STEM JOBS
CULTIVATE
SUCCESS
SCIENCE. TECHNOLOGY. ENGINEERING. MATHEMATICS.
TIM MCAWARD AND MEGAN RAFTERY
OPPORTUNITIES ARE GROWING ALL AROUND US

Faster aircraft. Bolder video games. Better medicines. Technology is advancing every day, and STEM workers make it happen. Without the work of scientists, technicians, engineers, mathematicians, and other skilled workers, many new products and discoveries would never have come about.

Just as the stem of a plant holds up other structures, STEM jobs are essential to our economy. They affect the way we communicate, work, live, travel, maintain our health, and enjoy our free time. They are an engine for job growth, creating more downstream jobs to fuel the economy.

If STEM jobs are good for the economy, then STEM careers certainly hold great promise for current and future workers. This ebook provides a quick overview of STEM jobs, which are very much alive and growing.

WHAT MAKES STEM JOBS SO GREAT?

- STEM workers enjoy wage premiums
- STEM workers experience relatively low unemployment
- There is growing demand for STEM workers across the globe
- They are often in the most innovative fields, working for the most progressive companies, leading to interesting and challenging work

WORKERS IN STEM OCCUPATIONS USE SCIENCE, MATH, AND TECHNOLOGICAL INNOVATIONS TO SOLVE PROBLEMS. ALTHOUGH EDUCATIONAL REQUIREMENTS FOR STEM OCCUPATIONS RANGE FROM A HIGH SCHOOL DIPLOMA AND ON-THE-JOB TRAINING TO A PH.D., ALL REQUIRE THE ABILITY TO PROBLEM SOLVE AND THINK LOGICALLY.
STEM JOBS HAVE REACH. The scope of STEM occupations is large, touching nearly every business or organization in one way or another. According to the Bureau of Labor Statistics, there are roughly 97 STEM occupations that account for 7.3 million jobs, or nearly 5.7% of U.S. employment.

THE TOP FIVE STEM OCCUPATIONS BY CATEGORY ARE:

S / Life, Physical, and Social Sciences
1. Clinical Counseling/School Psychologists
2. Medical Scientists, Except Epidemiologists
3. Environmental Scientists/Specialists, Including Health
4. Chemists
5. Biological Technicians

T / Computer Specialists
1. Computer Support Specialists
2. Software Developers, Applications
3. Computer Systems Analysts
4. Software Developers, Systems Software
5. Network and Computer Systems Administrators

E / Architecture and Engineering
1. Civil Engineers
2. Mechanical Engineers
3. Industrial Engineers
4. Architectural and Engineering Managers
5. Electrical Engineers

M / Mathematics
1. Operations Research Analysts
2. Statisticians
3. Actuaries
4. Mathematicians
5. Mathematical Science Occupations, All Other

DID YOU KNOW?
Technology (IT/Computer) occupations make up 49% of STEM employment with architecture and engineering; life, physical and social sciences; and mathematics occupations making up 34%, 15%, and 2% respectively.
STEM JOBS ARE IN DEMAND. The increasingly global economy of innovation in which we live is driving the demand for the knowledge, skills, and abilities STEM workers possess.

INNOVATION IS IN THE DRIVER’S SEAT
According to research by Kelly Services®, other key factors driving the demand include:

- **Technology explosion**: use of the internet, proliferation of web applications, social communities and mobile apps are increasing the demand for more sophisticated technologies.
- **An aging and growing worldwide population**: demand for new products and medical and scientific advancements will grow rapidly in response to changing demographic trends.
- **Renewed focus on innovation**: cost pressures coming out of the global recession will force companies to improve and update product designs and optimize existing manufacturing processes.
- **Conservation and green energy**: environmental pressures, international legislation, and the higher costs of fossil fuels are creating new market opportunities.
- **Heightened security measures**: the need for security and security systems technology is on the rise in the public and private sectors.
- **Adoption of nanotechnology**: the U.S. National Science Foundation estimates that nanotechnology industries worldwide will require 2 million workers by 2015.

