AOPA FOUNDATION HIGH SCHOOL AVIATION STEM CURRICULUM

PACING GUIDE

ELEVENTH GRADE CURRICULUM

THE FLYING ENVIRONMENT

SEMESTER ONE

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.

Unit 1: Aviation Weather Theory

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.

		No. of Sessions Per Lesson	Day of Semester
Pre-Course Exam		1	1
Section A – Why Weather Matters			
Lesson 1	Introduction to Aviation Weather	1	2
Section B – Understanding Atmosphere			
Lesson 1	Makeup of the Atmosphere	3	5
Lesson 2	Atmospheric Circulation and Winds	3	8
Lesson 3	Clouds and Precipitation	4	12
Lesson 4	Air Masses and Fronts	4	16
Lesson 5	Thunderstorms	4	20
Unit 1 Exam		1	21

Total Sessions Unit 1 **21**
Semester Total **21**

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PACING GUIDE

Unit 2: Aviation Weather Services

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.

		No. of Sessions Per Lesson	Day of Semester
<u>Section A – Weather Observations and Forecasts</u>			
Lesson 1	Introduction to Aviation Weather Services	1	22
Lesson 2	Aviation Weather Observation & Reporting	4	26
Lesson 3	Aviation Forecasts and Weather Charts	4	30
<u>Section B – Getting Weather Information</u>			
Lesson 1	Preflight Weather Planning	3	33
Lesson 2	In-flight Weather and Tactical Weather Decision Making	3	36
<u>Unit 2 Exam</u>		1	37

Total Sessions Unit 2 **16**
Semester Total **37**

PACING GUIDE

Unit 3: Airport Operations

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.

		No. of Sessions Per Lesson	Day of Semester
Section A – Understanding Airports			
Lesson 1	Introduction to Airports and Airport Data	2	39
Lesson 2	Airport Markings and Signs	4	43
Lesson 3	Airport Lighting	2	45
Lesson 4	Traffic Patterns	2	47
Lesson 5	Communications	4	51
Lesson 6	ATC	2	53
Lesson 7	Pilot Communications in the Airport Environment	3	56
Lesson 8	Airport Safety and Pilot Considerations	2	58
Unit 3 Exam		1	59

Total Sessions Unit 3 22
Semester Total 59

PACING GUIDE

Unit 4: Introduction to Aeronautical Charts and Airspace

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.

		No. of Sessions Per Lesson	Day of Semester
Section A – Introducing Aeronautical Charts and Airspace			
Lesson 1	Introduction to Aeronautical Charts	4	63
Lesson 2	Introduction to the National Airspace System	4	67
Unit 4 Exam		1	68

Total Sessions Unit 4 **9**
Semester Total **68**

Unit 5: Post-Course Exam Review

After a semester full of weather, airport operations, and navigation, it's time to review for the Post-Course Exam. In this unit, students become the teachers as they select topics to review from weather theory to types of airspace, plan review activities, and present their lessons or activities to their classmates.

		No. of Sessions Per Lesson	Day of Semester
Section A – Post-Course Exam Review			
Lesson 1	Review or Project: Student/Teacher Choice	1	69
Post-Course Exam		1	70

Total Sessions Unit 5 **2**
Semester Total **70**