**Course:** Aviation Honors Ground School  
**PEIMS Code:** N1290400  
**Abbreviation:** AVIAHGS  
**Grade Level(s):** 11-12  
**Number of Credits:** 1.0

### Course description:

An advanced course of academic study over previous AFJROTC aerospace topics. The completion of this course entitles college credit at aviation oriented universities and Jr. Colleges with aviation degree plans (i.e., Embry Riddle Aeronautical University and Southwest Texas Jr. College) as well as preparation to take and pass the Federal Aviation Administration Private Pilot Airman Knowledge Test requisite to obtain a Private Pilots License. Provides 1 elective credit for this 2 semester course.

Intended for juniors and seniors who have completed prerequisite Science of Flight ASII courses.

### Essential knowledge and skills:

**(a) Knowledge and Skills**

1. Comprehend the fundamentals of flight: The student will be able to:
   - (A) understand the school’s pilot training program;
   - (B) identify main aircraft components and systems;
   - (C) identify the various flight instrument functions, operating characteristics, errors and common malfunctions;
   - (D) analyze various aspects of powerplant, related mechanical systems, operating processes and importance;
   - (E) recall the four forces of flight, aerodynamic principles of stability, maneuvering flight and load factor;
   - (F) recognize the basics of stall/spin characteristics and recovery methods.

2. Comprehend flight operations: The student will be able to:
   - (A) apply important safety considerations to include collision avoidance procedures, right-of-way rules, and minimum safe altitudes;
   - (B) recognize airport markings, lighting, aeronautical charts and types of airspace;
   - (C) analyze the severity of runway incursions aircraft ground operating practices;
(D) recognize radar, transponder operations, FAA equipment, services and applications to all VFR and some IFR operations;

(E) describe FSS and other weather and enroute support services;

(F) demonstrate the use of radio for communication;

(G) apply a basic understanding of the sources of flight information and regulations, particularly the Aeronautical Information Manual (AIM), Federal Aviation Regulations (FAR) from the Code of Federal Regulations (CFR) as well as other FAA advisory circulars and the National Transportation Safety Board (NTSB).

(3) Comprehend the atmosphere and its effect on aircraft operations: The student will be able to:

(A) identify the causes of various weather conditions, frontal systems and hazardous weather phenomenon;

(B) recognize critical weather situations from the ground and during flight to include thunderstorm-related hazards;

(C) recognize and avoid wind shear and wake turbulence;

(D) locate and interpret weather reports, data, and graphics;

(E) identify important courses of weather information during preflight planning and while in-flight; and

(F) recognize critical weather situations described by weather reports and forecasts.

(4) Comprehend the basics of navigation using charts and radio aids: The student will be able to:

(A) employ data supplied by various aircraft manufacturers/designers to predict airplane performance to include takeoff and landing distances, climb performance, fuel consumption and range;

(B) compute and control weight and balance requirements for safe flight;

(C) use the basic functions of aircraft navigation computers;

(D) understand the effect of density and pressure altitude on aircraft performance;

(E) explain basic concepts of VFR pilotage, dead reckoning and radio navigation using various aircraft navigational systems; and

(F) demonstrate understanding guidelines and recommended procedures related to flight planning, use of an FAA Flight Plan, VFR cruising altitudes as well as enroute and lost emergency procedures.
(5) Apply the principles of aeronautical decision making and flight-related physiological factors. The student will be able to:

(A) name important aviation physiological factors as they relate to piloting health factors;

(B) demonstrate the accepted procedures and concepts pertaining to aeronautical decision making and judgment including cockpit resource management (CRM) and human factors;

(C) demonstrate a basic understanding of aeronautical decision-making and judgment;

(D) demonstrate planning processes for cross-country flight;

(E) identify the details of flying a cross-country flight, including evaluation of in-flight weather and decisions for alternative actions to include weather and fuel diversions, and

(F) plan for alternative plans for actions when unforeseen events occur in the flight environment.

Description of specific student needs this course is designed to meet:

The AHGS Program allows qualified AFJROTC students to extend and enrich their high school experiences by providing additional knowledge and skills required to advance their interests in the aviation industry. This course is designed to allow students through a collegiate approach of study and courseware to learn and pass the formal ground requisite exam to proceed toward obtaining the FAA Certification of a Private Pilot's License; the end of the course will allow the student to take and pass the FAA Private Pilot FAA Airman Knowledge Test. After taking this Test students may have the option to personally obtain flight training without the requirement of taking ground instruction and complete all requirements to become a certificated Private Pilot. This course also gives students a strong knowledge base to successfully complete the flight training requirements.

Major resources and materials:

Aviation Honors Ground School (AHGS) Program as formally established and set forth by published AFJROTC Curriculum Guide, 2013, Curriculum Directorate, Holm Center/CRJ, 60 Shumacher Ave, Bldg 803, Maxwell AFB, AL, 36112-6106

Required activities and sample optional activities to be used:

Use of coordination with local Flight Service Station (FSS) and Automated Transcribed Weather Broadcast Services (ASOS and TWEB) broadcasts; access and use of aviation weather planning site, www.aviation.gov /// All of these resources lead to the required activity to plan a flight with three navigation legs. Weather interpretation, working weight and balance problems and actually filing a flight plan with the local FSS. The local USAF unit at Fort Worth JRB will support with access to actual aircraft allowing for the potential of an actual flight aboard a USAF aircraft to see practical applications of all elements of this course. This will include participation in operational flight planning requirements, observing crew health standards and associated disciplines.

Methods for evaluating student outcomes:

Students are evaluated through use of written exams presented throughout the conduct of the course throughout the year. Computer generated exams similar to the actual FAA exam will be presented while students also must demonstrate cognitive writing abilities as they explain certain concepts and exhibit an increasing grasp of the block-building course objectives. Website access will require student class participation through the development of homework assignments much like a college-level course.

Teacher qualifications:

The instructor is a rated (pilot) officer of the United States Air Force and furthermore certificated as a formal Certificated Flight Instructor (CFI) by the FAA. Although actual flight instruction is not provided through this ground school course, the flying experiences and background of the instructor will apply practical rigor to the academic environment. The instructor is first and foremost a senior instructor certified through the AFJROTC and formally certified through that role to teach as a professional staff member in FWISD.

Additional information:

This course as identified by the Air Force JROTC on student transcripts may qualify for college elective credit when taught in adherence to JROTC requirements in the AFJROTC Curriculum Guide. Junior and senior high school students identified to this course must have demonstrated a high level of achievement in the honors, GT, or AP environment and completed a minimum of two years of prior JROTC although one of the two requisite years can be waived by the instructor if that student can demonstrate the level of knowledge commensurate with a 2nd year Cadet. (2nd year student in JROTC).