

Pathway to Engineering

An Engineering Program for Roslyn High School & Middle School

Project Lead The Way is the nation's leading provider of STEM (science, technology, engineering, and math) programs.

Through world-class K-12 curriculum, high-quality teacher professional development, and outstanding partnerships, PLTW is helping students develop the skills needed to succeed in the global economy.

Click PLTW below for short

video

PROJECT LEAD THE WAY

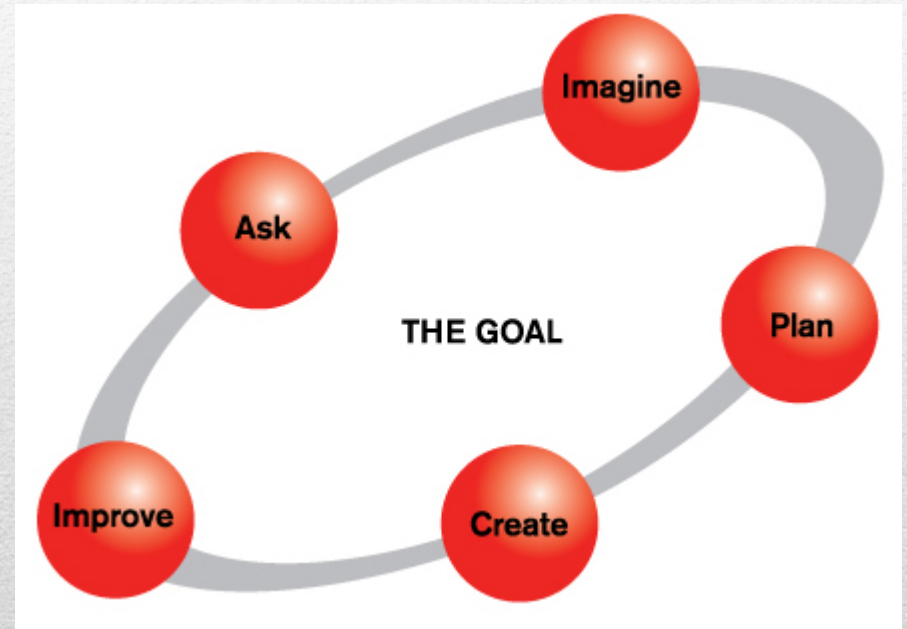
PLTW



Pathway to Engineering

Sequence of courses which follows a proven hands-on, real-world, problem solving approach

Students learn and apply the Design Process



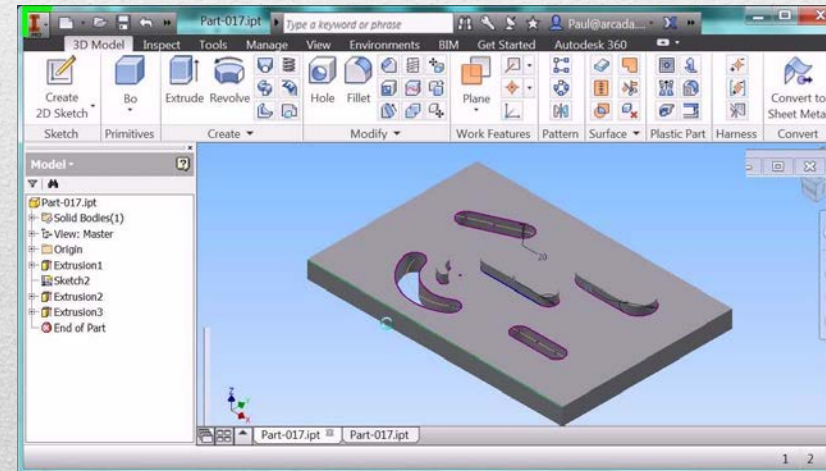
Pathway to Engineering

Develop teamwork and communication skills



Pathway to Engineering

Students use the same 3-D design software as Intel, Lockheed Martin and Pixar



Pathway to Engineering



Introduction to Engineering Design (IED)

Students dig deep into the engineering design process, applying math, science, and engineering standards to hands-on projects. They work both individually and in teams to design solutions to a variety of problems using 3D modeling software, and use an engineering notebook to document their work.

Foundation Courses - Required

Principles of Engineering (POE)

Through problems that engage and challenge, students explore a broad range of engineering topics, including mechanisms, the strength of structures and materials, and automation. Students develop skills in problem solving, research, and design while learning strategies for design process documentation, collaboration, and presentation.

