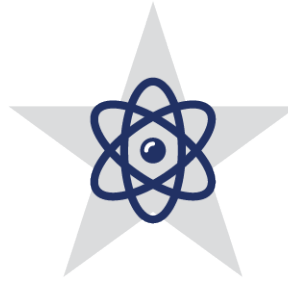


Engineering

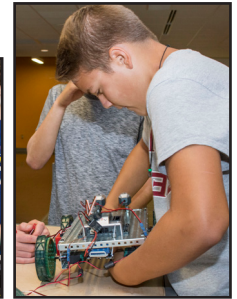
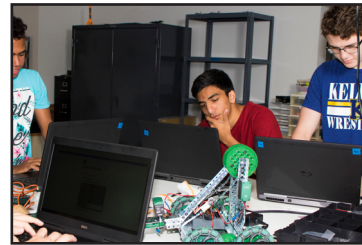
Public Service Endorsement

Career Pathways

- Architectural Engineer
- Civil Engineer
- Mechanical Engineer
- Biomedical Engineer
- Environmental Engineer
- Aerospace Engineer



Science,
Technology,
Engineering &
Mathematics



Program of Study Course Sequence	9th. Grade	10th. Grade	11th. Grade	12th. Grade
Engineering	Introduction to Engineering Design (1 Credit)	Principles of Engineering (1 Credit) <i>Prerequisite: Introduction to Engineering Design, Algebra 1, and Biology</i>	Choose 2 credits from the following 4 courses: Aerospace Engineering (1 Credit), Digital Electronics (1 Credit), Civil Engineering (1 Credit), Robotics I (1 Credit) <i>Prerequisite: Principles of Engineering, Algebra 1, and Geometry</i>	Choose 2 credits from the following 4 courses: Engineering Design and Development (1 Credit), Robotics II (1 Credit), AP Physics C: Electricity and Magnetism (1 Credit), Practicum in Science, Technology, Engineering, and Math (2 Credits) <i>Prerequisite: 3 credits in Engineering Program</i>

Program Highlights

- Solar Car Challenge
- Ford Autonomous Vehicle Challenge
- Cutting edge labs & resources

CTSO(s)

- KCAL Robotics (Local Chapter)
- VEX, BEST, FIRST Robotics Competitions

Program Location

- Course(s) available at CHS
- Course(s) available at FRHS
- Course(s) available at KHS
- Course(s) available at TCHS
- Grey courses at KCAL (Only)

New discoveries are made every day. Scientists, technologists, engineers, and mathematicians are pushing the boundaries of human knowledge by seeking to better understand and improve the world around us. They spend their time exploring everything from vast galaxies of stars to the tiniest subatomic particles. They invent the technologies that make our lives easier and more rewarding and develop solutions to problems that threaten our future. Thanks to the men and women on the cutting edge, we know more than ever before. If you are curious about the universe, dream of exploring new worlds of knowledge, or want to solve the planet's problems, then Science, Technology, Engineering, & Mathematics could be the right career cluster for you.

Careers in the field of engineering involve problem solving in design and development of products and systems. Individuals pursuing these careers evaluate problems to develop and test solutions and provide advice and consultation.

Introduction to Engineering Design (TEDS: N1303742 / KISD: 82641)

This is the foundation course in a series of Project Lead the Way pre-engineering courses designed to introduce the student to the field of engineering. Students will develop problem-solving skills, with emphasis placed upon the concept of developing 3-D models. The course will emphasize the design development process of a product and a model of the product is produced, analyzed, and evaluated, using a Computer Aided Design Systems. Various design applications will be explored with discussion of possible career opportunities. Students who pass the PLTW college-credit exam, given at the end of the course, can receive college credit at PLTW affiliated universities.

Principles of Engineering (TEDS: 13037500 / KISD: 82642)

This foundation course is designed to help students understand the field of engineering/engineering technology. Exploring various technology systems and manufacturing process help students learn how engineers and technicians use math, science and technology in an engineering problem solving process to benefit people. The course also includes concerns about social and political consequences of technological change. Students who pass the PLTW college-credit exam, given at the end of the course, can receive college credit at PLTW affiliated universities. This course counts as a science credit.

