

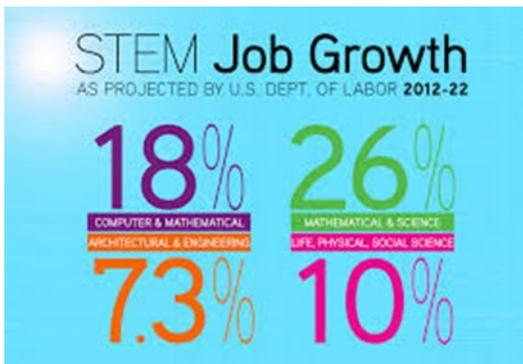
Student Newsletter

Winter 2015

What Is STEM?

What is STEM? In a world of acronyms and abbreviations, STEM (Science, Technology, Engineering, and Mathematics) has garnered national attention while also becoming a current focus of higher education institutions. STEM is an interdisciplinary and applied approach that is coupled with hands-on, problem-based learning (California STEM Learning Network). Various colleges, universities, and organizations across the country have placed an overwhelming financial and educational effort in increasing STEM opportunities for students and professionals. You still may be asking, what is STEM? According to the STEM Education Coalition, "Our nation's competitiveness and future economic prosperity is closely linked with student success in the STEM fields. The U.S. must expand the capacity and diversity of the STEM workforce pipeline (stemedcoalition.org). What does this all mean?

If you are a fan of The Big Bang Theory, this means that educational institutions are trying to attract a bunch of Sheldon Coopers to their respective institutions. Joking aside, individuals whose intended majors are in a STEM related field are going to be heavily recruited by colleges and future employers. Should you choose to pursue a STEM related degree? The answer to that question depends on your academic strengths and your intended career. According to the U.S. Department of Labor, it is estimated that there will be approximately 1.2 million vacancies in STEM related workforce positions by 2018 (Department of Homeland Security). This has created the shift in focus to provide education and resources to build a qualified workforce to fill STEM positions and increase the U.S. position in a global and competitive economy.



The emphasis on STEM is not that the world is ruled by Sheldon, Raj, Leonard, Howard, Amy, and Bernadette (don't forget Penny). In terms of innovation and creation, STEM fields of study range from Agronomy and Crop Science to Atmospheric Physics and Dynamics. The disciplines of Science, Technology, Engineering, and Mathematics intertwine and work with one another. The ability to see and work through various content areas increases your critical and analytical thinking, the core of STEM programs. What is STEM? Continue reading on for a look at college STEM programs and related careers.

References:

- "CSLNet." *CSLNet*. Web. 24 Nov. 2014. "Home." *STEM Education Coalition*. Web. 24 Nov. 2014.
- "What Does STEM Stand For?" *Welcome to Study in the States*. Web. 24 Nov. 2014.

The Best Places to Get STEM Educated!

When you think about the fields of Science, Technology, Engineering and Math (STEM), you generally think that you can get an education anywhere. This is true; most public and private schools in Pennsylvania offer degree programs in all four areas. However, engineering and technology are two fields that are more specific to certain schools.

A STEM education requires you to think critically and solve complex problems. STEM drives advancements in science and technology. A degree in one of the STEM fields is valuable to you as the number of jobs in the STEM field are growing up to 70% faster than other occupations. A STEM educated student has an advantage when searching for the high-tech, high-salary jobs of the future. STEM majors range from biology to nutrition, chemical engineering, quantitative analysis, and industrial safety. You can view a complete list of STEM majors at: <http://www.ice.gov/doclib/sevis/pdf/stem-list.pdf>.

