

Advanced Aviation and Flight Syllabus

Course# CTF-3020

Course Description: This class is designed as an expanded private pilot ground course, preparing students to take the FAA Private Pilot written exam. This course prepares students to be pilots of their own aircraft studying; fundamentals of flight, airplane systems, and aerodynamic principles, aircraft design, the flight environment, weather, physiology, aircraft performance, navigation, and decision making. This course also utilizes personal simulators to further flying knowledge. This class is in line with all necessary items according to the FAA standards for a private pilot ground course.

Aim: Students will gain the knowledge and skill associated with Aviation and Flight.

Grade Level: 10th, 11th and 12th Grades

Prerequisites: Introduction to aviation

Length: Semester Course, 1hr 40 min. Period

Instructional Philosophy and Delivery Plan

Expectation: Students will be expected to meet all course goals by demonstrating of the basic concepts of each topic area. To pass the course, students will need a minimum of 75%

Delivery Method: Instruction will consist of individual hand on activities and projects, group work, lecture, discussion, reading, writing, self-assessment, and the use of technology.

Community Involvement: Individuals and students from the school will bring in projects for the students to complete a project.

Assessment: Students will be graded on the following items: Presentations, Written service reports, Tests, Daily work, Group work and individual projects.

Major Course Projects

Develop a resume for all goals accomplished in the classroom.

Develop a habit of safe flight control and communication in and around the aircraft.

Develop control for drone operations.

Grading Scale

93- 100% = A

85 - 92% = B

76 - 84% = C

65 - 75% = D

0 - 64 = F

Semester test grade is 15% of the semester grade

Course Assessment Plan

Students will be scored on a basis of Project grades that are usually scored out of 500 pts. Skills quizzes to show proficiency of each task is based on 100 pts.

Performance Standards

AV 4.1 Know the basic aircraft instruments. Examples: • Identify the six basic aircraft instruments (airspeed indicator, attitude indicator, altimeter, turn coordinator, heading indicator, and vertical speed indicator). • Interpret the reading of each instrument to confirm an accurate 'instrument scan'.

AV 4.2 Know aircraft systems. Examples: • List the basic flight control systems (mechanical, hydromechanical and fly-by-wire). • Describe the latest innovations in fly-by-wire flight control systems.

AV 4.3 Predict aircraft performance. Examples: • Solve percentage problems (percent of power for turbine engines, flap position percent indicators) • Solve ratio and proportion problems (compression ratios of an aircraft, glide ratios)

AV 4.4 Calculate weight and balance. Examples: • Compute empty weight center of gravity on an aircraft. • Compute loaded weight and loaded weight center of gravity of an aircraft.

AV 6.1. Understand basic navigation. Examples: • List and describe the essential navigational information a pilot needs to know (starting point, ending point, direction, distance, speed, fuel capacity, and weight and balance) • List the advantages and disadvantages of Visual Flight Rules (VFR) flying.

AV 6.2 Understand dead-reckoning and pilotage. Examples: • Define dead-reckoning and pilotage. • Calculate a flight course using the elements of course line, airspeed, course heading and elapsed time.

AV 6.3 Utilize a flight computer. Examples: • Understand the basic concepts of a flight computer. • Use a flight computer to file a flight plan.

AV 6.4 Utilize aeronautical charts. Examples: • Plot a course using an aeronautical chart. • Evaluate flight plans for improved efficiency.

AV 6.5 Comprehend radio navigation. Examples: • Distinguish between the types of Radio Navigation: Very High Frequency Omnidirectional Range (VOR), Distance Measuring Equipment (DME), Instrument Landing System (ILS), Global Positioning System (GPS), Inertial Navigations Systems (INS)

AV 7.1 Know the effect on the body in the flight environment. Examples: • Identify the potential hazards on the body during flight. • List and describe the safety procedures to prevent aviation accidents due to physical distress.

AV 8.1 Understand key concepts affecting exploration of space. Examples: • Identify the effect of zero gravity on flight. • Identify the effect of lack of atmosphere on flight. • Identify the effect of friction on flight.

AV 8.2 Understand basic rocket theory and space flight. Examples: • Understand the history of rocketry. • Identify the major developments in space flight

AV 8.3 Analyze existing space platforms. Examples: • Analyze the stages of development and importance of the International Space Station. • Summarize the development and impact of the Hubble Space Telescope. • List the scientific purposes of unmanned space explorations. • Compare and contrast the privatization of the space program and the space shuttle program.

AV 9.1 Investigate aviation career fields and occupations. Examples: • Interview a professional working in an occupation that is of interest to them. • Research aerospace career opportunities of interest by participating in career exploration activities. • Explore the requirements, skills, wages, education, and geographic opportunities in one career associated with aerospace. • Present the results of your career exploration and resources. • Identify employability skills preferred by different aviation occupations.

Grade Performance Standard

A Independent Learner

Did research, designed and planned; applied academic skills; evaluated work and made adjustment; did quality work; needed help from the teacher; sought and found resources independently; demonstrated knowledge with a grade of 90 or higher; produced a quality portfolio

B Semi-Independent Learner

Did research, designed and planned; needed some help from the teacher; did quality work with few flaws; needed feedback from the teacher to realize work did not meet standards; redid work to meet standards; demonstrated knowledge with a grade of 80 or higher; produced a better-than average portfolio.

C Dependent Learner

Needed help to research, design and plan or had to be given a plan; relied a great deal on the teacher; had to be given procedures for performing tasks; required significant help to produce a quality product; needed help to evaluate a product, final product still did not meet standards; demonstrated knowledge with a grade of 70 or higher; produced an average portfolio.

F Failure

Did not complete projects; if projects were completed, they were of such low quality that they did not pass; failed to document procedures; did not show criteria for determining quality; scored less than 70 on knowledge tests; produced a poor portfolio or none at all.