

# GREAT PLAINS Technology Center

## Pre-Engineering Academy High School Program

*Apply your math and science skills in this college prep program to get you ready for a rigorous engineering or engineering technology degree. Students earn 3 credits each year with a two year plan of study for grades 10-12.*



### AP Physics 1

Algebra-trigonometry based course of mechanics, circular motion, static electricity, electric circuits, sound and waves.

Additional academic courses offered through the Academy: Geometry, Algebra 2, Statistics, Pre-AP Chemistry, Anatomy & Physiology

### Pre-Calculus and AP Calculus

**Prepares Engineering-bound students to succeed in Calculus-based science courses in Engineering.**

## Pre-Engineering Courses

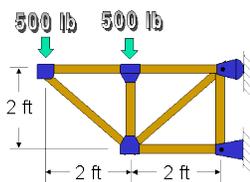


### Introduction to Engineering Design (IED)

Through hands-on projects, students apply engineering standards and document their work. Students use industry standard 3D modeling software to help them design solutions to solve proposed problems, document their work using an engineer's notebook, and communicate solutions to peers and members of the professional community.

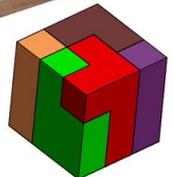


#2



### Principles of Engineering (POE)

This survey course exposes students to major concepts they'll encounter in a post-secondary engineering course of study. Topics include mechanisms, energy, statics, materials, and kinematics. They develop problem-solving skills and apply their knowledge of research and design to create solutions to various challenges, document their work and communicate solutions.

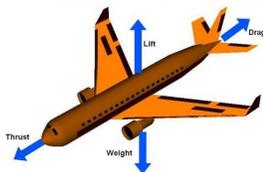


### Digital Electronics (DE)

Digital electronics is the foundation of all modern electronic devices such as mobile phones, MP3 players, laptop computers, digital cameras and high-definition televisions. Students are introduced to the process of combinational and sequential logic design, engineering standards and technical documentation.



### Four Forces on an Airplane



### Aerospace Engineering (AE)

AE explores the evolution of flight, navigation and control, flight fundamentals, aerospace materials, propulsion, space travel, and orbital mechanics. In addition, this course presents alternative applications for aerospace engineering concepts. Students analyze, design, and build aerospace systems. They apply knowledge gained throughout the course in a final presentation about the future of the industry and their professional goals.

VEX

Robotics

Team 2435



Speedfest

RC Flight

Contest



For more information or personalized tours, please feel free to contact one of the following Pre-Engineering Academy faculty:

Mike Farrell

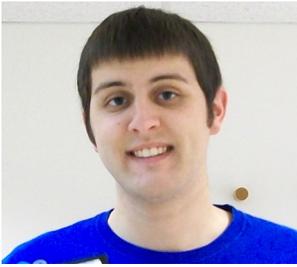
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**OSU Electrical Engineering Technology Graduate-Robert Schlecht**

When I first entered the Pre-engineering program at GPTC, I wasn't sure if I wanted to be an engineer let alone what kind I would want to be. However because of the talented, hardworking teachers and the wide array of disciplines covered, I was able to get into the swing of things easily and learned a lot about the engineering world. I am now finished with a degree in Electrical Engineering Technology and work with a company called L-3 communications.

**OSU Mechanical Engineering Graduate-Chris Duncan**

I am so glad I took physics and calculus in pre-engineering at GPTC. The fundamentals you learn will give you a solid foundation for understanding college engineering mathematics and physics. However it's not always about the final solution. It's whether or not you understand the theory and principles. Pre-engineering strengthened my ability in these areas. I was so happy to see my younger brother, Justin, attend the program for two years.

I work for International Paper in Valliant, OK. They acknowledged my achievements in the pre-engineering program.



**OSU Architectural Engineering Senior-Erica Castillo**

My high school pre-engineering classes helped build confidence and prepared me for college. One of the biggest helps was learning how to manage my homework. I also have a good understanding of math and physics. So do my friends from pre-engineering, and they are here with me at OSU. We learned we are interested in the same things and we still help each other out. We learned how to study together and to work in teams. Pre-engineering helped me figure out how to apply my love of art and skills in math. Now, I'm studying to be an architectural engineering.

**Dee Jarvis: Tire Assembly - Mechanical / Electrical Design Engineer for The Goodyear Tire & Rubber Company**

At the Lawton-based Goodyear plant I am one of 10 engineers and the only one from Oklahoma. Lawton is my hometown. I've been on the advisory committee of the pre-engineering program at GPTC since its inception nine years ago. We review curriculum and equipment to ensure the program is up to date with industry and teaching the right stuff. PLTW is right on. Students are getting expanded engineering experience in areas such as design. The company hopes to be able to hire some good "homegrown" engineers who want to stay closer to home to work. We have a high turnover rate because engineers come from far-away states and end up wanting to get back closer to home. We hope to hire more engineers from the local area who will want to stay with us.

**Jeanie Caldwell, Lawton High School Advisor**

PLTW is exciting. The program enables not just the students with straight A's, but B and high C students with a keen interest to make it. They ALL love it. These students have all the ability in the world but it hasn't being used in the regular classroom setting. They surprise themselves that they can learn this difficult curriculum and they feel special. Straight A students love it, too. They love the application of math and science and to see how it all works together by doing projects.

A barrier to overcome is to understand that the program is not for straight A students only, but for those who are genuinely interested in math and science. Many are afraid that the class might be too hard for them. Sometimes fear of the unknown is also a barrier, but 99 percent of the students feel they are treated more like adults as they learn to apply their newly acquired knowledge to industry.