Foundation Courses - Required

Aerospace Engineering (AE)

This course propels students' learning in the fundamentals of atmospheric and space flight. As they explore the physics of flight, students bring the concepts to life by designing an airfoil, propulsion system, and rockets. They learn basic orbital mechanics using industry-standard software. They also explore robot systems through projects such as remotely operated vehicles.



Specialization Courses

Biological Engineering (BioE)

The growing market for jobs in biological engineering is playing a central role in energy and agricultural sustainability solutions. The BioE course develops students' thinking skills and prepares them for emerging careers through topics such as genetic engineering, biofuels, and bio-manufacturing.

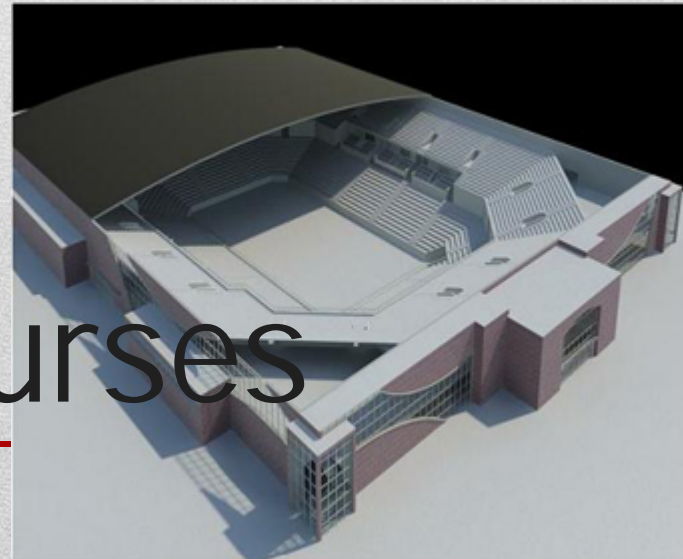


Specialization Courses

Civil Engineering and Architecture (CEA)

Students learn important aspects of building and site design and development. They apply math, science, and standard engineering practices to design both residential and commercial projects and document their work using 3D architecture design software. Some students have seen these designs come to life through partnerships with local housing organizations.

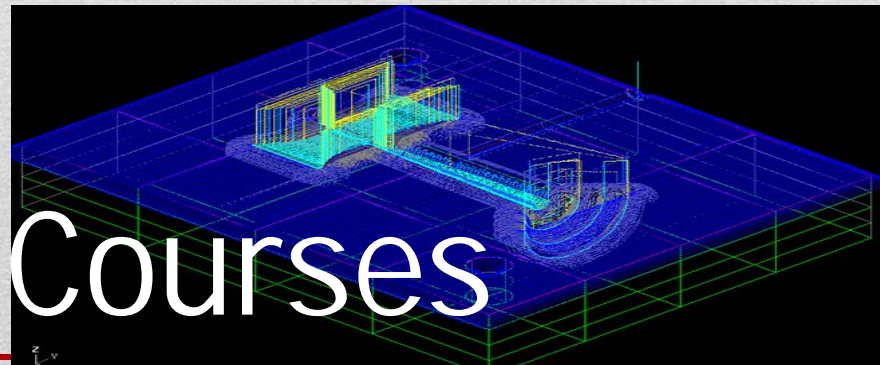
Specialization Courses



Computer Integrated Manufacturing (CIM)

Manufactured items are part of everyday life, yet most students have not been introduced to the high-tech, innovative nature of modern manufacturing. This course illuminates the opportunities related to understanding manufacturing. At the same time, it teaches students about manufacturing processes, product design, robotics, and automation. Students can earn a virtual manufacturing badge recognized by the National Manufacturing Badge system.

Specialization Courses



Digital Electronics (DE)

From smart phones to appliances, digital circuits are all around us. This course provides a foundation for students who are interested in electrical engineering, electronics, or circuit design. Students study topics such as combinational and sequential logic and are exposed to circuit design tools used in industry, including logic gates, integrated circuits, and programmable logic devices.

Specialization Courses



Computer Science and Software Engineering (CSSE)

Open doors in any career with computer science! In CSE, students create apps for mobile devices, automate tasks in a variety of languages, and find patterns in data. Students collaborate to create and present solutions that can improve people's lives, and weigh the ethical and societal issues of how computing and connectivity are changing the world.