So the question is, where can Western Pennsylvania students get a STEM education? All of the state universities (Clarion, Edinboro, Slippery Rock, Indiana, etc.), along with many private institutions (Mercyhurst, Allegheny, Grove City, Gannon, Duquesne, etc.), offer STEM programs. The U.S. News Report on Education reports that of the top 30 schools in the United States that grant the highest percentage of STEM degrees, a few are in our area. Among the top 30 are Carnegie Mellon (62%), Case Western Reserve (53%), SUNY College of Environmental Science (72%), Cornell University (45%), Lehigh University (39%), Drexel University (33%), and Penn State University (33%). Penn State Behrend, located in Erie, PA, grants a high percentage of engineering, technology and math degrees and has a successful job placement rate.

Women are the minority in STEM careers. Many initiatives are in place to support females in STEM occupations. Forbes magazine recently released a list of the top ten STEM colleges for women. Number one on that list is Westminster College. Located in New Wilmington, PA just outside of Grove City, Westminster's computer science and math departments enroll 50% females. This is amazing, since the national average of females in these majors is only 15%. Westminster also is one of the few schools to graduate more females than males with STEM degrees. A total of 36% of all males and females graduate from Westminster with a STEM degree. Number two on the list is Carnegie Mellon University, located in Pittsburgh, PA. Carnegie Mellon is noted for computer science degrees. In 2005, they only had 7% women in all computer science degree programs. Today, just ten years later, 40% of students enrolled in this area are women. Other schools on the list include Harvey Mudd College, Colby College, Tuskegee College, SUNY College of Environmental Science and Forestry, Polytech Institute of NYU, United States Coastguard Academy, Worcester Polytechnic Institute, and California Institute of Technology. Why stray so far when two of the top schools are in our local area?

Don't forget about community colleges. Butler County Community College (BC3) offers numerous degrees in the STEM fields and is involved in the STEM initiative. BC3 is a great opportunity to get an associate's degree at a minimal cost.

There are numerous STEM opportunities waiting for you. The field provides a plethora of high-tech jobs at high salaries. You can change yourself, but you can also change the world with a STEM degree. Are you ready for the challenge?

References:

"The 10 Best Colleges for Females in STEM." *Best Colleges Online*. Web. 3 Dec. 2014.

"What is STEM School?" *STEM School*. Web. 3 Dec. 2014.

Ten Top Earning and Fast Growing Science, Technology, Engineering, and Math (STEM) Careers

Data from the Bureau of Labor and Statistics (BLS) and National Center for Education Statistics (NCES) indicate that STEM related careers are projected to grow at three times the rate of non-STEM careers, and that wages will be greater than non-STEM jobs. STEM careers are ideal for investigative people interested in knowing, analyzing, thinking, or exploring. Realistic individuals more inclined to physical activity, hands-on, practical solutions, tool-oriented problem solving do extremely well in this field, too. Artistic people who enjoy creating and thinking “outside of the box” may also excel in these jobs.

Petroleum Engineer – Bachelor’s Degree, \$130,280 predicted earnings, 26% job growth. Petroleum engineers design and develop methods for extracting oil and gas from deposits below the earth’s surface. In addition, they find new ways to extract natural resources from already existing wells and reservoirs. The U.S. has increased its oil and shale exploration and raised the demand for petroleum engineers. The need for environmental engineers/environmental technicians is predicted to grow.

Mathematician including Actuaries and Statisticians – Master’s Degree, \$101,360 predicted earnings, 23% job growth. Mathematical analyses of trends are used to gauge many activities, ranging from internet-user tendencies to airport traffic control. Statisticians predict the likelihood consumers will buy the next iPhone or new running shoe. Actuaries analyze the financial costs of risk and uncertainty. They use mathematics, statistics, and financial theory to assess the risk that an event will occur, and they help businesses and clients develop policies that minimize the cost of that risk. Actuaries’ work is essential to the insurance industry. Specializations are diverse from calculus to number theory.

Software Engineer – Bachelor’s Degree, \$93,350 predicted earnings, 22% job growth. Software engineers develop the applications that allow people to do specific tasks on a computer or other device. Computer technology is always changing. Companies need engineers to keep up with the latest developments, i.e. cloud computing. They write software code for programs that manage everything from online shopping to home heating.