GLOBALLY SPEAKING
As a result of these drivers, the demand for STEM talent is expected to increase across the globe. The STEM workforce is global by nature. Although we often hear about American companies going abroad for STEM talent, the continuing globalization of the STEM workforce is driving interest in the American workforce from companies abroad who are increasingly “insourcing” STEM work.
STEM JOBS ARE ON THE RISE IN THE U.S. In the U.S., demand for STEM professionals is expected to increase 16.8% from 2010 to 2020—adding nearly 1.3 million new STEM jobs to the workforce. The Bureau of Labor Statistics expects the demand will be the greatest for computer-related occupations, with new job openings expected to jump 21.8% from 2010 to 2020.

Overall, the top 10 fastest growing STEM occupations in terms of numerical increase through 2020 are:

1. Software Developers, Applications
2. Software Developers, Systems Software
3. Computer Systems Analysts
4. Computer Support Specialists
5. Network and Computer Systems Administrators
7. Computer and Information Systems Managers
8. Civil Engineers
9. Computer Programmers
10. Medical Scientists, Except Epidemiologists

The top four STEM jobs in terms of numerical and percentage growth through 2020 are:

1. Software Developers, Applications (143,800 new jobs, 27.6% growth)
2. Software Developers, Systems Software (127,200 new jobs, 32.4% growth)
3. Network and Computer Systems Administrators (96,600 new jobs, 27.8% growth)
4. Medical Scientists, Except Epidemiologists (36,400 new jobs, 36.4% growth)

There are other promising STEM occupations. The following occupations are expected to grow more than 25% by 2020:

- Biomedical Engineers (61.7% growth)
- Biochemists and Biophysicists (30.8% growth)
- Database Administrators (30.6% growth)
- Actuaries (26.7% growth)
STEM JOBS ARE GEOGRAPHICALLY BASED. Geography plays a part in where STEM jobs exist. Regions with a strong presence of STEM-related employment are often heavily dependent on government funding. Local technology centers, research parks, and research university clusters also influence the concentration of STEM jobs in a region.

The following metropolitan areas have a substantial volume and concentration of STEM jobs, compared to total employment. STEM jobs in these areas are predicted to grow by more than 6% in the next five years:
1. Atlanta-Sandy Springs-Marietta, GA
2. Baltimore-Towson, MD
3. Boston-Cambridge-Quincy, MA-NH
4. Dallas-Fort Worth-Arlington, TX
5. Houston-Sugar Land-Baytown, TX
6. Minneapolis-St. Paul-Bloomington, MN-WI
7. San Diego-Carlsbad-San Marcos, CA
8. San Francisco-Oakland-Fremont, CA
9. San Jose-Sunnyvale-Santa Clara, CA
10. Seattle-Tacoma-Bellevue, WA

Although the volume of STEM jobs is still relatively small, the following states have experienced the strongest STEM job growth on a percentage basis from 2001 to 2011:

- Alaska (18%)
- North Dakota (31%)
- Wyoming (26%)
- Utah (18%)
- Nevada (19%)
- Texas (19%)
- Washington-Arlington-Alexandria, DC-VA-MD-WV

![Diagram of metropolitan areas with high concentration of STEM jobs]
STEM JOBS ARE INDUSTRY BASED. STEM occupations make up more than half of industry employment in computer systems design and related services; architectural, engineering, and related services; scientific research and development services; software publishing; and computer and peripheral equipment manufacturing.

It’s worth noting that even though the STEM workforce concentration in government is 6% overall, the government (local, state, and federal) employs more than 1 million STEM workers.

INDUSTRIES WITH THE HIGHEST CONCENTRATION OF STEM JOBS

INDUSTRIES WITH THE MOST STEM JOBS
STEM JOBS HAVE EARNING POTENTIAL.
It pays to be in a STEM occupation. The average annual wage for all STEM occupations is $77,880, compared to the U.S. average of $43,460. Why the higher wages? The strong demand for STEM workers is the driving force behind higher than average wages.

