

# Syllabus and Course Outline AeroStem 2022-2023

Course Name : **AOPA 11-12**

Teacher Name : **Mr. J. Morse**

Teacher Contact information:

Email : [jmorse@aerostem.org](mailto:jmorse@aerostem.org)

Room : **201**

## Welcome to AOPA Class!

We will be studying everything aviation related in preparations for your future in aviation.

## Core Subject Description:

This subject is designed to provide a general background for the understanding of the science Aviation / UAS. This course develops an appreciation of the beauty of life from beginning with the intention of a 12th grade certification is so desired.

## General Standards:

The learner demonstrates an understanding of basic concepts as deepened by other disciplines. The learner is able to analyze/solve problems critically, think innovatively / creatively, and make informed decisions to enhance the integrity.

## Materials:

If there is any difficulty obtaining these materials, please let your teacher know as soon as possible.

- 2" binder (durable please)
- District/Personal Laptop
- Lined Paper
- Dividers
- Blue or Black Pens and Pencils
- Folder MEAD 5-star
- Markers and colored pencils
- Gluesticks
- Ruler and protractor.

## Grading Procedures:

**Formative** assignments are graded as "Formative" or "Participation". Flight and Space notes and other forms of written work, including Engineering Notebook (ISN) activities which are done in class are considered "Formative" will be graded as Complete, Incomplete, No Evidence, or Re-done as described by the given scale.

**Isometric Drawing** and designs in the Engineering Notebook will be "Participation", and graded by the rubric on the following page.

This class will use the following codes to help communicate with you regarding your homework and group work progress.

**C** - Complete. Assignment was completed and turned in on time. The work provided demonstrates thoughtful assessment of the material and question. **Full Credit.**

**I** - Incomplete. Assignment was turned in, however, questions were incomplete or some were incorrect. **Half Credit.**

**NE** - No Evidence. Assignment was not turned in, was less than half complete or most answers were incorrect. **No Credit.**

**RD** - Re-Done. Student revised or completed a similar assignment to improve their grade. **Average Credit.**

**Summative** assessments demonstrate a student's mastery of the standards.

**Unit** exams, and quizzes will be assigned percentage grades.

**Large** projects, research papers, classroom presentations, or video submissions will be assessed using rubrics.

**Short** written answers will be graded using the C,I, NE, RD, Scale.

Students are encouraged to retake or revise assessments if they struggled to demonstrate the mastery expected. This has to take place within the same Learning Period.

Quarter grades will be calculated from cumulative points per quarter from weighted categories. Semester grades will be calculated with each quarter being 40% and the final being the remaining 20%. Letter grades are assigned based on the scale listed below:

<b>A = 90% - 100%</b>	Quarter 1	= 40%	Assessments	= 35%
<b>B = 80% - 89%</b>	Quarter 2	= 40%	Class works & HW	= 30%
<b>C = 70% - 79%</b>	Final Exam	= 20%	Labs/Simulations	= 20%
<b>D = 60% - 69%</b>			Participation	= 15%
<b>F = 50% - 59%</b>	<b>Total</b>	<b>= 100</b>		
			<b>Total</b>	<b>= 100%</b>

## Checking your Grades:

It is **expected** that students and parents regularly access Power School and Google Classroom to check grades. Also, students are expected to access their grades at least once a week and report on their progress grade through a grade check.

## Classroom Expectations:

- **A. Classroom Routine**
- 1. Enter the Class Room Quietly. Go to your seat and begin to work on the warm up (Warm ups are handed in weekly).
- 2. During Roll Please Say "Here".
- 3. The instructor will take this time to check on homework completion.
- 4. Announcements.
- 5. Lecture Time -- please do not talk and take notes.
- 6. Have all materials needed READY for the day!