A hand holding a black pen pointing at a blue technical drawing on a screen.


Specialization Courses

Engineering Design and Development (EDD)

The knowledge and skills students acquire throughout PLTW Engineering come together in EDD as they identify an issue and then research, design, and test a solution, ultimately presenting their solution to a panel of engineers. Students apply the professional skills they have developed to document a design process to standards, completing EDD ready to take on any post-secondary program or career.

Specialization Courses

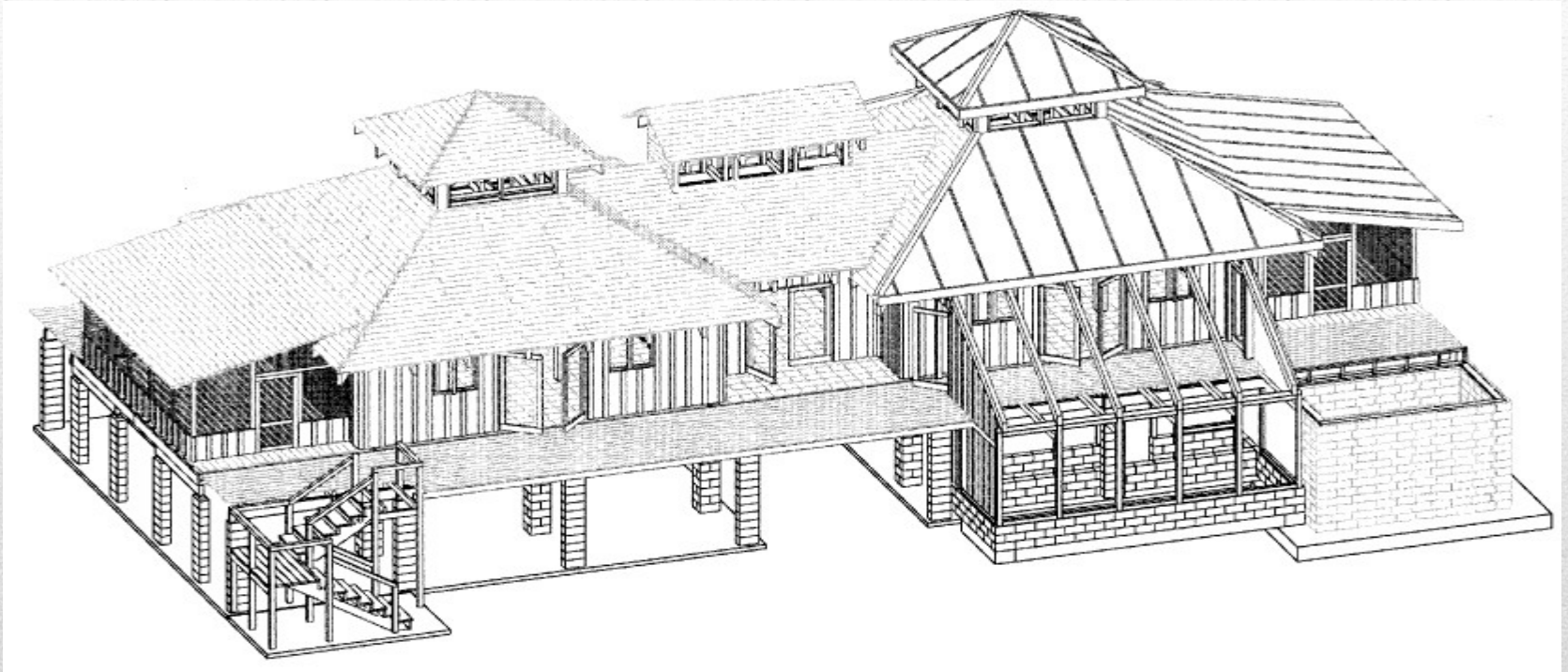


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- 1 Period everyday for the entire school year
 - Taken in addition to science courses
 - Students use the design process and industry standard 3-D modeling software to design solutions to solve proposed problems

