

Aerospace Engineering Syllabus

Course Description/Goals:

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, rockets, and robot systems.

Course TEKS/Objectives:

Aerospace Engineering (AE) ignites students' learning in the fundamentals of atmospheric and space flight. Aerospace Engineering is one of the specialization courses in the PLTW Engineering program. The course deepens the skills and knowledge of an engineering student within the context of atmospheric and space flight. Students explore the fundamentals of flight in air and space as they bring the concepts to life by designing and testing components related to flight such as an airfoil, propulsion system, and a rocket. They learn orbital mechanics concepts and apply these by creating models using industry-standard software. They also apply aerospace concepts to alternative applications, such as a wind turbine and a parachute. Students simulate a progression of operations to explore a planet, including creating a map of the terrain with a model satellite and using the map to execute a mission using an autonomous robot.

<https://tea.texas.gov/academics/learning-support-and-programs/innovative-courses/pltw-aerospace-engineering.pdf>

Course Outline:

Semester 1	Semester 2
<u>Unit 1: Introduction to Aerospace</u> <u>Evolution of Flight</u> <u>Physics of Flight</u> <u>Flight Planning and Navigation</u>	Unit 3: Space Space Travel Orbital Mechanics
<u>Unit 2: Aerospace Design</u> <u>Materials and Structures</u> <u>Propulsion</u> <u>Flight Physiology</u>	Unit 4: 1to34 High Powered Rocket Project and Launch (Semester 2 is subject to change)