## Policies Classroom Policies:

1. **Dress Code:** Please refer to the dress code in the handbook. No hats or Hoodies in Class.
2. **Environment:** No distracting noises, gestures, or talking. Only those things appropriate for school are acceptable, No Phones at anytime in class, no chewing gum in class, and do not through anything in the classroom.
3. **Language:** Please follow school rules for appropriate language use, no inappropriate language will be tolerated. .
4. **Active Participation** in class is expected from each student is expected.
5. **Raise Your Hand:** If you have questions, or need something please raise your hand and ask the teacher.
6. **Technology in the Classroom:** Only those sites, WebPages, or programs that are part of the class work are acceptable.
7. **Laptop Policies:** The teacher may mute or stop the video, lock out a site, or close a tab of any student who is not meeting expectations, this way the student may remain in the class.
8. **During Classes,** everyone is expected to respect the speaker may it be your teacher or fellow students. Avoid distracting the class any means possible to avoid sanctions.
9. **Lab Procedures:** From time to time there will be Lab assignments. It is imperative for the safety of all that ALL SAFETY regulations are obeyed to during lab times, no horseplay or other un sanctioned activities will be tolerated.
10. **Tools and Equipment:** All tools and equipment are to utilized only with the proper safety precautions: If you break it the

total price of the tool or equipment will be charged to you.

### **Absences and Make-up Work:**

- It is the student's responsibility to obtain any missed work and notes in cases of excused absences.
- If a long-term assignment has been assigned before the absence, the due date stands.
- Make-up work must be received within the number of days (s) of the excused absence and according to the time of the assignment or it will be treated as late work.
- Students will not receive any credit for work from an unexcused absence. It is important to be present every day in class.

### **Late Work:**

Due dates are posted several times and you are responsible for knowing these. If an assignment is not handed in when asked for or due, it is considered late.

- If late: You will not be reminded to turn in late work.
- Late work will be accepted at teacher discretion.
- Any late work accepted by the teacher will have a 5% deduction per day from the final grade.

Note This Class has Monday Work!!

**August 8-12**

**Class Introduction and Orientation**

1. Teacher Introduction
2. Classroom and Learning Rules
3. Grading System
4. White Board and Cabinets Orientation
5. Chrome Books Sites we will use.
6. Classroom Contracts