Fall 2014

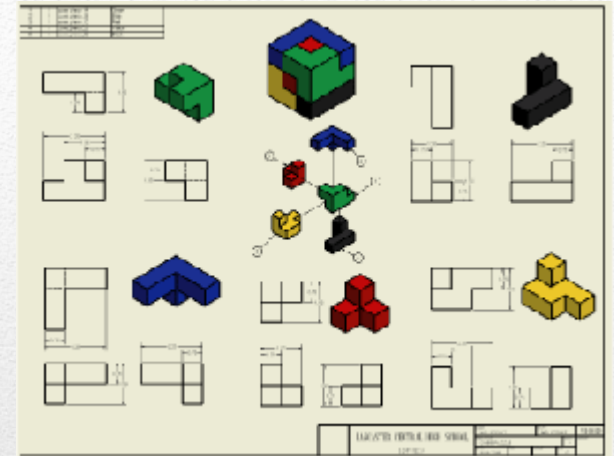
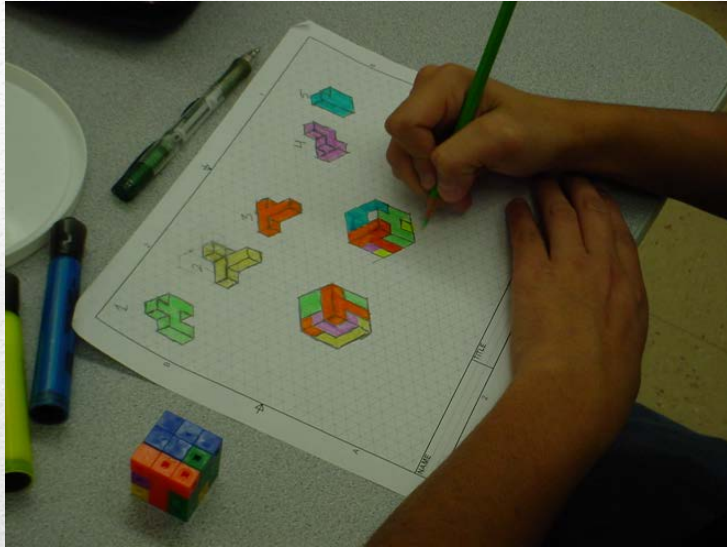
~~Introduction to Engineering Design~~

Students will learn how to create drawings using
Computer Aided Drawing programs (AutoDesk Inventor)



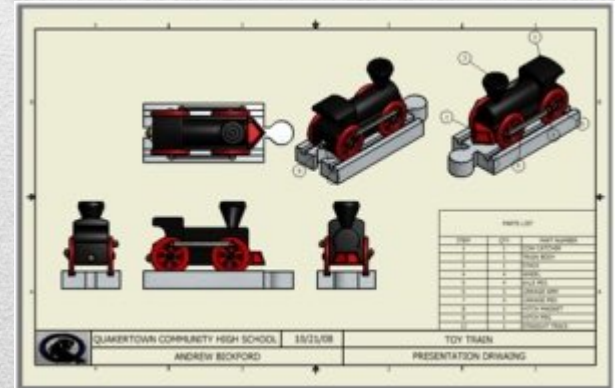
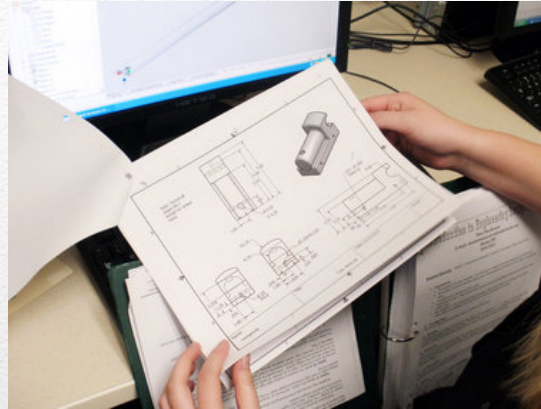
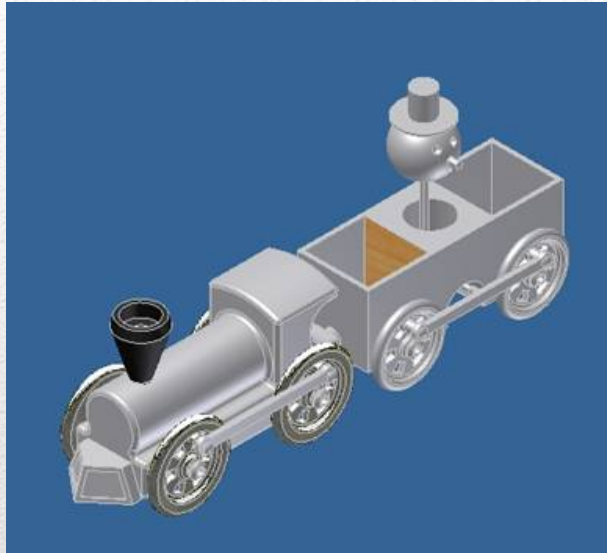
Computer Aided Design (CAD)

Students design, draw and construct a puzzle cube.

