**AEROSPACE SCIENCE II and III, SY 2023-2024**

**Instructors**: **Maj Farese, SMSgt Owen**

**Credit Hours: 1 Elective Credit Each Semester (PE credit may be obtained if needed)**

1. **ACADEMICS:**

**1st  Semester** **SCIENCE OF FLIGHT:**  *The Science of Flight: A Gateway to New Horizons* is an

introductory course and customized textbook that focuses on **CH 1: How Airplanes Fly**, **CH 2 Working Through Flight Conditions**, **CH 3: Flight and the Human Body**, and **CH 4 Flying From Here to There**. The course is designed to complement materials taught in math, physics, and other science related courses and is aligned with the National Science Education Standards, the Math Standards and Expectations, and ISTE National Educational Technology Standards for Students.

* **In Class Project:** cadets will be divided into several groups and given the task to build a Remotely Controlled Drones, using the RubiQ Classroom Drone System. Cadets will also, as a final project, design a plan to integrate the VEX robotics system with the RubiQ Cadets will be graded on task completion (accuracy, construction techniques, ability to follow directives, timeliness) teamwork and participation.

**OBJECTIVE:** Analyze the elements of flight. Evaluate how atmospheric conditions

affect flight. Evaluate how flight affects the human body. Analyze flight navigation

and the purpose of aerial navigation aids.

**Textbook “The Science of Flight: Gateway to New Horizons”, Selected Videos, Navigation**

**Charts, Nav Plotters/computers, Curriculum in Action Field trips**

**2nd Semester** **AN INTRODUCTION TO VEX 5 ROBOTICS:** This engaging robotics course starts with the basics of the VEX V5 Kit, teaching Cadets the function of each component and simple construction techniques. They will then build progressively more complex structures, learning to create sturdy, functional, and mobile builds while exploring how physics plays a role in their construction. This section peaks with the Capstone Challenge, they will use their new skills to design and build a prototype of a new product and pitch their design.

1st Nine Wks: **Unit 1**: Get Started Building.  Teaches Cadets the function of each component and simple ` construction techniques. Cadets will build progressively more complex structures,

learning to create sturdy, functional, and mobile builds while exploring how physics

plays a role in their construction.

**Unit 2**: Learning Coding. Teaches the cadets the basics of coding. First they will use

VEXcode VR to code a virtual robot to drive and turn to knock down castles on the

Castle Crasher Playground. Then Cadets will take their new coding skills and apply them

to coding the VEXcode V5.

**Unit 3:** Team Freeze tag Lab. In the Team Freeze Tag Unit, students will build the

TrainingBot and learn to drive it with the Controller, in order to play a game of Team

Freeze Tag in the Unit Competition

**Unit 4:** Medbot. Cadets are asked to design and program a robot to deliver medications

In a hospital lab they create.

**Unit 5:** Robot Soccer Lab. Cadets are asked to design 2 or more robots and have them

compete in a game of soccer

2nd Nine Wks: **Unit 6:** Bumper Maze Challenge. Cadets in this section, will learn to use the VR Pen and

Coding the robot to draw a house Then go even further by coding the VR Robot to drive

through a maze using the Bumper Sensor. Next, transfer their coding skills to the

TrainingBot and code it to drive through a simple maze. Finish out this section by

completing the Capstone Challenge - coding your TrainingBot to navigate a complex

maze as quickly as possible.

**Unit 7:** Loop there it is! Cadets will learn how to program loops, which are projects that

have repeated movements

**Unit 8:** Capestone Challenge: design and build a prototype of a new product, pitch

its design, and demonstrate function.

**Textbook ONLINE:** Education.vex.com/afjrotc

**2. LEADERSHIP:**

1st Nine Wks Uniform wear, Management Techniques, Drill of the Flight, CH 1 (LE 200) Learning

And Communication., CH 2 (LE 200) Communicating Effectively

2nd Nine Wks Drill of the flight; CH 3 (LE 200) Understanding your Attitude, CH 4 (LE 200)

Understanding Your Actions

3rd Nine Wks Drill of the Flight, CH 5 (LE 200) Developing Vision and Teams, CH 6 (LE 200)

Solving Conflicts and Problems

4th Nine Wks Parades Basic, Leadership Concepts, CH 7 (LE 200) A Leadership Model,

CH 8 (LE 200) Adaptive Leadership

**OBJECTIVE:** Analyze the Key factors in communication and critical thinking

Apply elements of objective writing and public speaking. Analyze the importance

Of attitude in daily life. Evaluate the ways in which personality and behavior

Affect relationships with others. Analyze the foundation of n effective team. Apply

effective problem-solving and consensus-building methods. Analyze Air Force

leadership model. Evaluate effective leadership and followership

**Textbook DAFPAM 34-1302 Drill and Ceremonies; Leadership 200, Select Videos**,

1. **WELLNESS**

**OBJECTIVE:**

1. Motivate AFJROTC cadets to lead active, healthy lifestyles beyond program requirements and into their adult lives.

2. Create an individualized training program based on national standards by age and

gender.

3. Identify areas of improvements for each cadet.

4. Incorporate a physical training program to reach goals

\* Current events will be discussed on a daily basis; Tuesday is JROTC uniform day, Friday will normally be physical training day.

**4**. **GRADING POLICY**

Cadets will be graded each week as follows:

Major Category: Uniform Wear and Physical Training (60%)

Minor Category: Quizzes and Current Events (30%)

Daily category: Homework/bellwork and Participation (10%)

1st Semester (Second Sem is the same as First Sem)

80% Average 1st and 2nd Nine Weeks

20% Final Exam

**Final Exam Exemption Policy**: The superintendent may exempt from final examinations only seniors enrolled in courses earning a full Carnegie unit both first and second semesters for high school diploma credit who have an average of 90 or above for the second semester course, effective August 19, 2016. **All underclassmen students will take final examinations**

**Make-up Policy:**

**Excused absences:** 5 days to make up these assignments: quizzes, tests, bellwork and homework. If a uniform day or a current event assignment is missed due to an excused absence, the uniform must be worn and the missing current event will be due upon return. A grade of “0” will be given if assignments are not completed within 5 days or the uniform is not worn or current events not turned in upon return to school.

Current events are due EVERY Thursday and will be turned in via CANVAS. Cadets may be asked every day to stand up and discuss a current event topic of their choice with the class.

**Unexcused absences:** NO work may be made up, to include uniform wear. A grade of “0” will be given for each assignment that falls in this category.

**District policy:** "Students are expected to follow all school and school district policies."