**August 16-19**

**Unit 1: Aviation Weather Theory**

Pre-Course Exam

**Section A – Why Weather Matters**

Lesson 1 Introduction to Aviation Weather

**Section B – Understanding Atmosphere**

Lesson 1 Makeup of the Atmosphere-1

Lesson 1 Makeup of the Atmosphere-2

**August 23-26**

Lesson 1 Makeup of the Atmosphere-3

Lesson 2 Atmospheric Circulation and Winds-1

Lesson 2 Atmospheric Circulation and Winds-2

Lesson 2 Atmospheric Circulation and Winds-3

**August 30-Sept 2**

Lesson 3 Clouds and Precipitation-1

Lesson 3 Clouds and Precipitation-2

Lesson 3 Clouds and Precipitation-3

Lesson 3 Clouds and Precipitation-4

**Sept 6-9**

Lesson 4 Air Masses and Fronts-1

Lesson 4 Air Masses and Fronts-2

Lesson 4 Air Masses and Fronts-3

Lesson 4 Air Masses and Fronts-4

**Sept 13-16**

Lesson 5 Thunderstorms-1

Lesson 5 Thunderstorms-2

Lesson 5 Thunderstorms-3

Lesson 5 Thunderstorms-4

**Unit 1 Exam**

**Sept 20-23 --Grades Go In**

**Unit 2: Aviation Weather Services**

**Section A – Weather Observations and Forecasts**

Lesson 1 Introduction to Aviation Weather Services

Lesson 2 Aviation Weather Observation & Reporting-1

Lesson 2 Aviation Weather Observation & Reporting-2

Lesson 2 Aviation Weather Observation & Reporting-3

Lesson 2 Aviation Weather Observation & Reporting-4

**Break Sept 26-30**

**Oct 4-7**

Lesson 3 Aviation Forecasts and Weather Charts-1

Lesson 3 Aviation Forecasts and Weather Charts-2

Lesson 3 Aviation Forecasts and Weather Charts-3

Lesson 3 Aviation Forecasts and Weather Charts-4

**Oct 11-14**

**Section B – Getting Weather Information**

Lesson 1 Preflight Weather Planning-1

Lesson 1 Preflight Weather Planning-2

Lesson 1 Preflight Weather Planning-3

Lesson 2 In-flight Weather and Tactical Weather Decision Making-1

Lesson 2 In-flight Weather and Tactical Weather Decision Making-2

**Oct 18-21**

Lesson 2 In-flight Weather and Tactical Weather Decision Making-3

**Unit 2 Exam**

**Unit 3: Airport Operations**

**Section A – Understanding Airports**

Lesson 1 Introduction to Airports and Airport Data-1

Lesson 1 Introduction to Airports and Airport Data-2

Lesson 2 Airport Markings and Signs-1

**Oct 24-28**

Lesson 2 Airport Markings and Signs-2

Lesson 2 Airport Markings and Signs-3

Lesson 2 Airport Markings and Signs-4

Lesson 3 Airport Lighting-1

Lesson 3 Airport Lighting-2

**Nov 1-4**

Lesson 4 Traffic Patterns-1

Lesson 4 Traffic Patterns-2

Lesson 5 Communications-1

Lesson 5 Communications-2

Lesson 5 Communications-3

**Nov 8-10 No School 11th**

Lesson 5 Communications-4

Lesson 6 ATC-1

Lesson 6 ATC-2

Lesson 7 Pilot Communications in the Airport Environment-1

**Nov 15-18**

Lesson 7 Pilot Communications in the Airport Environment-2

Lesson 7 Pilot Communications in the Airport Environment-3

Lesson 8 Airport Safety and Pilot Considerations-1

Lesson 8 Airport Safety and Pilot Considerations-2

**Unit 3 Exam**

**\*\*\*Thanks Giving Break Nove 20-24\*\*\***

**Nov 28-Dec 2**

**Unit 4: Introduction to Aeronautical Charts and Airspace**

**Section A – Introducing Aeronautical Charts and Airspace**

Lesson 1 Introduction to Aeronautical Charts-1

Lesson 1 Introduction to Aeronautical Charts-2

Lesson 1 Introduction to Aeronautical Charts-3

Lesson 1 Introduction to Aeronautical Charts-4

Note This Class has Monday Work!!

**August 8-12**

**Class Introduction and Orientation**

1. Teacher Introduction
2. Classroom and Learning Rules
3. Grading System
4. White Board and Cabinets Orientation
5. Chrome Books Sites we will use.
6. Classroom Contracts