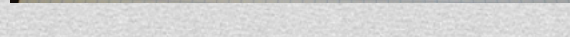


Projects – Puzzle Cube

Students will model the assembly of a toy train using Autodesk Inventor



Projects – Train Model





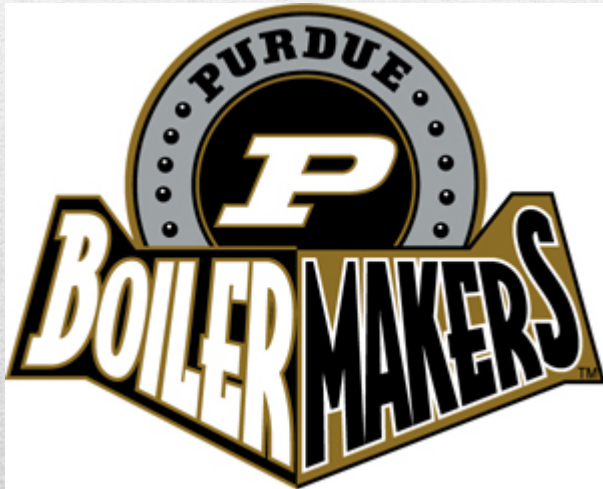
Benefits to Students



INDIANA UNIVERSITY



Potentially earn college credit in
engineering



Pathway to Engineering

Scholarship award possibilities




Duke University



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Pathway to Engineering



Students who complete a four year sequence of PLTW courses are eligible to become **PLTW Scholars**, which will be recognized by University Partners and may lead to additional scholarships, university credit, preferential admissions, etc.

Pathway to Engineering

Questions?



Gateway to Technology Middle School Program - 2015

Design & Modeling

Students apply the design process to solve problems and understand the influence of creativity and innovation in their lives. They work in teams to design a playground and furniture, capturing research and ideas in their engineering notebooks. Using Autodesk® design software, students create a virtual image of their designs and produce a portfolio to showcase their innovative solutions.

Foundation Units



Automation & Robotics

Students trace the history, development, and influence of automation and robotics as they learn about mechanical systems, energy transfer, machine automation, and computer control systems. Students use the VEX Robotics® platform to design, build, and program real-world objects such as traffic lights, toll booths, and robotic arms.

Foundation Units



Energy & the Environment

Students are challenged to think big and toward the future as they explore sustainable solutions to our energy needs and investigate the impact of energy on our lives and the world. They design and model alternative energy sources and evaluate options for reducing energy consumption.



Specialization Units

Flight & Space

The exciting world of aerospace comes alive through Flight and Space. Students explore the science behind aeronautics and use their knowledge to design, build, and test an airfoil. Custom-built simulation software allows students to experience space travel.

