GEORGIA | PEACH STATE PATHWAYS

Career, Technical, & Agricultural Education

ENGINEERING & TECHNOLOGY

PATHWAY: Engineering

COURSE: Foundations of Engineering and Technology

UNIT: 15: Careers in Engineering

INTRODUCTION

Annotation: Briefly describe the unit topics, tasks, methods, etc.

In this unit students will learn about the variety of careers in engineering, what skills are required to each career and how they can prepare for a career in engineering.

Grade(s):

X	9th
X	10th
X	11th
X	12th

Time:

10 Hours

Author:

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Students with Disabilities:

For students with disabilities, the instructor should refer to the student's IEP to be sure that the accommodations specified are being provided. Instructors should also familiarize themselves with the provisions of Behavior Intervention Plans that may be part of a student's IEP. Frequent consultation with a student's special education instructor will be beneficial in providing appropriate differentiation.

Note to the Teacher:

Optional: This lesson contains a project that uses PowerPoint on the computer. The teacher will need to secure use of computers or computer lab time. An alternative project could be to allow the students to create a poster that would include the same information as that listed on the assignment sheet.

FOCUS STANDARDS

GPS Focus Standards: Please list the standard and elements covered.

- ENGR-FET-1a – Identify potential career opportunities related to engineering and technology.
- ENGR-FET-1b – Explain the educational requirements and professional expectations associated with a chosen technological career path.
- ENGR-FET2c – List key persons who have contributed to technological change.
- CTAE-FS-5 Information Technology Applications: Learners use multiple information technology devices to access, organize, process, transmit, and communicate information.
- CTAE-FS-10 Career Development: Learners plan and manage academic-career plans and employment relations.

GPS Academic Standards:

National / Local Standards / Industry / ISTE:

UNDERSTANDINGS & GOALS

Enduring Understandings:

Students will learn the diversity and breadth of opportunities within engineering, as well as potential career opportunities in the engineering and technology fields.

Essential Questions:

- What are the potential career opportunities related to engineering and technology?
- What are the education requirements for professional engineers and engineering technologists?
- How have the opportunities in engineering grown and expanded as technology has developed? \

Knowledge from this Unit:

Students will…

- Analyze the contributions of all academics to the study of engineering.
- Identify potential career opportunities related to engineering and technology.
- Explain the educational requirements and professional expectations associated with a chosen technological career path.

Skills from this Unit: Performance.

ASSESSMENT(S)

Assessment Method Type: Select one or more of the following. Please consider the type(s) of differentiated instruction you will be using in the classroom.

- ____ Pre-test
- ____ Objective assessment - multiple-choice, true- false, etc.
  - __ Quizzes/Tests
  - __ Unit test
- X Group project
- X Individual project
- X Self-assessment - May include practice quizzes, games, simulations, checklists, etc.
  - __ Self-check rubrics
  - __ Self-check during writing/planning process
  - __ Journal reflections on concepts, personal experiences and impact on one's life
  - __ Reflect on evaluations of work from teachers, business partners, and competition judges
  - __ Academic prompts
  - __ Practice quizzes/tests
- ____ Subjective assessment/Informal observations
  - __ Essay tests
  - __ Observe students working with partners
  - __ Observe students role playing
- ____ Peer-assessment
  - __ Peer editing & commentary of products/projects/presentations using rubrics
  - __ Peer editing and/or critiquing
- ____ Dialogue and Discussion
  - __ Student/teacher conferences
  - __ Partner and small group discussions
  - __ Whole group discussions
  - __ Interaction with/feedback from community members/speakers and business partners
- ____ Constructed Responses
  - __ Chart good reading/writing/listening/speaking habits
  - __ Application of skills to real-life situations/scenarios
- ____ Post-test

Assessment(s) Title:

Engineering Careers PowerPoint Project

Engineering is Everywhere: How Engineering Relates to Future Careers Assignment

Assessment(s) Description/Directions:

Day 1

1. Power Point Presentation: Show the Careers in Engineering PowerPoint as an introduction to the course. Discuss the PowerPoint as you are presenting. Discuss things like what does the definition mean in applicable terms and what are examples of careers under each discipline.

2. Discussion: Discuss the range of opportunity available in careers in engineering. Encourage students to think about how engineering relates to their future career choice even if they do not want to be an engineer. If you have easy internet access you may want to show students http://www.engineering.com/ and discuss what careers or job listing surprise them on the website.

