1. **COURSE TITLE\*: Flight Controls, Rotorcraft and Inspection**
2. **CATALOG – PREFIX/COURSE NUMBER/COURSE SECTION\*: AVIT 1201**
3. **PREREQUISITE(S)\*: COREQUISITE(S)\*:**
4. **COURSE TIME/LOCATION/MODALITY: (*Course Syllabus – Individual Instructor Specific*)**
5. **CREDIT HOURS\*: 3 LECTURE HOURS\*: 2**

**LABORATORY HOURS\*: 1 (3.5 contact hrs) OBSERVATION HOURS\*: 0**

1. **FACULTY CONTACT INFORMATION: *(Course Syllabus – Individual Instructor Specific)***
2. **COURSE DESCRIPTION\*:**

This course will introduce the student to aircraft assembly and rigging of the wings, tail, and flight controls on fixed wing aircraft, and rotorcraft aircraft. Students will remove primary and secondary flight controls. Students will balance primary flight controls. Students will rig aircraft for flight in accordance with the manufacture’s data. Students will open and inspect an engine following the prescribed 100 hour or annual inspection check. Students will write discrepancies found on engines on appropriate inspection paperwork. Students will perform necessary repairs to correct the discrepancies on the engine inspected and return the engine to an airworthy condition. The inspection process will be performed to conformity and airworthiness standards.

1. **LEARNING OUTCOMES\*:**

Students will gain knowledge of the following:

1. Control cables
2. Push-pull tubes
3. Torque tubes
4. Bellcrank
5. Flight control balance
6. Rigging of aircraft flight controls
7. Aircraft flight controls and stabilizer systems
8. Secondary and auxiliary control surfaces
9. Rotorcraft aerodynamics
10. Flight controls
11. Transmissions
12. Rigging requirements for rotary wing aircraft
13. Rotor blade functions and construction
14. Rotor vibrations, track, and balance
15. Drive system vibrations and inspection
16. **ADOPTED TEXT(S)\*:**

FAA-H-8083-31A (Airframe Vol 1&2)

Aviation Maintenance Technician Handbook 43.13-1B

<https://www.faa.gov/sites/faa.gov/files/regulations_policies/handbooks_manuals/aviation/amt_airframe_hb_vol_1.pdf>

<https://www.faa.gov/handbooksmanuals/aviation/aviation-maintenance-technician-handbook-airframe-volume-2>

<https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_43.13-1B_w-chg1.pdf>

**9a: SUPPLEMENTAL TEXTS APPROVED BY FULL TIME DEPARTMENTAL FACULTY (INSTRUCTOR MUST NOTIFY THE BOOKSTORE BEFORE THE TEXTBOOK ORDERING DEADLINE DATE PRIOR TO ADOPTION) \*\*\*.**

1. **OTHER REQUIRED MATERIALS: (SEE APPENDIX C FOR TECHNOLOGY REQUEST FORM.)\*\***
2. **GRADING SCALE\*\*\*:**

Grading will follow the policy in the catalog. The scale is as follows:

A: 90 – 100

B: 80 – 89

C: 70 – 79

D: 60 – 69

F: 0 – 59

Grades of 69 and below will not meet the requirements of the FAA for Mechanic

Certificate.

1. **GRADING PROCEDURES OR ASSESSMENTS: (*Course Syllabus – Individual Instructor Specific)***

Test count – 40% of Final Grade

Quizzes count – 10% of Final Grade

Lab Grade counts – 50% of Final Grade

Class and lab attendance will be graded, two points will be deducted from the grade for each day missed. Quizzes cannot be made up. No test can be taken late without prior approval of the instructor.

1. **COURSE METHODOLOGY: *(Course Syllabus – Individual Instructor Specific)***

May included but not limited to lecture and problems solving, group and lab projects, in-class and home assignments, quizzes and tests. Lab project will be individual and group. Attendance to class and lab is required.