Aerospace Engineering (TEDS: N1303745 / KISD: 82662)

This specialization PLTW course applies principles of aeronautics, flight, and engineering. The course will include experiences from diverse fields of aeronautics, aerospace engineering, and related areas of study. It will cover many areas including the following: history of flight; airfoil design, construction, and testing; rocket engine thrust; rocket trajectory; effects of gravity; navigation systems; glider design; intelligent vehicles; and remote sensing. Class is taught at the Keller Center for Advanced Learning.

Digital Electronics (TEDS: 13037600 / KISD: 82673)

This is a course in applied logic that encompasses the application of electronic circuits and devices. Computer simulation software is used to design and test digital circuitry prior to the actual construction of circuits and devices. This course counts for a math credit. Class is taught at the Keller Center for Advanced Learning.

Civil Engineering and Architecture (TEDS: N1303747 / KISD: 82644)

In this course, students will learn important aspects of building and site design, and then they apply what they know to design a building. They will use math, science, and standard engineering practices to design both residential and commercial projects and document their work using 3-D architectural design software. Class is taught at the Keller Center for Advanced Learning.

Robotics I (TEDS: 13037000 / KISD: 82651)

Students enrolled in this course will demonstrate knowledge and skills necessary for the robotic and automation industry. Through implementation of the design process, students will transfer advanced academic skills to component designs in a project-based environment. Students will build prototypes or use simulation software to test their designs. Additionally, students explore career opportunities, employer expectations, and educational needs in the robotic and automation industry. Class is taught at the Keller Center for Advanced Learning.

Robotics II (TEDS: 13037050 / KISD: 82652)

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. This course counts as a math credit. Class is taught at the Keller Center for Advanced Learning.

Engineering Design and Development (TEDS: N1303749 / KISD: 82643)

This course is the senior capstone course of the Project Lead the Way pre-engineering sequence. Students will work in teams to research, design, and construct a solution to an open-ended engineering problem. Students apply principles developed in the four preceding courses and are guided by an engineering mentor. Students will present progress reports, submit a final written report, and present their solutions to a panel of outside reviewers at the end of the course. This course counts as a math credit. Class is taught at the Keller Center for Advanced Learning.

AP Physics C: Electricity and Magnetism (TEDS: A3050005 / KISD: 3435)

This course is designed for students interested in pursuing a degree in science, math or engineering. It is a calculus-based approach to physics and focuses on a more in-depth study of electromagnetism. It provides instruction on electrostatics, conductors, capacitors and dielectrics, electric circuits, magnetic fields, and electromagnetism. The course should prepare students for successful completion of the AP Physics C: Electricity and Magnetism Exam. The content of the course will meet College Board standards. AP students prepare to take the Advanced Placement Exam in May for possible college credit.

Practicum in Science, Technology, Engineering, and Math (TEDS: 13037400 / KISD: 82370)

The practicum course is a paid or unpaid capstone experience for students participating in a coherent sequence of career and technical education courses in the Engineering cluster. This course is a unique practicum that provides occupationally specific opportunities for students to participate in a learning experience that combines classroom instruction with actual business and industry career experiences. Practicum in STEM integrates academic and career and technical education; provides more interdisciplinary instruction; and supports strong partnerships among schools, businesses, and community institutions with the goal of preparing students with a variety of skills in a fast changing workplace. Class is taught at the Keller Center for Advanced Learning.

Career	High School	On the Job Training	Certificate	Associates Degree	Bachelor's Degree	Advance College Degree	Average Annual Salary	Possible Majors for this Pathway
Civil Engineer					x	x	\$83,540	<ul style="list-style-type: none"> • Civil Engineering • Industrial Engineering • Mechanical Engineering • Chemical Engineering • Petroleum Engineering • Aerospace Engineering • Agriculture Engineering
Petroleum Engineer					x		\$128,230	
Aerospace Engineer					x		\$109,650	
Biomedical Engineer					x		\$85,620	
Agricultural Engineer					x		\$73,640	
Health & Safety Engineer					x		\$86,720	
Engineering Manager					x		\$134,730	