



## **Winter Park High School NJROTC Aviation Science, Technology, Engineering and Math (STEM) Course Offering**

Winter Park High School NJROTC Aviation Science is an Honors/IB level (6.0 weighted) courses focused on aviation science. The curriculum emphasizes both manned and unmanned flight and provides an in-depth look at the aviation industry. Unique benefits for our students include earning up to 20 regional college credits from Embry-Riddle Aeronautical University (ERAU) and receiving up to 4 vocational certifications including the Unmanned Aircraft Systems (UAS) Visual Line of Sight Systems Operator (VSO) certification, Small UAS Ground Safety certification, FAA Part 107 Remote Pilot certification, and a FAA Ground Certification. Up to 4 dual-enrollment credits, a fine arts credit, a health credit and a physical education credit are also awarded upon successful completion of the four-year program.

The first year of instruction concentrates on JROTC prerequisites, aviation history and fundamentals of aircraft flight and weather. This course is a standard 4.0 weighted course, Aero Science 1. This is considered to be a college prep course and prepares the Cadet for the next year. Cadets should expect a faster paced academic environment with frequent home and class work.

Year two reinforces JROTC requirements, and begins the first semester of aviation training with AS 120 (ASC 1000), Principles of Aeronautical Science followed by AS 220 (ASC-2560) Unmanned Aircraft Systems (UAS) during the second semester. AS 220 culminates with the UAS Ground Safety vocational certification from the Unmanned Safety Institute (USI). Up to six regional college credits may be earned through these two training modules.

The third year of instruction has two tracts, a Manned Tract and an Unmanned Tract. For the Unmanned Tract there is 1 semester of AS 222 (ASC-2564) UAS Security, followed by a semester of AS 235 (ASC-2562) UAS Operation & Cross Country Data Entry; culminating with a UAV Pilot (Visual Line of Sight Systems Operator (VSO)) vocational certification. The Manned Tract would consist of AS-121 Private Pilot Operations, a yearlong course, culminating with the FAA Ground certification for manned pilots. These tracts can be taken simultaneously, but would require two NJROTC class periods.

Year four course offerings would be to continue with the Unmanned Tract - AS 237 (ASC-2563)\* UAV Photography with a Microsoft Photoshop vocational certification followed by a semester of the FAA Part 107 instruction, culminating with the FAA Part 107 Remote Pilot certification or to start the Unmanned Tract with AS 222 (ASC-2564) UAS Security, followed by a semester of AS 235 (ASC-2562) UAS Operation & Cross Country Data Entry; culminating with a UAV Pilot (Visual Line of Sight Systems Operator (VSO)) vocational certification.

It is important to note that this is a STEM based program and the prospective student must have a solid background in mathematics and science to successfully navigate the course. Students must enroll in the NJROTC program, complete the STEM application, and be recommended for the course by a math teacher, science teacher **or** guidance counselor.

For additional information contact Senior Chief Jerry Skirvin, Naval Science Instructor (NSI), at [jerry.skirvin@ocps.net](mailto:jerry.skirvin@ocps.net) or Commander Dave Haynes, Senior Naval Science Instructor (SNSI) at [david.haynes@ocps.net](mailto:david.haynes@ocps.net).

\*Course should be available for the 2019-20 school year, certifications are still being finalized.

\*\*Specific course names, descriptions, and credit hours are attached.

### **Semester Long Course Offerings**

#### AS 120 Principles of Aeronautical Science – 3 credits

An introductory course in Aeronautical Science designed to provide the student with a broad-based aviation orientation in flight-related areas appropriate to all non-Aeronautical Science degree programs. Subjects include historical developments in aviation and the airline industry; theory of flight; airport operations; aircraft systems and performance; elements of air navigation; basic meteorology theory; air traffic principles; flight physiology; and aviation regulations and safety.

#### AS 220 Unmanned Aerial Systems – 3 credits

This course is a survey of unmanned aircraft systems (UAS), emphasizing the military and commercial history, growth, and application of UASs. The course will include basic acquisition, use, and operation of UASs with an emphasis on operations.

#### AS 222 Unmanned Aircraft Systems Security – 3 credits

Unmanned Aircraft System Security is a sophomore level seminar course focused on the concepts of UAS security and protection. Through a combination of instructor lead discussion, assigned readings, and projects students will examine the concepts of security engineering, vulnerability, and malicious attack. Students will formulate opinions and strategies for protecting systems and assets from danger while understanding the implications of ignoring security concerns.

#### AS 235 Unmanned Aircraft Systems Operation & Cross Country Data Entry – 3 credits

This course provides an understanding of the core technologies of unmanned aircraft systems. It will include examinations of the design concepts, powerplants, control systems, and communication technologies utilized in current unmanned aircraft systems and/or likely to be used in the next few years. Particular attention will be given to the technical capabilities, best applications, and operational best practices of cross-country flight planning for today's UASs.

#### AS 237\* UAS Applications in Aerial Photography – 3 credits (\*planned availability 2019/20

school year) This course will familiarize the student with guidelines, regulatory standards, and practical operational considerations for aerial photography and videography techniques specific to the use of Unmanned Aircraft Systems (UAS). Current procedures and relevant practical application methods will provide a basis for commercial applications that leverage future UAS technologies.

### **Year Long Course Offerings**

#### AS 121 Private Pilot Operations – 5 credits

This course develops the aeronautical knowledge required for certification as a Private Pilot with an Airplane Single Engine Land rating. Topics include: regulations, safety, pre-solo operations, cross-country planning, airspace, chart use, communications, weather, performance, weight and balance, aerodynamics, and decision-making.




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**Winter Park High School NJROTC Aviation Science, Technology,  
Engineering and Math (STEM) Course Application**

**STUDENT INFORMATION**

**Last Name** \_\_\_\_\_ **First** \_\_\_\_\_

**Address:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Email:** \_\_\_\_\_

**Unweighted G.P.A.** \_\_\_\_\_ **Weighted G.P.A.** \_\_\_\_\_

**TEACHER/GUIDANCE RECOMMENDATION INFORMATION**

**Instructor/Counselor** \_\_\_\_\_

**Course (science/math/other)** \_\_\_\_\_

**Recommended**      **YES** \_\_\_\_\_ **NO** \_\_\_\_\_ **With Reservations** \_\_\_\_\_

**Comments** \_\_\_\_\_

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