**August 16-19**

**Unit 1: Aviation Weather Theory**

Pre-Course Exam

**Section A – Why Weather Matters**

Lesson 1 Introduction to Aviation Weather

**Section B – Understanding Atmosphere**

Lesson 1 Makeup of the Atmosphere-1

Lesson 1 Makeup of the Atmosphere-2

**August 23-26**

Lesson 1 Makeup of the Atmosphere-3

Lesson 2 Atmospheric Circulation and Winds-1

Lesson 2 Atmospheric Circulation and Winds-2

Lesson 2 Atmospheric Circulation and Winds-3

**August 30-Sept 2**

Lesson 3 Clouds and Precipitation-1

Lesson 3 Clouds and Precipitation-2

Lesson 3 Clouds and Precipitation-3

Lesson 3 Clouds and Precipitation-4

**Sept 6-9**

Lesson 4 Air Masses and Fronts-1

Lesson 4 Air Masses and Fronts-2

Lesson 4 Air Masses and Fronts-3

Lesson 4 Air Masses and Fronts-4

**Sept 13-16**

Lesson 5 Thunderstorms-1

Lesson 5 Thunderstorms-2

Lesson 5 Thunderstorms-3

Lesson 5 Thunderstorms-4

**Unit 1 Exam**

**Sept 20-23 --Grades Go In**

**Unit 2: Aviation Weather Services**

**Section A – Weather Observations and Forecasts**

Lesson 1 Introduction to Aviation Weather Services

Lesson 2 Aviation Weather Observation & Reporting-1

Lesson 2 Aviation Weather Observation & Reporting-2

Lesson 2 Aviation Weather Observation & Reporting-3

Lesson 2 Aviation Weather Observation & Reporting-4

**Break Sept 26-30**

**Oct 4-7**

Lesson 3 Aviation Forecasts and Weather Charts-1

Lesson 3 Aviation Forecasts and Weather Charts-2

Lesson 3 Aviation Forecasts and Weather Charts-3

Lesson 3 Aviation Forecasts and Weather Charts-4

**Oct 11-14**

**Section B – Getting Weather Information**

Lesson 1 Preflight Weather Planning-1

Lesson 1 Preflight Weather Planning-2

Lesson 1 Preflight Weather Planning-3

Lesson 2 In-flight Weather and Tactical Weather Decision Making-1

Lesson 2 In-flight Weather and Tactical Weather Decision Making-2

**Oct 18-21**

Lesson 2 In-flight Weather and Tactical Weather Decision Making-3

**Unit 2 Exam**

**Unit 3: Airport Operations**

**Section A – Understanding Airports**

Lesson 1 Introduction to Airports and Airport Data-1

Lesson 1 Introduction to Airports and Airport Data-2

Lesson 2 Airport Markings and Signs-1

**Oct 24-28**

Lesson 2 Airport Markings and Signs-2

Lesson 2 Airport Markings and Signs-3

Lesson 2 Airport Markings and Signs-4

Lesson 3 Airport Lighting-1

Lesson 3 Airport Lighting-2

**Nov 1-4**

Lesson 4 Traffic Patterns-1

Lesson 4 Traffic Patterns-2

Lesson 5 Communications-1

Lesson 5 Communications-2

Lesson 5 Communications-3

**Nov 8-10 No School 11th**

Lesson 5 Communications-4

Lesson 6 ATC-1

Lesson 6 ATC-2

Lesson 7 Pilot Communications in the Airport Environment-1

**Nov 15-18**

Lesson 7 Pilot Communications in the Airport Environment-2

Lesson 7 Pilot Communications in the Airport Environment-3

Lesson 8 Airport Safety and Pilot Considerations-1

Lesson 8 Airport Safety and Pilot Considerations-2

**Unit 3 Exam**

**\*\*\*Thanks Giving Break Nove 20-24\*\*\***

**Nov 28-Dec 2**

**Unit 4: Introduction to Aeronautical Charts and Airspace**

**Section A – Introducing Aeronautical Charts and Airspace**

Lesson 1 Introduction to Aeronautical Charts-1

Lesson 1 Introduction to Aeronautical Charts-2

Lesson 1 Introduction to Aeronautical Charts-3

Lesson 1 Introduction to Aeronautical Charts-4

## SECOND SEMESTER

### Jan 10-13

#### **Unit 6: Navigation: Plotting, Pilotage, Paperwork**

##### **Pre-Course Exam**

##### **Section A – Charts and Airspace Review**

Lesson 1 Advanced Aeronautical Charts-1

Lesson 1 Advanced Aeronautical Charts-2

Lesson 2 Latitude, Longitude, and Time-1

### Jan 17-20

Lesson 2 Latitude, Longitude, and Time-2

