Course Title: Exploring Aviation and Aerospace	**Length of Course:** 15 cycles
Grade Level(s): 9	**Periods Per Cycle:** 6
Units of Credit: .5	**Length of Period:** 43 minutes
Classification: Elective	**Total Instructional Time:** 64.5 hours

Course Description

The ninth-grade course will provide the foundation for advanced exploration in the areas of flying, aerospace engineering, and unmanned aircraft systems. Students will learn about engineering practices, problem solving, and the innovations and technological developments that have made today's aviation and aerospace industries possible. Students will also learn about the wide variety of exciting and rewarding careers available to them. The ninth-grade course will inspire students to consider aviation and aerospace careers while laying the foundation for continued study in grades 10 through 12 and beyond.

HS-ETS1-1 Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
HS-ETS1-2 Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
HS-ETS1-3 Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
HS-ETS1-4 Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.
HSG.MG.A.1 Use geometric shapes, their measures and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).
HSS-ID.B.5 Summarize, represent, and interpret data on two categorical and quantitative variables.

Instructional Strategies, Learning Practices, Activities, and Experiences

Hands-On Activities Lesson Objectives Digital Content (Videos, Slide Shows)	Formative Assessments Labs Group Projects	Online Resources Summative Assessments Engineering Projects

Assessments

Observation Discussions	Quizzes Exams	Unit Exams Projects

Materials/Resources

All materials and resources are provided digitally via the AOPA curriculum including lesson plans, activities, projects, assessments.	Various craft supplies and tools to complete hands-on activities.	

Adopted: 5/18/20
Revised:

CONTENT/KEY CONCEPTS	OBJECTIVES/STANDARDS

Science and Engineering Practices
   Asking Questions and Defining Problems
   Constructing Explanations and Designing
   Solutions
Crosscutting Concepts
   Systems and System Models
   Influence of Science, Engineering, and
   Technology on Society and the Natural
   World
	HS-ETS1-1 Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

Science and Engineering Practices
   Constructing Explanations and Designing
   Solutions
	HS-ETS1-2 Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

Science and Engineering Practices
   Constructing Explanations and Designing
   Solutions
Crosscutting Concepts
   Influence of Science, Engineering, and
   Technology on Society and the Natural
   World
	HS-ETS1-3 Evaluate a solution to a complex real-world problem based on prioritized criteria and tradeoffs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

Science and Engineering Practices
   Using Mathematics and Computational
   Thinking
Crosscutting Concepts
   Systems and System Models
	HS-ETS1-4 Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.
	
	HSS-ID.B.5 Summarize, represent, and interpret data on two categorical and quantitative variables.
	
	HSN-Q.A.2-3 Reason quantitatively and use units to solve problems.
	
	HSG.MG.A.1 Use geometric shapes, their measures and their properties to describe objects.