



Engineering

STEM

JOB OUTLOOK

As Tennessee strives to maintain and advance its economic stability and workforce, we must make it our goal to increase the number of students who come through and out of K–16 education prepared for these high-demand STEM-related careers. Unfortunately, students who choose to pursue these careers are often inadequately prepared to take on the challenges these positions demand. Secondary and postsecondary students are often lacking critical thinking, problem solving, and collaborative skills that are imperative for success. This too often affects their on the job performance. Students often struggle not only with academic knowledge when applying for a job, but they also face challenges involving real world applications like problem solving, conducting independent research, and proactively seeking solutions.

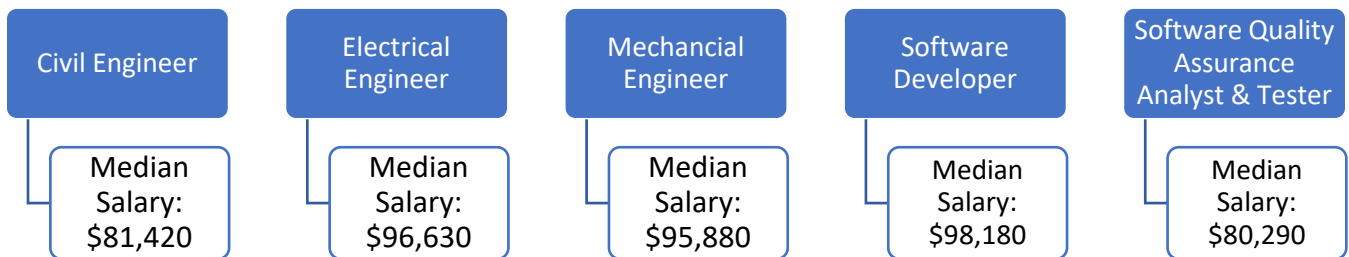
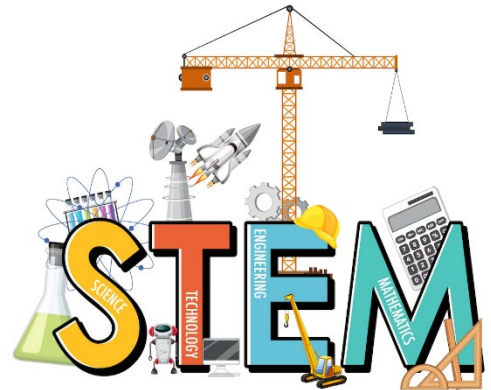
OCCUPATION PROFILE

With continued investment in U.S. infrastructure, **civil engineers** will be needed to manage projects that meet society's need for upgrading bridges, roads, water systems, buildings, and other structures. Civil engineers also will be needed to oversee renewable-energy projects, such as construction of wind farms and solar arrays, as these projects gain approval.

These **electrical engineers** are expected to have key roles in developing sophisticated consumer electronics, solar arrays, semiconductors, and communications technologies.

As manufacturing processes incorporate more complex automation machinery, **mechanical engineers** are expected to be needed to help plan for and design this equipment. However, employment declines in some industries may temper overall employment growth of mechanical engineers.

Software developers, software quality assurance analysts, and testers are likely to see new opportunities because of the increasing number of products that use software. For example, software systems continue to be built for consumer electronics and other products, including IoT-connected devices and electric vehicles.



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Memphis-Shelby County Schools



ROAD MAP TO SUCCESS

PROGRAM OF STUDY PROFILE

The Engineering program of study designed for students interested in the various disciplines of engineering and engineering technology. Course content is arranged around four sequenced, progressive courses that provide students with the opportunity to develop critical thinking skills and understanding of engineering concepts. Students then apply these skills in conjunction with the multi-step engineering design process to solve real-world problems. The capstone Engineering Practicum course places students with industry partners to complete a design project, report the results, and present their project before an audience. Students have the option to complete AP Physics as an alternative to the Engineering Practicum course. Upon completion of this POS, students will be prepared to pursue engineering studies at postsecondary institutions.

SECONDARY EDUCATION

- *Principles of Engineering and Technology
- *Engineering Design I
- *AP Computer Science Principles
- *Engineering Design II
- * AP Computer Science Principles
- * Engineering Practicum
- * AP Physics
- * AP Computer Science

CAREER PATHWAY

CERTIFICATION

- * Computer Software Specialist
- * Software Testing
- * Geographical Information Systems
- * Applied Geospatial Information Systems

ASSOCIATES

- * A.S. Computer Engineering Technology
- * A.S. Geographic Information Technology
- * A.S. Mechanical Engineering Technology
- * A.S. Mechanical Engineering Technology

BACHELORS

- * B.S. Mechanical or Electrical Engineering
- * B.S. Civil Engineering
- * B.S. Computer Engineering

MSCS PARTICIPATING SCHOOLS: Cordova HS

DUAL ENROLLMENT: Engineering Tech – Cordova HS + Southwest Tennessee Community College

LOCAL EMPLOYERS: Buckman, General Motors, Kelly, Medtronic, Smith & Nephew, and Synergy Solutions