##### **Section B – The Geometry of Navigation**

Lesson 1 Drawing and Measuring Courses-1

Lesson 1 Drawing and Measuring Courses-2

Lesson 1 Drawing and Measuring Courses-3

### Jan 24-27

Lesson 2 Which Way to Steer?-1

Lesson 2 Which Way to Steer?-2

Lesson 2 Which Way to Steer?-3

Lesson 2 Which Way to Steer?-4

### Jan 31 - Feb 3

Lesson 3 Flight Computers-1

Lesson 3 Flight Computers-2

Lesson 3 Flight Computers-3

##### **Section C – Planning a Cross-Country Trip**

Lesson 1 Plotting Your Course-1

### Feb 7-10

Lesson 1 Plotting Your Course-2

Lesson 2 Helpful Documents-1

Lesson 2 Helpful Documents-2

Lesson 3 VOR and GPS Navigation-1

### Feb 14-17 ---Grades Go In

Lesson 3 VOR and GPS Navigation-2

Lesson 3 VOR and GPS Navigation-3

Lesson 3 VOR and GPS Navigation-4

##### **Unit 6 Exam**

**\*\*\*No School Feb 20-24\*\*\***

### Feb 28-Mar 3

#### **Unit 7: Aircraft Performance**

##### **Section A – Reading Aircraft Performance Charts**

Lesson 1 Weight and Balance-1

Lesson 1 Weight and Balance-2

Lesson 1 Weight and Balance-3

Lesson 2 Density Altitude-1

### Mar 7-10

Lesson 2 Density Altitude-2

Lesson 3 Takeoff and Landing Distances-1

Lesson 3 Takeoff and Landing Distances-2

Lesson 4 Aircraft Power Settings-1

### Mar 14-17

Lesson 4 Aircraft Power Settings-2

Lesson 4 Aircraft Power Settings-3

Lesson 4 Aircraft Power Settings-4

##### **Unit 7 Exam**

### Mar 21-24

#### **Unit 8: Aeromedical Factors: Am I Safe to Fly?**

##### **Section A – Certificates, Regulations, and Safety**

Lesson 1 Medical Certificates

##### **Section B – Anatomy and Physiology**

Lesson 1 It's Getting Harder to Breathe-1

Lesson 1 It's Getting Harder to Breathe-2

Lesson 2 Your Eyes are Deceiving You-1

### Mar 28-31

Lesson 2 Your Eyes are Deceiving You-2

Lesson 2 Your Eyes are Deceiving You-3

Lesson 2 Your Eyes are Deceiving You-4

Lesson 3 Disorientation and Motion Sickness

### April 4-6 no school on 7th

##### **Section C – Drugs and Alcohol**

Lesson 1 Drugs and Alcohol

##### **Section D - Aeronautical Decision Making**

Lesson 1 Aeronautical Decision Making-1

Lesson 1 Aeronautical Decision Making-2

##### **Unit 8 Exam**

### April 18-21

#### **Unit 9: FAA Regulations Review**

##### **Section A – Overview**

Lesson 1 Regulations Overview

##### **Section B – Part 61 Regulations**

Lesson 1 FAR Part 61 Review-1

Lesson 1 FAR Part 61 Review-2

Lesson 1 FAR Part 61 Review-3

**\*\*\*NO School April 11 -14 Easter\*\*\***

### April 25-28

##### **Section C – Part 91 Regulations**

Lesson 1 FAR Part 91 Review-1

Lesson 1 FAR Part 91 Review-2

Lesson 1 FAR Part 91 Review-3

Lesson 1 FAR Part 91 Review-4

### May 2-5

##### **Section D – AIM, NTSB, and More**

Lesson 1 Aeronautical Information Manual-1

Lesson 1 Aeronautical Information Manual-2

Lesson 2 ACs, ADs, NOTAMs, and the NTSB

##### **Unit 9 Exam**

## Pilot

### **May 9-12**

#### **Unit 10: Private Pilot Projects**

##### **Section A – Ground Instruction**

Lesson 1 Teach a Private Pilot Lesson Section A – Ground Instruction-1

Lesson 1 Teach a Private Pilot Lesson Section A – Ground Instruction-2

Lesson 1 Teach a Private Pilot Lesson Section A – Ground Instruction-3

Lesson 1 Teach a Private Pilot Lesson Section A – Ground Instruction-4

### **May 16-19**

Lesson 1 Teach a Private Pilot Lesson Section A – Ground Instruction-5

Lesson 1 Teach a Private Pilot Lesson Section A – Ground Instruction-6

Lesson 1 Teach a Private Pilot Lesson Section A – Ground Instruction-7

Lesson 1 Teach a Private Pilot Lesson Section A – Ground Instruction-8

### **May 23-26**

#### **Section B – Career Planning**

Lesson 1 Career Portfolio Development

#### **Post-Course Exam**

May 30 - June 2

