SPRING GROVE AREA SCHOOL DISTRICT

PLANNED COURSE OVERVIEW

Course Title: Flight Planning	**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 will cover the remaining topics necessary for students to take the Federal Aviation Administration's Private Pilot Knowledge Test. Students will review regulations, cross-country flight planning, weight and balance, performance and limitations, human factors, chart use, night operations, navigation systems, and aeronautical decision making. At the end of this course, a school may choose to arrange for students to be signed off to take the Federal Aviation Administration's Private Pilot written exam.

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: Navigation: Plotting, Pilotage, Paperwork **Description:** An in-depth review of sectional aeronautical charts and instruction in the use of a plotter and mechanical flight computer called the E6B allows students to plan a short cross-country 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 ETS1.C: Optimizing the Design Solution **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 **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 Practice Using Mathematics and Computational Thinking Disciplinary Core Ideas ETS1.B: Developing Possible Solutions Crosscutting Concepts Systems and System Models

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Unit 2: Aircraft Performance **Description:** "Will I have enough fuel for this trip? How much baggage can I bring aboard the aircraft? Is the runway length at my destination long enough for landing and takeoff?" Answering these important preflight safety questions require a pilot to know how to read aircraft performance charts. In this unit, students will learn flight planning procedures that involve determining aircraft performance, which could be affected by weight, atmospheric conditions, the runway environment, and more. Students will learn to use performance charts to determine takeoff, climb, range, endurance, descent, and landing performance.	**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: Aeromedical Factors: Am I Safe to Fly? **Description:** Aircraft move and operate in many different environments, and sometimes pilots are subjected to conditions that can affect their health and safety. Optical illusions and spatial disorientation are just two of the conditions students will learn about in this unit. Additional topics include medical certification requirements, drug and alcohol use, and aeronautical decision making strategies.	**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: FAA Regulations Review **Description:** Throughout your study of aviation in the United States, students have seen references to the Federal Aviation Regulations or FARs. The United States Code of Federal Regulations has many parts (called Titles) regulating activities in the USA. Title 14 relates to Aeronautics and Space, and it is commonly known as the FARs. This unit covers the most common private pilot-related regulations in Part 61 (certification for pilots) and Part 91 (general operating and flight rules).	**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. **RST.11-12.9** - 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. **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.11-12.7** - 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. **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.

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Unit 5: Private Pilot Projects **Description:** In this final unit, students get to practice being ground instructors as they select a topic from the Pilot's Handbook of Aeronautical Knowledge, craft a lesson, teach their lesson to the class, and administer an assessment. This hands-on experience further develops their aviation knowledge in preparation for the FAA Private Pilot Knowledge Test. Students are also given time to assess and update their career portfolio with reflections, artifacts, and documentation from any work experiences, interviews, competitions, or coursework they have participated in throughout the year.	**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.11-12.7** - 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. **RST.11-12.9** - 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. **WHST.11-12.2** - Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes. **WHST.11-12.4** - Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. **WHST.11-12.5** - Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience. **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.11-12.7** - 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.

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	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. **WHST.11-12.10** - Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.