Goal

- Students will identify **Science, Technology, Engineering & Math (STEM)** as a Georgia career cluster

Objectives

- define a career cluster as a large grouping of occupations with common skills and knowledge
- identify sample occupations aligned with the **STEM** career cluster

Aligned Indicators and Standards

National Career Development Guidelines Indicators

- CM3.K4   Identify several ways to classify occupations
- PS2.A1   Demonstrate effective communication skills
- PS2.K2   Recognize the benefits of interacting with others in a positive way
- ED2.A7   Demonstrate participation in informal learning experiences

American School Counselor National Standards

- C:B1.4   Know the various ways in which occupations can be classified
- PS:A2.6   Use effective communication skills
- PS:A1.9   Demonstrate cooperative behavior in groups
- A:A3.5   Share knowledge

Related Georgia Performance Standard (GPS) and Common Core GPS

- S4CS8 (d)   Students will understand important features of the process of scientific inquiry. Students will apply the following to inquiry learning practices:
  d. Science involves many different kinds of work and engages men and women of all ages and backgrounds
- ELACC4RL1   Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text

Materials

- Georgia's Career Cluster chart
- occupational frame
- tape
- white paper plates (optional) newsprint if paper plates are not available
- markers
- newsprint
- **STEM** article, "Forensic Scientist"

Activity

- *Say:* "Today we are going to learn about the STEM career cluster which stands for **SCIENCE, TECHNOLOGY, ENGINEERING and MATH**." *Write STEM, **Science, Technology, Engineering and Math** on the board or flip chart. Say:* "Remember Georgia has 17 Career Clusters and each cluster represents a large group of occupations that are similar. **STEM** represents one of those clusters." *Ask:* "Can you name some other clusters you have studied?" *Allow students time to remember some of the other clusters. If needed, distribute handout listing Georgia's Career Clusters.*

- *Say:* "During the middle school years, you will learn more and more about the clusters and will eventually select courses at the high school that will relate to your selected cluster. Do you like science and math? If you answered yes, you will want to explore occupations in this cluster and continue to enhance your abilities in math and science." *Distribute the handout (front & back): article about Forensic Scientist and the occupational frame.*

- *Say:* "On the back of your handout are occupations that represent jobs in the **STEM** cluster. Most of these occupations require levels of education beyond high school. One really popular occupation is forensic scientist." *Divide the class into three or four groups with 5-6 students. Ask the students to take turns reading the article about a forensic scientist. Circulate around the room to assist and to ensure that everyone is engaged.*

- *When each group completes reading the article, give each group a large white paper plate or a newsprint circle with Forensic Scientist written in the center of the circle; cut strips of newsprint large enough on which students may write. Students in each group should write words on the newspaper strips that describe a forensic scientist. Instruct each group to post their "circle map" on the wall using tape. Allow students time to create the circle map then describe it to the rest of the class. Ask students not to repeat the descriptor if one of the other groups used that same descriptor. This can become a listening activity.*

- *Say:* "The outlooks for jobs in the **STEM** cluster are very, very good for the future. These are the types of jobs that result in new ideas, new products, and new technology. If you think you might be interested, continue to explore and investigate your opportunities. Google Forensic Scientist to see what you can discover. It could be lots of fun!" Or Google **STEM** and investigate other occupations in the **STEM** field. You may find just the right type of occupation for you." *Write these occupations on the board for students to copy on their handout: Chemical Engineer, Electrical Engineer, Zoologist, Nuclear Engineer, Computer Software Engineer, Chemist, and Nutritionist. Say:* "These occupations are additional ones aligned with the STEM cluster. I hope you will continue to learn more about this cluster by exploring the occupations in this list."

- Say: "I liked learning about a Forensic Scientist. I hope you did. Have a great day and continue to explore your future."

Evaluation
- Students will be evaluated on their responses and participation in the activity

Enhancements:
- Georgia **STEM**: for students http://stemgeorgia.org/?s=Students ; for parents http://stemgeorgia.org/stem-at-home/   *Write these websites on the board and allow students time to write the URL in their notebook. Tell them to share these websites with their family.*
- Download from Career One Stop to find career cluster video for STEM (http://www.careerinfonet.org/videos_by_cluster.asp?id=&nodeid=28) video, "Aerospace Engineer". Show this video to class as an example of another occupation in the **STEM Career Cluster**.

