

Career & Technical Education Engineering Foundations

- Level 1
- Introduction to Engineering Design
 - Applied Physics and Engineering

- Level 2
- Manufacturing Engineering Technology I
 - Robotics I

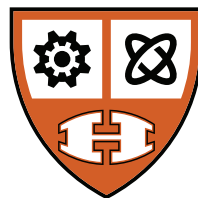
- Level 3
- Engineering Design & Presentation I
 - Engineering Mathematics
 - Robotics II

- Level 4
- Engineering Design & Presentation II
 - Engineering Design & Problem Solving
 - Practicum in STEM

Certification(s)

- Autodesk Associate - Inventor

Student Organization



**CAREER & TECHNICAL
EDUCATION** HUTTO ISD
ENGINEERING

Course Information - Engineering Foundations

Course Title	Credits	Prerequisites	Course Description
Introduction to Engineering Design	1.0	None	Students are introduced to the engineering design process, applying math, science, and engineering standards to identify and design solutions to a variety of real problems. They work both individually and in collaborative teams to develop and document design solutions using engineering notebooks and 3D modeling software.
Applies Physics and Engineering	1.0 (Science)	Algebra I	In Applied Physics and Engineering, students will conduct laboratory and field investigations, use scientific practices during investigations, and make informed decisions using critical thinking and scientific problem solving. Various systems will be described in terms of space, time, energy, and matter. Students will study a variety of topics that include laws of motion, conservation of energy, momentum, electricity, magnetism, thermodynamics, and characteristics and behavior of waves. Students will apply physics concepts and perform laboratory experimentations for at least 40% of instructional time using safe practices.
Manufacturing Engineering Technology I	1.0	None	In Manufacturing Engineering Technology I, students will gain knowledge and skills in the application, design, production, and assessment of products, services, and systems and how those knowledge and skills are applied to manufacturing. Students will prepare for success in the global economy. The study of manufacturing engineering will allow students to reinforce, apply, and transfer academic knowledge and skills to a variety of interesting and relevant activities, problems, and settings in a manufacturing setting.
Robotics I	1.0	None	In Robotics I, students will transfer academic skills to component designs in a project-based environment through implementation of the design process. Students will build prototypes or use simulation software to test their designs. Additionally, students will explore career opportunities, employer expectations, and educational needs in the robotic and automation industry.
Engineering Design & Presentation I	1.0	Algebra I	Engineering Design and Presentation I is a continuation of knowledge and skills learned in Principles of Applied Engineering. Students enrolled in this course will demonstrate knowledge and skills of the design process as it applies to engineering fields using multiple software applications and tools necessary to produce and present working drawings, solid model renderings, and prototypes. Students will use a variety of computer hardware and software applications to complete assignments and projects.
Engineering Math	1.0 (Math)	Algebra II	Engineering Mathematics is a course where students solve and model design problems. Students will use a variety of mathematical methods and models to represent and analyze problems that represent a range of real-world engineering applications such as robotics, data acquisition, spatial applications, electrical measurement, manufacturing processes, materials engineering, mechanical drives, pneumatics, process control systems, quality control, and computer programming.
Robotics II	1.0 (Math)	Robotics I	In Robotics II, students will explore artificial intelligence and programming in the robotic and automation industry. Through implementation of the design process, students will transfer academic skills to component designs in a project-based environment. Students will build prototypes and use software to test their designs.
Engineering Design & Presentation II	2.0	Algebra I & Geometry	Engineering Design and Presentation II is a continuation of knowledge and skills learned in Engineering Design and Presentation I. Students enrolled in this course will demonstrate knowledge and skills of the design process as it applies to engineering fields using multiple software applications and tools necessary to produce and present working drawings, solid model renderings, and prototypes. Students will use a variety of computer hardware and software applications to complete assignments and projects.
Engineering Design & Problem Solving	1.0 (Science)	Algebra I & Geometry	The Engineering Design and Problem-Solving course is the creative process of solving problems by identifying needs and then devising solutions. The solution may be a product, technique, structure, or process depending on the problem. Science aims to understand the natural world, while engineering seeks to shape this world to meet human needs and wants. Engineering design takes into consideration limiting factors or "design under constraint."