## UAS

### SECOND SEMESTER

#### Jan 10-13

##### **Unit 6: Introduction to Drones and UAS Operations**

###### **Pre-Course Exam**

###### **Section A – Drones and their Components**

Lesson 1 Introduction to UAS-1

Lesson 1 Introduction to UAS-2

Lesson 2 How Drones Fly-1

#### Jan 17-20

Lesson 2 How Drones Fly-2

Lesson 2 How Drones Fly-3

###### **Section B - Part 107 and Beyond**

Lesson 1 Part 107: An Introduction-1

Lesson 1 Part 107: An Introduction-2

#### Jan 24-27

Lesson 2 Part 107: Operating Rules and Waivers-1

Lesson 2 Part 107: Operating Rules and Waivers-2

Lesson 2 Part 107: Operating Rules and Waivers-3

Lesson 3 Beyond 107: Best Practices and Being a Good Neighbor-1

#### Jan 31 - Feb 3

Lesson 3 Beyond 107: Best Practices and Being a Good Neighbor-1

###### **Unit 6 Exam**

###### **Unit 7: Operational Decision Making**

###### **Section A – Weather and Performance**

Lesson 1 Practical Weather for UAS Pilots-1

Lesson 1 Practical Weather for UAS Pilots-2

#### Feb 7-10

Lesson 1 Practical Weather for UAS Pilots-3

Lesson 2 Small UAS Loading-1

Lesson 2 Small UAS Loading-2

Lesson 3 UAS Aerodynamics and Performance-1

#### Feb 14-17 ---Grades Go In

Lesson 3 UAS Aerodynamics and Performance-2

Lesson 3 UAS Aerodynamics and Performance-3

###### **Section B – UAS Crew Management**

Lesson 1 Preflight and Maintenance-1

Lesson 1 Preflight and Maintenance-2

#### **\*\*\*No School Feb 20-24\*\*\***

#### Feb 28-Mar 3

Lesson 1 Preflight and Maintenance-3

Lesson 2 UAS Crew Resource Management and Communications-1

Lesson 2 UAS Crew Resource Management and Communications-2

Lesson 2 UAS Crew Resource Management and Communications-3

#### Mar 7-10

Lesson 3 Handling Emergencies-1

Lesson 3 Handling Emergencies-2

Lesson 3 Handling Emergencies-3

Lesson 4 Human Factors and ADM-1

#### Mar 14-17

Lesson 4 Human Factors and ADM-2

Lesson 4 Human Factors and ADM-3

Lesson 4 Human Factors and ADM-4

###### **Unit 7 Exam**

#### Mar 21-24

###### **Unit 8: Becoming a Commercial sUAS Pilot**

Section A – Part 107 Exam Preparation

Lesson 1 Group Project: -1-4

Your Turn to Teach 10 46 Regulations Airspace and Requirements Weather Loading and Performance Operations

#### Mar 28-31

Lesson 1 Group Project: Days 4-8

#### April 4-6 no school on 7th

Lesson 1 Group Project: 9-10

Unit 8 Practice Exam

#### April 18-21

###### **Unit 9: From Theory to Practice: Planning and Executing a Mission**

###### **Section A – Flight School**

Lesson 1 The Right Drone for the Job-1

Lesson 1 The Right Drone for the Job-2

Lesson 2 Expert Mode-1

Lesson 2 Expert Mode-2

\*\*\*NO School April 11 -14 Easter\*\*\*

#### April 25-28

Lesson 2 Expert Mode-3

Lesson 2 Expert Mode-4

Lesson 3 Learning to Fly: Fundamentals of Control-1

Lesson 3 Learning to Fly: Fundamentals of Control-2

#### May 2-5

Lesson 3 Learning to Fly: Fundamentals of Control-3

Lesson 3 Learning to Fly: Fundamentals of Control-4

###### **Section B – Drones in Action**

Lesson 1 Real-World Experience: UAS Team Operations-1

Lesson 1 Real-World Experience: UAS Team Operations-2

#### May 9-12

Lesson 1 Real-World Experience: UAS Team Operations-3

Lesson 1 Real-World Experience: UAS Team Operations-4

Lesson 1 Real-World Experience: UAS Team Operations-5

Lesson 1 Real-World Experience: UAS Team Operations-6



## UAS

### **May 16-19**

Lesson 1 Real-World Experience: UAS Team Operations-7

Lesson 1 Real-World Experience: UAS Team Operations-8

Lesson 1 Real-World Experience: UAS Team Operations-9

Lesson 1 Real-World Experience: UAS Team Operations-10

### **May 23-26**

**Post-Course Exam**

May 30 - June 2

**Maps**