**Foundations of Aviation & Aerospace Studies**

**Course Syllabus**

**Academic Term:** August 2024 – December 2024

**Meetings:** Monday – Friday, Room V102, CCTAA Building

**Instructor:** Amy Archer

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**COURSE DESCRIPTION**:

The Fundamentals of Aerospace Studies course includes a high-level exposure to the foundation of history, careers, disciplines, and operations of the world’s aerospace industry. An introductory focus will be placed on aerospace physics (secondary education core curriculum components), engineering, management, operations, and maintenance. Upon completion of this course, students will have an understanding of academic and career paths in aviation and aerospace.

**LEARNING OUTCOMES:**

On completion of this course, the student will be able to:

1. Explain aspects of aviation history and interpret aviation regulations.
2. Examine the various principles regarding flight.
3. Explore the various careers in the aerospace industry.
4. Analyze the human factors that affect our work environments.
5. Explore the major aerospace technology areas.
6. Understand the basic aviation meteorology concepts
7. Develop an understanding of aviation careers, describe the principal fields of specialization and identify associated career opportunities.
8. Examine how related student organizations are integral parts of career and technology education courses through leadership development, school and community service projects, and competitive events.
9. Demonstrate employability skills required by business and industry

**Grading:**

The semester grades are made up of a combination of Formative (40%) and Summative (60%) assessments.

* At the end of a semester course, the Final Course Average is calculated with 90% (semester grade) and the Final Exam, 10%.

**Course Schedule:**

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| **Week** | **Topics**  | **Activities** |
| 1 | Introduction and Study Fundamentals  | * **Discussion**: Introductions
* Development of a personal study schedule for the course
* **Presentation**: Current event
* **Writing**: Narrative on your Interests in Aviation
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| 2 | History and Organization of the Aviation Industry | * **Discussion**: FAA Regulation Questions
* **Project:** Divide into six groups; assign each group a segment in history; groups begin working on PowerPoint presentations. Each group uses one of the first six chapters in Aerospace: *The Journey of Flight.*
* **Movie:** Amelia (Movie Questions/Quiz)
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| 3 | Flight, How Does It Happen?  | * **Discussion**: FAA Regulation Questions
* **Research**: How a plane flies and present findings to the class with an assigned group
* **Project:** Design an aircraft and demonstrate how the forces of flight affect aerodynamics in a presentation to the class.
* **\*\* FAA Regulations Quiz**
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| 4 | Types of Aircraft | * **Discussion**: FAA Regulation Questions
* **Research**: Annotated bibliography - research at least 2 different aircraft**.**
* **Writing**: Write a 1-2-page report comparing and contrasting 2 aircraft of your choosing.

**\*\* Use Grammarly to work on technical writing skills**.  |
| 5 | Airplane Systems | * **Discussion**: FAA Regulation Questions
* **Presentation**: Current event
* **Project:** Divide into six groups; assign each group an airplane system to research and explain; groups begin working on PowerPoint presentations. Each group will use chapters in Aerospace: *The Journey of Flight.*
* **\*\* FAA Regulations Quiz**
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| 6 | Careers in Aviation | * **Discussion**: FAA Regulation Questions
* **Research**: The students will create a graphic organizer on their top 5 aviation careers of interest.
* **Writing**: Write a 1-2-page Resume for a career you would like to have in aviation.
* **Project: Interviews/Guest Speakers**
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| 7 | Aviation Work Environment and Characteristics | * **Discussion**: FAA Regulation Questions
* **Presentation**: Current event
* **Project/Centers**: Aeronautical Decision Making (ADM) • Risk Management (RM) • Task Management (TM) • Automation Management (AM) • Controlled Flight Into Terrain (CFIT) Awareness • Situational Awareness (SA)
* **\*\* FAA Regulations Quiz**
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| 8 | The National Airspace System/ Emerging Technology in Aviation | * **Discussion**: FAA Regulation Questions
* **Project:** In groups, students will create a product that will teach other students and laypersons the latest technologies in aviation to avoid collisions, terrain, and hazardous weather.
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| 9/10 | Airports | * **Discussion**: FAA Regulation Questions
* **Project/Presentation:** Airport Design project.
* **\*\* FAA Regulations Quiz**
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| 11 | Commercial Aviation and Security | * **Discussion**: FAA Regulation Questions
* **Presentation**: Current event
* **Research**: Commercial Aviation/Aviation Security
* **Writing**: Write a 2-3 page Case Analysis Paper that encompasses your findings on how the commercial aviation industry and aircraft security was different before and after 9/11.
* **\*\* Use Grammarly to work on technical writing skills**.
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| 12 | Weather and Flight Planning | * **Discussion**: FAA Regulation Questions
* **Presentation**: Current event
* **Project/Centers:** Center One: Trivial Pursuit Game with FAA Weather questions; Center Two: Weather Worksheets; Center Three: Quia Web JG 6 A Air Movement; CM 6A Levels of the Atmosphere; RR 6B Cloud Types and Clouds Rags to Riches; Center Four: Sporty’s Volume 3: Segments 7 and 8; Center Five: Make a poster explaining lapse rate & adiabatic heating and cooling.
* **\*\* FAA Regulations Quiz**
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| 13 | Flight Physiology | * **Discussion**: FAA Regulation Questions
* **Project:** Divide into six groups; assign each group a particular condition that is affected by flight to research and explain; groups begin working on PowerPoint presentations. Each group will use chapters in Aerospace: *The Journey of Flight and Flight Physiology.*
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| 14 | You, Human Factors, and Safety | * **Discussion**: FAA Regulation Questions
* **Presentation**: Current Event
* **Writing**: Write a 1-2 page paper on human factors in aviation and why it is important to study human factors.
* **\*\* Use Grammarly to work on technical writing skills**.
* **\*\* FAA Regulations Quiz**
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| 15 | National Transportations (NTSB) and Safety | * **Discussion**: FAA Regulation Questions
* **Presentation**: Current event
* **Movie/Quiz: Sully**
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| 16 | Unmanned Aerial Vehicles (UAV) | * **Discussion**: FAA Regulation Questions
* **Presentation**: Current event
* **Research**: Create/narrate PowerPoint on the different types and uses of UAVs used by both civilians and the military.
* **Project:** Present Videos/presentations of their own drone footage taken with the school drones and somehow incorporated into a class project to be used in the school or community.
* **\*\* FAA Regulations Quiz**
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| 17 | Space Flight, Exploration, and Commerce | * **Discussion**: FAA Regulation Questions
* **Writing**: Current Event
* **Project/Presentation**: Space Movie Project
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| 18 |  | * **Final Exam Week**
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Submitted by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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