DISCLAIMER
The sources and web links listed in the activities may be of help to you as you consider the career awareness activities. While these sources are provided to assist you in your search, it is your responsibility to investigate them to determine their value and appropriateness for your situation and needs. These sources are provided as a sample of available resources and are for informational purposes only. THE GEORGIA DEPARTMENT OF EDUCATION DOES NOT MONITOR, EVALUATE, OR ENDORSE THE CONTENT OR INFORMATION OF THESE RESOURCES. NONE OF THESE RESOURCES SHOULD BE CONSIDERED THE ADVICE OR GUIDANCE OF THE GEORGIA DEPARTMENT OF EDUCATION.

FORENSIC SCIENTIST

(Adapted from and credit for the article from http://www.accreditedonlinecolleges.com)

What's it really like to be a <u>forensic scientist</u> in the real world? Are the television portrayals of forensic scientists realistic? Forensic scientists do not arrest or even interview criminals. In most cases, they spend hours analyzing evidence collected by police officers.

What is a Forensic Scientist?

Forensic scientists use their experience, scientific training, and skills to study evidence pertaining to crimes. They're provided with physical evidence from crime scenes, which they examine and study. This evidence, and their testimony, is then used in a courtroom to help provide a basis for criminal conviction or innocence.

What do Forensic Scientists do?

Forensic scientists use their skills to help solve crimes. Forensic scientists use their skills to help identify criminals, serve as expert witnesses, recreate crime scenes, analyze data, and share their findings with the court. Many criminalists, another name for forensic scientists, spend time in laboratories or in the field in order to investigate the evidence from a crime scene.

Specialized forensic occupations include: forensic biologist, forensic engineer, crime scene investigator. A forensic pathologist may work closely with a forensic anthropologist on a body that is in the late stages of decay in order to identify whether or not the remains are human, what the gender of the body is, and what may have caused the death.

What Type of Salary does Forensic Scientists Receive?

The salary scale for forensic scientists varies. Entry-level technicians generally earn around $35,000 per year. As you move into the more specialized areas of forensic science, the salaries are dependent upon the special skills. Experienced forensic scientists who have a bachelor's or master's degrees can earn about $75,000 per year. Forensic scientists specializing in the medical field generally earn above $200,000 per year.

Where do Forensic Scientists Work?

While there may be special circumstances under which a forensic scientist may work for a private company, most work for city, state, or federal governments. Forensic scientists also work in morgues and laboratories within various crime fighting agencies. The Federal Bureau of Investigation, Drug Enforcement Administration, Secret Service, Central Intelligence Agency, and the U.S. Postal Service also hire forensic scientists.

Dr. John D. Barge, State School Superintendent
"Making Education Work for All Georgians"

Science, Technology, Engineering & Mathematics

Planning, managing, and providing scientific research and professional and technical services (e.g.; physical science, social science, engineering) including laboratory and testing services, and research and development services.

Occupational Frame

Aerospace Engineer* Aeronautical Engineer* Agricultural Engineer* Agricultural Technician* Application Engineer* Architectural Engineer* Automotive Engineer* Biomedical Engineer* Biotechnology Engineer* Chemical Engineer* Civil Engineer* Communications Engineer* Computer Engineer* Computer Hardware Engineer* Computer Programmer* Computer Science Technician* Computer Software Engineer* Construction Engineer* Consultant* Development Engineer* Drafter* Electrical Engineer* Electrician* Electronics Technician* Energy Transmission Engineer* Environmental Engineer* Facilities Technician* Fire Protection Engineer* Geothermal Engineer* Hazardous Waste Engineer* Hazardous Waste Technician* Human Factors Engineer* Industrial Engineer* Industrial Engineering Technician* Licensing Engineer* Manufacturing Engineer* Manufacturing Technician* Manufacturing Processes Engineer* Marine Engineer* Materials Engineer* Materials-Lab & Supply-Technician* Mechanical Engineer* Metallurgic Engineer* Mining Engineer* Naval Engineer* Network Technician* Nuclear Engineer* Ocean Engineer* Operations Research Engineer* Packaging Engineer* Packaging Technician* Petroleum Engineer* Pharmaceutical Engineer* Plastics Engineer* Power Systems Engineer* Product Design Engineer* Project Engineer* Project manager* Prototype Engineer* Quality Engineer* Quality Technician* Radio/TV Broadcast Technician* Radiology Engineer* Researcher* Safety Engineer* Software Engineer* Sound Technician* Structural Engineer* Survey Technician* Systems Design Engineer* Technical Sales Manager* Technical Writer* Telecommunications Engineer* Textile Engineer* Transportation Engineer* Nuclear Engineer and Procurement Engineer*

