SPRING GROVE AREA SCHOOL DISTRICT

PLANNED COURSE OVERVIEW

Course Title: The Flying Environment	**Length of Course:** 15 cycles
Grade Level(s): 11	**Periods Per Cycle:** 6
Units of Credit: .5	**Length of Period:** 40 minutes
Classification: Elective	**Total Instructional Time:** 60 hours

Course Description

This course is foundational for both manned and unmanned aviation and will prepare students to take either of two Federal Aviation Administration tests: the Private Pilot Knowledge Test or the Part 107 Remote Pilot Knowledge Test. Topics include: pre-flight procedures, airspace, radio communications, aviation phraseology, regulations, airport operations, aviation safety, weather, cockpit management, and emergency procedures.

Instructional Strategies, Learning Practices, Activities, and Experiences

Direct Instruction Field Experiences Groupwork Drone Flights	Instructional Videos Labs Practice Problems/Calculations	Reading Flight Simulations Flight Planning/ Map Reading

Assessments

Unit Quizzes Unit Tests Pre-Test	Projects Presentations Post-Test	Videos Simulations

Materials/Resources

AOPA Curriculum Sectional Charts The York Airport	Plotters E6B Flight Calculators FAA Regulations FAR/AIM	Model Airplanes Drones The Pilots Handbook of Aeronautical Knowledge

Adopted: 5/23/22
Revised:

CONTENT/KEY CONCEPTS	OBJECTIVES/STANDARDS
Unit 1: Aviation Weather Theory **Description:** What makes weather, and why does it matter to pilots? In this unit, students will examine the building blocks of weather. Early lessons will cover broad concepts, such as heat exchange, the role of atmospheric water, and the movement of air masses. Later lessons will focus on understanding specific weather phenomena, including clouds and fog, thunderstorms, and wind shear.	**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 Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Disciplinary Core Ideas ETS1.A: Defining and Delimiting Engineering Problems **HS-ESS2-3** - Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection. Science and Engineering Practices Developing and Using Models Disciplinary Core Ideas ESS2.A: Earth Materials and Systems Crosscutting Concepts Energy and Matter

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Unit 2: Aviation Weather Services **Description:** To fly safely, pilots must have good insight into the weather around them. Weather observations, forecasts, and charts are vital to a pilot's understanding of the weather both before takeoff and as a flight progresses. In this unit, students will learn about the sources of weather observations, including radiosondes, radar, satellites, and more. They'll also learn about various weather products and services available to pilots and how to interpret these essential tools to make good decisions about the viability of a proposed flight.	**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 Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Disciplinary Core Ideas ETS1.A: Defining and Delimiting Engineering Problems **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. Science and Engineering Practices Constructing Explanations and Designing Solutions Disciplinary Core Ideas ETS1.B: Developing Possible Solutions

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Unit 3: Airport Operations **Description:** Every flight begins and ends at an airport. To keep airports running smoothly and safely, pilots need to understand the "rules of the road." Signs and pavement markings help pilots navigate the complex and sometimes busy world of the airport. Specialized lighting makes it easier to find your way at night. In this unit, students will learn the meaning and function of the many signs and markings used at airports.	**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 Asking Questions and Defining Problems Constructing Explanations and Designing Solutions Disciplinary Core Ideas ETS1.A: Defining and Delimiting Engineering Problems Crosscutting Concepts Systems and System Models **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. Science and Engineering Practices Constructing Explanations and Designing Solutions Disciplinary Core Ideas ETS1.B: Developing Possible Solutions Crosscutting Concepts Influence of Science, Engineering, and Technology on Society and the Natural World **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. Science and Engineering Practices Using Mathematics and Computational Thinking Disciplinary Core Ideas ETS1.B: Developing Possible Solutions Crosscutting Concepts Systems and System Models

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Unit 4: Introduction to Aeronautical Charts and Airspace **Description:** A good flight starts with a good plan, and the first thing a pilot may turn to is a map. In aviation, the maps are known as aeronautical charts, and they provide a wealth of information for pilots. Knowing how to read the charts is critical for any pilot, and this unit provides an introduction to the main features of the charts as well as an introduction to the National Airspace System which governs where and under what circumstances drone and manned pilots may fly their aircraft.	**RST.11-12.2 -** Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. **RST.11-12.4** - 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. **WHST.11-12.6** - Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information. **WHST.11-12.8** - Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation. **WHST.11-12.9** - Draw evidence from informational texts to support analysis, reflection, and research.