Day 2

1. Handout: Handout the sheet titled "ScienceTechnologyEngineeringMathematics", which lists a large number of engineering careers. At this point in time you can lead a short discussion to remind students how broad engineering really is. Ask if there are careers on the sheet that surprise them.

2. Assignment: Give students the Careers in Engineering Assignment Sheet and go over it. Allow students the rest of the day to work on the presentations.

Days 3

1. Work on assignment: Allow students to have plenty of time to finish their PowerPoint. This may take the rest of the class or they may be ready to start presenting towards the end.

Day 4

1. Presentations: Allow each student (or student group) to present their PowerPoint to the class. Encourage discussion and questions.

Day 5-8

1. Assignment: Engineering is Everywhere: How Engineering Relates to Future Careers assignment. Discuss this assignment in detail as it will be more in-depth and expected to be more detailed and polished than the previous presentation. Allow students to begin brainstorming and writing out how things connect. This should be well outlined before they ever sit at the computer. During these four days students should put together and polish their PowerPoint and presentation.

Day 9-10

1. Presentations: Allow students to present their PowerPoints to the class. Encourage questions. This is a great opportunity to see how engineering is integrated into so many careers and career pathways.

Attachments for Assessment(s): Please list.

Careers in Engineering PowerPoint

Engineering is Everywhere Word document

LEARNING EXPERIENCES

Sequence of Instruction

1. Identify the Standards. Standards should be posted in the classroom for each lesson.

- ENGR-FET-1a – Identify potential career opportunities related to engineering and technology.
- ENGR-FET-1b – Explain the educational requirements and professional expectations associated with a chosen technological career path.
- ENGR-FET2c – List key persons who have contributed to technological change.
- CTAE-FS-5 Information Technology Applications: Learners use multiple information technology devices to access, organize, process, transmit, and communicate information.
- CTAE-FS-10 Career Development: Learners plan and manage academic-career plans and employment relations.

2. Review Essential Questions.

- What are the potential career opportunities related to engineering and technology?
- What are the education requirements for professional engineers and engineering technologists?
- How have the opportunities in engineering grown and expanded as technology has developed?

3. Identify and review the unit vocabulary.

Discipline

Role

Engineering

4. Assessment Activity.

- Day one: Introduction, PowerPoint, Discussion
- Day two: Handout (ScienceTechnologyEngineeringMathematics), discussion, assignment (Engineering Careers)
- Day three: Assignment (Engineering Careers), presentations
- Day four: Presentations
- Days five-eight: Assignment (Engineering is Everywhere)
- Days nine-ten: Presentations

Attachments for Learning Experiences: Please list.

Careers in Engineering PowerPoint

Careers in Engineering Assignment Sheet

Engineering Careers Test

Engineering is Everywhere Word document

ScienceTechnologyEngineeringMathematics Word document

Notes & Reflections: May include notes to the teacher, pre-requisite knowledge & skills, suggestions, etc.

CULMINATING PERFORMANCE TASK (Optional)

Culminating Unit Performance Task Title:

Engineering in Careers PowerPoint Project

Engineering is Everywhere: How Engineering Relates to Future Careers Assignment

Culminating Unit Performance Task Description/Directions/Differentiated Instruction:

See attached sheets:

Careers in Engineering Assignment Sheet

Engineering is Everywhere

Attachments for Culminating Performance Task: Please list.

Careers in Engineering Assignment Sheet
Engineering is Everywhere Word document

UNIT RESOURCES

Web Resources:

http://www.Monster.com/

http://www.hotjobs.com/

http://www.engineering.com/

http://www.khake.com/index.html

http://www.bls.gov/oco/ocos027.htm

http://www.nap.edu/html/careers/contents.html

Attachment(s): Supplemental files not listed in assessment, learning experiences, and performance task.

What 21st Century Technology was used in this unit:

X	Slide Show Software		Graphing Software		Audio File(s)
	Interactive Whiteboard		Calculator	X	Graphic Organizer
	Student Response System	X	Desktop Publishing	X	Image File(s)
	Web Design Software		Blog		Video
	Animation Software		Wiki	X	Electronic Game or Puzzle Maker
	Email	X	Website		