Introduction — *Science, Technology, Engineering and Math*

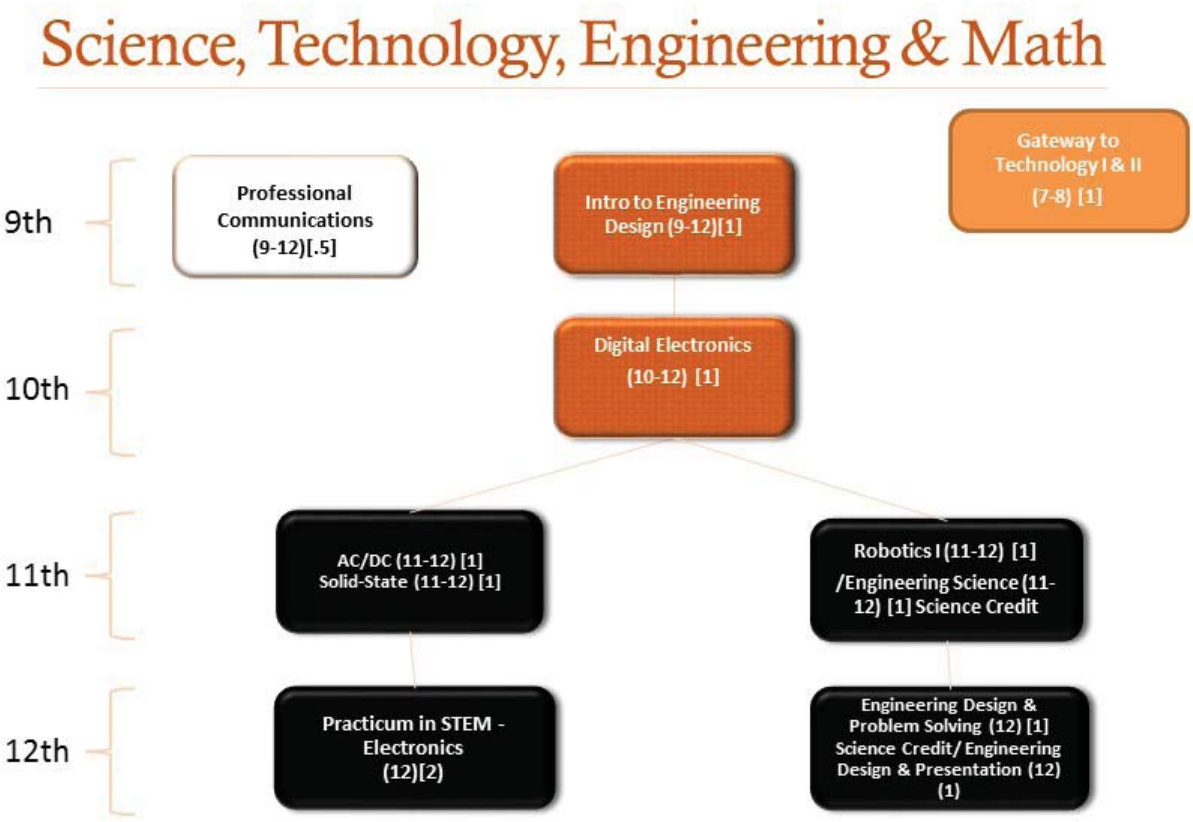
A career in Science, Technology, Engineering or Mathematics (S.T.E.M.) is challenging and ever-changing. Learners who pursue one of these career fields will be involved in planning, managing, and providing scientific research and professional and technical services (e.g., physical science, social science, engineering) including laboratory and testing services, and research and development services.

Project Lead The Way (PLTW) includes a three year sequence of courses which introduces students to the scope, rigor and discipline of engineering and engineering technology prior to entering college. Introduction at this level will allow high school students to determine if engineering is the career they desire. Students participating in PLTW courses are better prepared for college engineering programs and more likely to be successful, thus reducing the attrition rate in these college programs, which currently exceeds 50% nationally.

Career Opportunities — *Science, Technology, Engineering and Math*

Aerospace Engineer
Product Designer
Manufacturing Supervisor
Mineral Engineer
Electrical Engineering
Computer Engineer
Mechanical Engineer
Robotics Technician
Civil Engineer
Nuclear Engineer
Architectural Engineer
Architect
General Contractor
Laser Technician
Environmental Engineer

Sequences — *Science, Technology, Engineering and Math*



PROJECT LEAD THE WAY

PRE-ENGINEERING -- Students **may begin the three year program in the 9th grade or later**, but must take the courses in sequence in order for the training and education to be most effective. The courses are outlined in their proper sequential order.

T7510

Introduction to Engineering Design (IED)

- ***Grade Placement 9-12***
- ***Credits ..... 1 (Accelerated: Double Blocked for One Semester)***
- ***Prerequisite..... None***
- ***Partnerships..... University of North Texas Engineering Department, Bell Helicopter, Batteries Plus***

Ever tried to design something new or draw up an idea you wanted to share with your friends and wondered how you could communicate your idea? Or, have you wondered how someone designed that new MP3 player or sleek new phone? Then Introduction to Engineering Design(IED) is the course for you. The major focus of the course is learning how to take an idea through a design process that will eventually be manufactured or produced. Students will have the opportunity to test for university credit.