Analytical Chemist* Anthropologist* Applied mathematician* Archeologist* Astronomer* Astrophysicist* Atmospheric scientist* Biologist* Botanist* CAD operator* Cartographer* Chemist* Communications technologist* Conservation scientist* Cosmologist* Cryptographer* Crystallographer* Demographer* Dye chemist* Ecologist* Economist* Electronmicroscopist* * Environmental scientist* Expert systems scientist* Geneticist* Geologist* Geophysicist* Geoscientist* Herpetologist* Hydrologist* Ichthyologist* Inorganic chemist* Laboratory Technician* Mammalogist* Marine scientist* Materials analyst* Materials scientist* Mathematician* Mathematics* Metallurgist* Meteorologist* Microbial Physiologist* Mycologist* Nanobiologist* Nuclear chemists* Nuclear technician* Numerical analyst* Nutritionist* Oceanographer* Organic chemist* Ornithologist* Paleontologist* Physicist* Polymer scientist* Programmer* Protein scientist* Protozoologist* Quality-control scientist* Radio chemist* Research chemist* Research Technician* Science Teacher* Lab Technician* Scientific visualization/ graphics expert* Spectroscopist* Statistician* Technical writer* Technologist* Toxicologist* Zoologist* □

Occupational frames can be printed at http://www.careertech.org under the tab Career Clusters.

Georgia's Career Clusters:
Groupings of occupations with common knowledge and skills

Cluster	Cluster Description
Agriculture, Food & Natural Resources	Careers with common knowledge and skills related to production, processing, marketing, financing, distribution, and development of agricultural commodities and resources. These commodities include food, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources.
Architecture & Construction	Careers with common knowledge and skills related to the designing, planning, managing, and building of structures.
Arts, A/V Technology & Communications	Careers with common knowledge and skills related to designing, producing, exhibiting, performing, writing, and publishing multimedia content including visual and performing arts and design, journalism, and entertainment services.
Business, Management & Administration	Careers with common knowledge and skills related to the preparation of students with computer skills for future college and career plans. Cluster skills mastered include planning, organizing, directing, and evaluating as well as owning and operating a successful business.
Education & Training	Careers with common knowledge and skills related to planning, managing, and providing education and training services as well as related learning support services.
Energy	Careers with common knowledge and skills related to preparing individuals for careers in the design, planning, maintaining, generating, transmission and distribution of traditional and alternative energy.
Finance	Careers with common knowledge and skills related money management, including planning, investing, and spending. Students gain career development skills for the finance world with opportunities that expand beyond basic business skills into financial literacy, banking, investing, insurance, and risk management.
Government & Public Administration	Careers with common knowledge and skills related to the planning and performing of government management and administrative functions at local, state, and federal levels. Careers are available in national security, foreign service, revenue, and regulations.

Health Science	Careers with common knowledge and skills related to planning, managing, and providing services in therapeutics, diagnostics, health informatics, support areas, and biotechnology research and development
Hospitality & Tourism	Careers with common knowledge and skills related to the management, marketing, and operations of restaurants, and other food services, lodging, attractions, recreation events, and travel related services.
Human Services	Careers with common knowledge and skills related to family and human needs such as nutrition and food science, counseling and mental health services, family and community services, personal care, and consumer services.
Information Technology	Careers with common knowledge and skills related to the preparation for careers that create, use, modify, and engage technology skills. Graphics, multimedia animation, web design, game and application development, networking, and computer repair are all possibilities.
Law, Public Safety, Corrections & Security	Careers with common knowledge and skills related to employment in emergency and fire services, legal services, protective services, and homeland security.
Manufacturing	Careers with common knowledge and skills related to the processing of materials into intermediate or final products and related professional and technical support activities, such as production control, maintenance, and process engineering.
Marketing	Careers with common knowledge and skills related to the process of anticipating, managing, and satisfying consumers' demand for products, services, and ideas. The Marketing career cluster generates the strategy that underlies advertising and promotional techniques, business communication, and business development.
Science, Technology, Engineering & Mathematics	Careers with common knowledge and skills related to planning, managing, and providing scientific research and professional and technical services.
Transportation, Distribution & Logistics	Careers with common knowledge and skills related to planning, managing, and moving people, materials, and goods by road, pipeline, air, rail, and water, and also includes other related professional and technical support services.