pathways. The eight pathways of the STEM Career Cluster are:

A. Advanced Manufacturing
B. Aerospace
C. Biotechnology
D. Energy
E. Geospatial Technology
F. Information Technology
G. Nanotechnology
H. Robotics

Instructions: Using the list above, place the letter of the career pathway next to the occupation that it relates to. Be prepared to explain your responses.

CAREER PATHWAY MATCHING ACTIVITY KEY

1. A
2. C
3. B
4. D
5. A
6. B
7. D
8. E
9. B
10. D
11. C
12. F
13. C
14. F
15. D
16. A
17. G
18. C
19. H
20. E
21. D
22. A
23. F
24. G
25. H
26. E
27. H
28. H
29. E
30. E
31. F
32. F
33. F
34. G
CREATE A CROSSWORD PUZZLE

Materials needed:
Computer, internet, printer, copy of the crossword puzzle for each student

TEKS:
Varied, dependent on content

Approximate time:
10 to 15 minutes

Directions:

1. Create a list of terms and clues. These can be vocabulary terms or occupation information such as tools, tasks, requirements, etc.

2. Use an online crossword puzzle maker. There are many free programs available. Simply search for “free crossword puzzle maker.”

3. Follow the prompts of the program to enter the terms and clues.

4. Keep a completed puzzle for yourself as a key.

5. Monitor the students as they complete the puzzle to make certain they have identified the correct terms from the clues.

6. *For difficult puzzles or modification, provide a word bank

7. *An alternative activity is to divide the class into small groups and have them create a crossword puzzle. Exchange the puzzles and have each group complete the puzzle they receive.
Careers in STEM Crossword Puzzle

DOWN:
1. There are many forms of this
2. Software systems to organize and communicate information electronically
3. Products needed for environmental management
4. Design and manufacturing of aircraft, rockets, missiles, space crafts, etc.
5. Scale of less than 100 nanometers

ACROSS:
6. Helps make jobs safer, easier, and more efficient, particularly in the manufacturing industry
7. Contributes to the geographic mapping and analysis of the Earth and human societies
8. Involves both new ways to manufacture existing products, and especially the manufacture of new advanced technologies
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# Careers in STEM Crossword Puzzle Grading Key

<table>
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