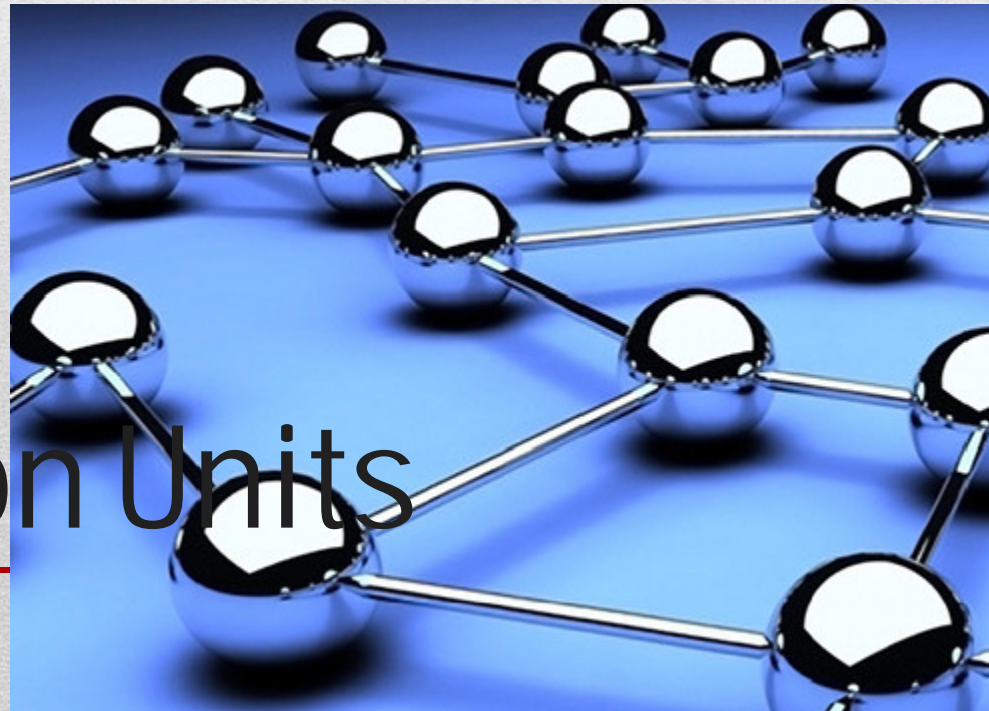


Specialization Units

Science of Technology

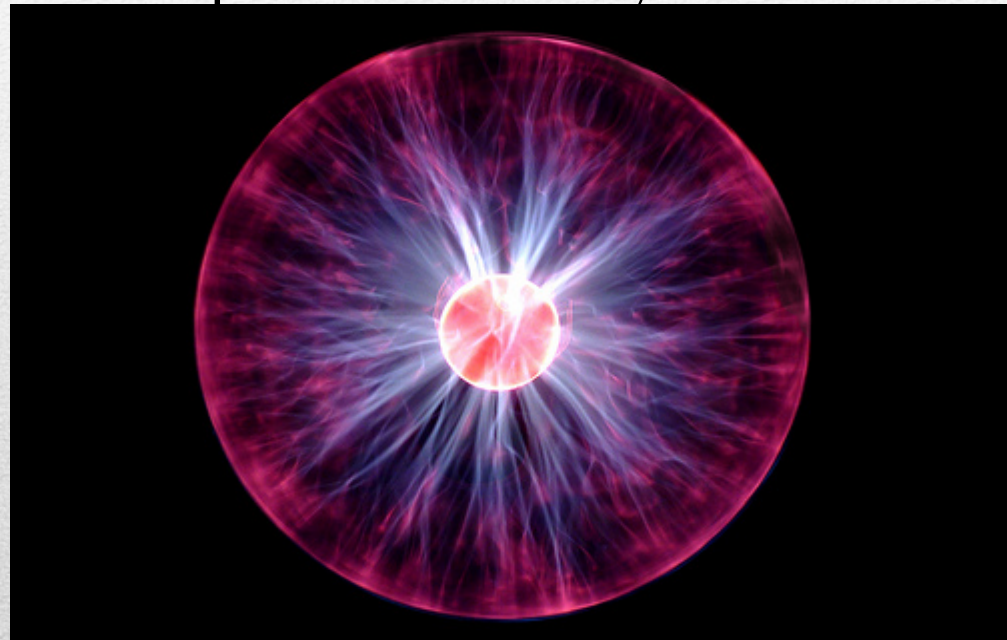
Science impacts the technology of yesterday, today, and the future. Students apply the concepts of physics, chemistry, and nanotechnology to STEM activities and projects, including making ice cream, cleaning up an oil spill, and discovering the properties of nano-materials.

Specialization Units



Magic of Electrons

Through hands-on projects, students explore electricity, the behavior and parts of atoms, and sensing devices. They learn knowledge and skills in basic circuitry design, and examine the impact of electricity on the world around them.



Specialization Units

Green Architecture

Today's students have grown up in an age of “green” choices. In this unit, students learn how to apply this concept to the fields of architecture and construction by exploring dimensioning, measuring, and architectural sustainability as they design affordable housing units using Autodesk's® 3D architectural design software.

Specialization Units



Medical Detectives

Students play the role of real-life medical detectives as they analyze genetic testing results to diagnose disease and study DNA evidence found at a “crime scene.” They solve medical mysteries through hands-on projects and labs, investigate how to measure and interpret vital signs, and learn how the systems of the human body work together to maintain health.



Specialization Units
