AEROSPACE ENGINEERING  
Course Syllabus

Course Number: ST00013  
OHLAP Credit: No

OCAS Code: 8715

Course Length: 120 Hours

Career Cluster: Science, Technology, Engineering and Mathematics

Career Pathway: Engineering and Technology

Career Major(s): PLTW Pre-Engineering (Comprehensive High Schools), PLTW Pre-Engineering

Pre-requisite(s): Introduction to Engineering Design, Principles of Engineering

Course Description: Aerospace Engineering is a specialty engineering course where students learn through hands-on engineering projects developed with NASA. Students learn about aerodynamics, astronautics, space-life sciences, and systems engineering (which includes the study of intelligent vehicles like the Mars rovers Spirit and Opportunity).

Textbooks: Project Lead the Way Materials

Course Objectives:

A. Demonstrate Knowledge of Aerospace Engineering  
   1. History of Flight  
   2. Components of an Airplane  
   3. Design changes effects on performance.

B. Discuss Aerodynamics and Aerodynamics Testing  
   1. Aerodynamics  
   2. Airfoil Construction  
   3. Wind Tunnel Testing

C. Demonstrate Knowledge of Flight Systems  
   1. Glider Design Construction and Testing  
   2. GPS and Spacial Awareness

D. Demonstrate Knowledge of Astronautics  
   1. Measuring Rocket Engine Thrust  
   2. Model Rocket Trajectory  
   3. Rocket Camera  
   4. Orbital Mechanics

E. Use Knowledge of Space Life Sciences to Conduct Experiments  
   1. Life Support and Environmental Systems  
   2. Effects of Gravity on the Human Body  
   3. Microgravity Drop Tower

F. Apply Knowledge of Aerospace Materials  
   1. Composite Fabrication and Testing  
   2. Thermal Protection Systems
AEROSPACE ENGINEERING

G. Use Knowledge of Systems Engineering
1. Intelligent Vehicles

1PTW objectives

Teaching Methods: The class will primarily be taught by the lecture and demonstration method and supported by various media materials to address various learning styles. There will be question and answer sessions over material covered in lecture and media presentations. Supervised lab time is provided for students to complete required projects.

Grading Procedures: 1. Students are graded on theory and shop practice and performance.
2. Each course must be passed with seventy (70%) percent or better.
3. Grading scale: A=90-100%, B=80-89%, C=70-79%, D=60-69%, F=50-59%.

Description of Classroom, Laboratories, and Equipment: Tulsa Technology Center campuses are owned and operated by Tulsa Technology Center School District No. 18. All programs provide students the opportunity to work with professionally certified instructors in modern, well-equipped facilities.

Available Certifications/College Credit: The student may be eligible to take state, national or industry exam after completion of the program. College credit may be issued from Oklahoma State University-Okmulgee or Tulsa Community College. See program counselor for additional information.

College Credit Eligibility: The student must maintain a grade point average of 2.0 or better.