Biomedical Engineer – Bachelor’s Degree, \$86,960 predicted earnings, 27% job growth. Biomedical engineers analyze and solve problems in biology and medicine, with the goal to improve the quality and effectiveness of patient care. They may be involved directly in discovering new medications or improving the quality of technology, including radiation machinery.

Information Security Analyst – Bachelor’s Degree, \$86,170 predicted earnings, 36% job growth. Information Security Analysts plan and monitor security of computer networks. Their responsibilities are expanding as the number of cyber attacks increase.

Computer Systems Analyst – Bachelor’s Degree, \$85,320 predicted earnings, 24% job growth. These individuals work with the actual hardware (servers to laptops) to ensure the correct equipment is in place and to accomplish the company’s needs. Their importance will only continue to grow in the coming years as more companies and institutions move hard copy files into digital formats.

Civil Engineer – Bachelor’s Degree, \$79,340 predicted earnings, 20% job growth. As the state and federal governments invest in infrastructure, demand will continue. Civil engineers have a hand in building bridges, retro-fitting buildings, and damming reservoirs.



Like us on Facebook at Clarion University—
Educational Talent Search.

(Ten Top Earning and Fast Growing Science...Careers continued from page 3)

Occupational Therapist (OT) – Master’s Degree and License, \$75,400 predicted earnings, 29% job growth. Occupational therapists work with injured or ill patients to speed recovery. They focus on modifying each patient’s environment and training them to use adaptive equipment to increase independence. OTs tend to work with the aging population in order that they may continue to engage in meaningful activities. There are also great opportunities as occupational therapy assistants (OTA). OTAs are licensed and have an associate’s degree. They work under the direction of occupational therapists.

Dental Hygienists – Associate’s Degree and License, \$70,210 predicted earnings, 33% job growth. Besides cleaning teeth, dental hygienists instruct patients in proper oral hygiene. As Doctor Seuss once said, “Teeth are always in style.”

Audiologists – Doctoral, \$69,720 predicted earnings, 34% job growth. An audiologist helps people with hearing and balance problems. Demand is expected to be high because of the aging baby boomer population. Improvements in hearing aid technology has made devices more attractive to patients.

References:

“Occupational Outlook Handbook.” *Bureau of Labor and Statistics*. Web. 10 Nov. 2014.

Langdon, D., McKittrick, G., Beede, D. et al. “STEM: Good Jobs Now and for the Future.” U.S. Department of Commerce, Economics and Statistics Administration. July 2011.

“Most Valuable STEM Majors.” *World Wide Learn*. Web. 27 Oct. 2014.

STEM Sites —

<http://stemcareer.com> Click on the student tab at this packed website. Here you will find career information on science, technology, math, and engineering careers, along with information on selecting a college and opportunities for internships. Start with this site and then check out some more specific ones below.

<http://www.bls.gov/ooh/math/mathematicians.htm> The Bureau of Labor and Statistics provides information about careers within the mathematics field (www.bls.gov). Mathematicians work in government and in private science and engineering research companies – check out the information here!

<http://www.pacareerzone.org/profile/17-2151.00> Investigate mining and geological engineers, who conduct sub-surface surveys to identify the characteristics of potential land or mining development sites.

<http://www.bls.gov/ooh/life-physical-and-social-science/medical-scientists.htm> If none of the previous links interests you, then this one may do the trick. The Bureau of Labor and Statistics provides a variety of employment information. This link is about medical scientists. Medical scientists conduct research aimed at improving overall human health. They often use clinical trials and other investigative methods to reach their findings.

<http://www.onetonline.org/find/result?s=Technology&a=1> O*Net Online is an extremely important tool when researching careers. This link leads to careers specifically related to technology. Technology jobs vary from your local librarian to nuclear medicine technologists. If you are looking for a field that is diverse and unique, then technological jobs are the way to go!