Spring Branch ISD
Career & Technical Education

Engineering Foundations

The Engineering career cluster is all about using science, technology, and math to plan, design, test, and build items - like machines, structures, and systems. From mechanical engineers to electrical engineers and even mapping technicians, there are many exciting careers to explore.

In the Engineering Foundations program, you'll get hands-on experience designing and testing projects related to engines, machines, and structures, all while solving real-world problems with innovative solutions. If you're into creating and improving things, this is the perfect path for you!

Example Occupations

Civil Engineering Technologists and Technicians
Median Wage: $61,138
Annual Openings: 765
10-Year Growth: 11%

Aerospace Engineers
Median Wage: $115,694
Annual Openings: 483
10-Year Growth: 18%

Mechanical Engineers
Median Wage: $99,937
Annual Openings: 1,755
10-Year Growth: 19%

Data Source: Texas Wages, Texas Workforce Commission. Retrieved 3/8/2024.

Project Lead the Way

Project Lead the Way (PLTW) Engineering is a hands-on, project-based program that introduces students to the world of engineering through real-world challenges and design projects. The program helps students develop critical thinking, problem-solving, and technical skills as they explore fields like robotics, aerospace, and civil engineering. By working on exciting projects and collaborating with peers, students gain a deeper understanding of engineering principles and how they can apply them in future careers or college studies. PLTW Engineering prepares students to become innovators and leaders in the engineering field.

PROJECT LEAD THE WAY
PLTW

Endorsement:
Business and Industry -or-
STEM, if math & science requirements are met

Engineering Foundations
Program of Study

Level 1: Grades 9 - 11	Introduction to Engineering Design (PLTW) *Students learn the engineering design process through activities, problems, and projects. Topics include engineering notebooks, design processes, prototyping, technical sketching, measurement and statistics, 3D computer solid modeling, and reverse engineering. This course is a prerequisite for additional Project Lead the Way (PLTW) courses.* ***IBC: Autodesk Certified User in Fusion 360***
Level 2: Grades 10 - 11	Engineering Science (meets science requirement) *Students are introduced to significant concepts studied in higher education engineering programs. Topics include mechanisms, energy, statics, materials, kinematics, and computer control systems to develop problem-solving skills and create solutions to challenges.*
Level 3: Grades 11 - 12 **Choose One**	Aerospace Engineering (PLTW) *Students solve problems related to aerospace information systems, astronautics, rocketry, propulsion, the physics of space science, space life sciences, the biology of space science, principles of aeronautics, structures and materials, and systems engineering.* *-or-* Robotics 1 *Students will transfer academic skills to component designs in a project-based environment through the implementation of the design process. Students will build prototypes or use simulation software to test their designs and discover career opportunities.*
Level 4: Grade 12	Engineering Design and Problem Solving (meets science requirement) *Capstone course where students work in teams to design and develop an original solution to a valid open-ended technical problem by applying the engineering design process.*