**14. COURSE OUTLINE: *(Course Syllabus – Individual Instructor Specific)***

***(Insert sample course outline with learning outcomes tied to assignments / topics.)***

**Below is an example of how you might fill-in the course outline of classwork, assignments, tests, et al…**

|  |  |  |
| --- | --- | --- |
| **WEEK** | **DESCRIPTION** | **LEARNING OUTCOMES #** |
| WEEK 1 | Structural designs, types of aircraft structures, airfoil sections. | 1, 2, 3 |
| WEEK 2 | Truss-type wing construction, stressed-skin wing construction. | 1, 2, 3 |
| WEEK 3 | Control surface construction, airfoil control and aerodynamic configurations, ailerons, spoilers, flaperons and ruddervators, winglets, vortex generators, empennage structures. | 4, 5 |
| WEEK 4 | Fuselage structures, truss-type fuselage, stressed-skin fuselage, pressurized fuselage, landing gear, water operations, snow operations, powerplant support structures, access and inspection. | 4, 5 |
| WEEK 5 | **Quiz 1**  Airplane axis, stability and control, conditions of stability, types of stability, stability about the axis. | 7, 8 |
| WEEK 6 | Control systems, longitudinal controls, lateral controls, directional controls. | 7, 8 |
| WEEK 7 | Flight control surfaces, tabs. | 7, 8 |
| WEEK 8 | Supplemental lift-modifying devices, four different types of flaps. | 7, 8 |
| WEEK 9 | **Test 1**  The flight controls of a large commercial aircraft. |  |
| WEEK 10 | Helicopter aerodynamics, main rotor systems, anti-torque systems, helicopters with two main rotors. | 9, 10 |
| WEEK 11 | Helicopter axis of flight, helicopters in flight, hovering. | 11, 12 |
| WEEK 12 | Forward flight, blade flapping, advancing blade and retreating blade problems, autorotation. | 13, 14 |
| WEEK 13 | High-speed aerodynamics, the speed of sound, shock waves. | 15 |
| WEEK 14 | Cables, cable ends, fabricating cables, test cables, rigging flight controls and cables. | 1, 6 |
| WEEK 15 | Rigging of the various flight control systems, three major steps of aircraft rigging.  Airframe Inspection | 1, 6 |
| WEEK 16 | Final Exam |  |

* Structural designs, types of aircraft structures, airfoil sections.
* Truss-type wing construction, stressed-skin wing construction.
* Control surface construction, airfoil control and aerodynamic configurations, ailerons, spoilers, flaperons and ruddervators, winglets, vortex generators, empennage structures.
* Fuselage structures, truss-type fuselage, stressed-skin fuselage, pressurized fuselage, landing gear, water operations, snow operations, powerplant support structures, access and inspection.
* Quiz 1
* Airplane axis, stability and control, conditions of stability, types of stability, stability about the axis.
* Control systems, longitudinal controls, lateral controls, directional controls.
* Flight control surfaces, tabs.
* Supplemental lift-modifying devices, four different types of flaps.
* The flight controls of a large commercial aircraft.
* Test 1
* Helicopter aerodynamics, main rotor systems, anti-torque systems, helicopters with two main rotors.
* Helicopter axis of flight, helicopters in flight, hovering.
* Forward flight, blade flapping, advancing blade and retreating blade problems, autorotation.
* High-speed aerodynamics, the speed of sound, shock waves.
* Cables, cable ends, fabricating cables, test cables, rigging flight controls and cables.
* Rigging of the various flight control systems, three major steps of aircraft rigging.
* Airframe Inspection
* Final exam.

**15. SPECIFIC MANAGEMENT REQUIREMENTS\*\*\*:**

Class and lab attendance will be graded. Quizzes cannot be made up. No test can be taken late without prior approval of the instructor.

**16. FERPA:\***

Students need to understand that their work may be seen by others. Others may see your work when being distributed, during group project work, or if it is chosen for demonstration purposes. Students also need to know that there is a strong possibility that your work may be submitted to other entities for the purpose of plagiarism checks.

**17. ACCOMMODATIONS: \***

Students requesting accommodations may contact Ryan Hall, Accessibility Coordinator at rhall21@sscc.edu or 937-393-3431, X 2604.

Students seeking a religious accommodation for absences permitted under Ohio’s Testing Your Faith Act must provide the instructor and the Academic Affairs office with written notice of the specific dates for which the student requires an accommodation and must do so no later than fourteen (14) days after the first day of instruction or fourteen (14) days before the dates of absence, whichever comes first. For more information about Religious Accommodations, contact Ryan Hall, Accessibility Coordinator at [rhall21@sscc.edu](mailto:rhall21@sscc.edu) or 937-393-3431 X 2604.

**18. OTHER INFORMATION\*\*\*:**

**SYLLABUS TEMPLATE KEY**

**\*** Item cannot be altered from that which is included in the master syllabus approved by the Curriculum Committee.

**\*\*** Any alteration or addition must be approved by the Curriculum Committee

**\*\*\*** Item should begin with language as approved in the master syllabus but may be added to at the discretion of the faculty member.