T7540

Digital Electronics (DE)

- ***Grade Placement 10-12***
- ***Credits 1***
- ***Prerequisite..... Introduction to Engineering Design***
- ***Partnerships..... University of North Texas Engineering Department, Bell Helicopter, Batteries Plus***

Digital Electronics(DE) is the study of electronic circuits that are used to process and control digital signals. Digital electronics is the foundation of all modern electronic devices such as cellular phones, MP3 players, laptop computers, digital cameras, high definition televisions, etc. The major focus of the DE course is to expose students to the design process of combinational and sequential logic design, teamwork, communication methods, engineering standards, and technical documentation. Students will have the opportunity to test for university credit.

T7535

Robotics I

- ***Grade Placement 11-12***
- ***Credits 1***
- ***Prerequisite..... Introduction to Engineering Design/Digital Electronics***
- ***Location ..... Advanced Technology Complex***
- ***Partnerships ..... University of North Texas Engineering Department, Bell Helicopter, Batteries Plus***

Robotics 1 course was designed to introduce the students to the fundamentals of problem solving, program design, algorithms and programming using a high-level language. This course introduces the fundamental concepts of programming and robotics. Programming and building robots applies science, technology, engineering and math (STEM) concepts. Students will have the opportunity to complete multiple challenges involving guided research, problem solving, working in teams, and design documentation.

T7525

Engineering Science

- ***Grade Placement 11-12***
- ***Credits ..... 1 (Accelerated: Double Blocked for One Semester)***
- ***Prerequisite..... IED, DE, Robotics***
- ***Location ..... Advanced Technology Complex***
- ***Partnerships..... University of North Texas Engineering Department, Bell Helicopter, Batteries Plus***

Engineering Science is designed to help students understand the field of engineering and engineering technology. Exploring various technology systems and manufacturing processes 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 will have the opportunity to test for university credit. The course counts as a 4th Science credit for graduation.

T7530

Engineering Design & Problem Solving

- ***Grade Placement 12***
- ***Credits ..... 1 (Accelerated: Double Blocked for One Semester) (4th SCIENCE CREDIT)***
- ***Prerequisite..... IED, DE, Robotics, Engineering Science, Algebra I and Geometry***
- ***Location..... Advanced Technology Complex***
- ***Partnerships..... University of North Texas Engineering Department, Bell Helicopter, Batteries Plus***

Engineering Design & Problem Solving is an applied physics course designed to provide a study in force, work, rate, resistance, energy, power and force transformers as applied to mechanical, fluid, thermal, and electrical energy. Students learn to apply principle theories to the design and development process through project-based lessons where they create a variety of projects to meet specific goals. The course counts as a 4th Science credit for graduation.

T7520

Engineering Design & Presentation

- ***Grade Placement 12***
- ***Credits ..... 1 (Accelerated: Double Blocked for One Semester)***
- ***Prerequisite..... IED, DE, Robotics, Eng Science, Engineering Design & Problem Solving***
- ***Location..... Advanced Technology Complex***
- ***Partnerships ..... University of North Texas Engineering Department, Bell Helicopter, Batteries Plus***

Engineering Design and Presentation is the course that allows you to design a solution to a technical problem of your choosing. Now is the time to eliminate one of the “Don’t you hate it when…” statements of the world. This course is an engineering research course in which you will work in teams to research, design, and construct a solution to an open-ended engineering problem. The product development lifecycle and a design process will be used to guide and help your team reach a solution to the problem. You and your team will present and defend your solution to a panel of outside reviewers at the end of the school year.

T7545

AC/DC Electronics

- ***Grade Placement 11-12***
- ***Credits 1***
- ***Prerequisite..... Recommended: Digital Electronics***
- ***Location..... Advanced Technology Complex***
- ***Partnerships..... International Society of Certified Electronics Technicians (ISCET)***

AC/DC Electronics focuses on the basic electricity principles of alternating current/direct current circuits. Students will demonstrate knowledge and applications of circuits, electronic measurement and implementation. Through the use of the design process, students will transfer academic skills to component design in project based environment.

T7550

Solid State Electronics

- ***Grade Placement 11-12***
- ***Credits 1***
- ***Prerequisite..... AC/DC Electronics***
- ***Location..... Advanced Technology Complex***
- ***Partnerships..... International Society of Certified Electronics Technicians (ISCET)***

In Solid State Electronics, Students will demonstration knowledge and application of advanced circuits, electronic measurement, and electrical implementation used in the electronics and computer industries. Students will transfer advanced academic skills to apply engineering principles and technical skills to troubleshoot, repair and modify electronic components, equipment, and power 16 electronic systems in a project based learning environment

T7555

Practicum in STEM - Electronics

- ***Grade Placement 12***
- ***Credits 2***
- ***Prerequisite..... AC/DC & Solid State Electronics***
- ***Location..... Advanced Technology Complex***
- ***Partnerships..... International Society of Certified Electronics Technicians (ISCET) & Texas State Technical College***

Students will learn advanced semiconductor/solid state theories (transistor/integrated circuit-IC chip theories), associated labs, test equipment usage and prototyping. Students will build and analyze a basic power supply, amplifier and learn digital theories! Students will have an opportunity to design projects that utilize electronics skills. At the end of each semester you will have the opportunity to test for an industry standard electronics certification through ISCET.