RADNOR HIGH SCHOOL
Course Overview

Aerospace Engineering
Project Lead The Way
Course # 1263

General Information

Credits: 1.0
Weighted: Yes
Prerequisite: 1250

Length: Full Year
Format: Meets Daily
Grade: 10-12

Course Description

The Aerospace Engineering course is intended to serve as a specialization course within the Project Lead The Way® sequence. The course is structured to enable all students to have a variety of experiences that provide an overview of the field of aerospace engineering. Students work individually and in teams, exploring hands-on projects and activities to learn the characteristics of aerospace engineering and are exposed to the various situations that aerospace engineers face in their careers. In addition, students use Inventor, a state of the art 3D design software package from Autodesk, to design solutions to proposed problems. Students learn about documenting their projects, solving problems, and communicating their solutions to their peers and members of the professional community.

Units of Study

UNIT: 1—Introduction to Aerospace
UNIT: 2—Aerospace Design
UNIT: 3—Space
UNIT: 4—Alternative Applications

COURSE WIDE SCIENCE AND TECHNOLOGY AND ENGINEERING EDUCATION STANDARDS
3.4.10.A2: Interpret how **systems** thinking applies logic and creativity with appropriate comprises in complex real-life problems.
3.4.12.A2: Describe how management is the process of planning, organizing, and controlling work.
3.4.10.B1: Compare and contrast how the use of **technology** involves weighing the trade-offs between the positive and negative effects.
3.4.10.C2: Analyze a **prototype** and/or create a working model to test a design concept by making actual observations and necessary adjustments.
3.4.10.C3: Illustrate the concept that not all problems are technological and not every problem can be solved using **technology.**
3.4.12.C3: Apply the concept that many technological problems require a multidisciplinary approach.
3.4.10.D2: Diagnose a malfunctioning **system** and use tools, materials, and knowledge to repair it.
3.4.12.D2: Verify that engineering design is influenced by personal characteristics, such as creativity, resourcefulness, and the ability to visualize and think abstractly.
3.4.12.E5: Explain how the design of intelligent and non-intelligent transportation **systems** depends on many processes and innovative techniques.

COURSE WIDE COMMON CORE STANDARDS FOR READING IN SCIENCE AND TECHNOLOGY

3.5.9-10.E: Analyze the structure of the relationships among concepts in a text, including relationships among key terms (e.g., *force, friction, reaction force, energy*).
3.5.9-10.G: Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
3.5.9-10.H: Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.

3.5.11-12.C: Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks;
analyze the specific results based on explanations in the text.
3.5.11-12.D: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 11–12 texts and topics*.
3.5.11-12.F: Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.
3.5.11-12.G: Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
3.5.11-12.H: Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
3.5.11-12.I: Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

COURSE WIDE COMMON CORE STANDARDS FOR WRITING IN SCIENCE AND TECHNOLOGY
CC.3.6.9-10.A. Write arguments focused on *discipline-specific content.*
CC.3.6.9-10.B. Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.
CC.3.6.9-10.E: Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
CC.3.6.11-12.F: Conduct short as well as more sustained research projects to answer a question (including a self generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.