In addition to higher earnings, workers in STEM occupations on average experience lower unemployment rates than workers in other fields.

All STEM degree holders receive an earnings premium relative to other college graduates, whether or not they end up in a STEM job. Likewise, college graduates, regardless of their major, enjoy an earnings premium for having a STEM job.

The highest paying STEM occupations—all earning more than $100k per year—are:

- Natural Science Managers
- Architectural and Engineering Managers
- Computer/Information Systems Managers
- Petroleum Engineers

No matter what their occupation, those who major in a STEM field make substantially more money during their lifetime than those who do not, by about $300,000.
STEM JOBS ALLOW SELF-EMPLOYMENT. More and more STEM workers are becoming free agents. While the recent recession has most likely been a factor in driving some STEM workers into entrepreneurial pursuits, the shift may be due in part to personal reasons, such as the desire for more freedom and flexibility.

According to the 2012 Kelly Global Workforce Index™, an annual survey revealing opinions about work and the workplace, about 75% of STEM workers see the free agent workstyle as a career asset.

Consider these statistics about the growth of self-employed STEM workers between 2009 and 2011:

- The growth of self-employed STEM workers (3.1%) is nearly twice the rate of growth for all self-employed workers (1.7%) and five times the rate of overall employment (.6%).
- The growth of self-employed STEM workers (3.1%) is more than twice the rate of growth for STEM workers in traditional employment relationships (1.5%).

FREE AGENT, DEFINED

A free agent is an independent professional who moves from project to project, location to location, enhancing his or her skills and knowledge with each assignment. Free agents prefer freedom and flexibility over the security of traditional employment, and look for challenging and rewarding work that complements their personal goals—allowing them to build the value of their own professional portfolio.

In general, free agency is gaining popularity in the workplace today to meet the needs of workers who are seeking a better work-life balance and businesses that need to fill gaps with flexible talent.
STEM JOBS REQUIRE EDUCATION AND SKILLS.
Current statistics show that more than two-thirds of STEM workers (68%) have a bachelor’s degree or higher, nearly one-quarter (23%) have completed an associate’s degree or at least some college, and only 9% have a high school diploma or less.

While there are some STEM opportunities for those with a high school diploma, the majority of new and replacement occupations in STEM will require at least some postsecondary education.

Beyond education in a STEM field, there are some key **hard and soft skills** that are necessary to succeed. More and more employers are looking beyond the technical skills to individuals who are well rounded and possess complementary soft skills. The great news is that all of the following STEM skills are easily transferable and needed in virtually every job sector.

**STEM HARD SKILLS**
- Analytical and critical thinking
- Complex problem solving
- Evaluation, analysis, and troubleshooting
- Mathematics, calculation, measurement, and monitoring
- Technical (systems, computers, software, etc.)

**STEM SOFT SKILLS**
- Active listening
- Cooperation and teamwork
- Creativity/Innovation
- Leadership
- Organization/Attention to detail
- Written and oral communication

**EMERGING STEM SOFT SKILLS**
- Cross-cultural competency
- New media literacy
- Social intelligence
- Transdisciplinary skills
- Virtual collaboration
STEM JOBS HAVE STRONG ROOTS. There are many reasons to consider a STEM career. Beyond the premium wages and increasing opportunities, STEM workers are today’s innovators and inventors.

They often work for the most progressive companies, generating new ideas, inventing new products, and solving complex business and societal problems. Their contributions are significant and their impact is immense, creating downstream jobs and fueling economic growth.

Could a STEM career be ideal for you? The potential is huge, and many working in STEM fields find great satisfaction in making contributions to further our global economy of innovation.

If you would like more information on STEM opportunities, contact your local Kelly Services office. To locate a branch near you, visit kellyservices.us today.
SOURCES


• Bureau of Labor Statistics.

• Economic Modeling Specialists, Inc.

• OECD
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ABOUT KELLY

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