COURSE SYLLABUS

AVT-112 AIRCRAFT ELECTRICITY

Spring 2016

Instructor: Thomas Roy

Office: SIU Transportation Education Center – Office 226E

Contact Info: Phone: 618-453-9213
                Email: troy@siu.edu

Office Hours: Monday 10:00am-12:00pm, Wednesday 10:00am-12:00pm, Friday 10:00am-1200pm

REQUIRED TEXTBOOKS AND OTHER MATERIALS:

- ASA Fast Track Test Guide - General or ASA Prepware - General
- Scientific/Engineering Calculator
- Digital Multi-Meter

COURSE DESCRIPTION:

Students will gain a basic knowledge of electricity generation, AC and DC circuitries, and controls. They will be able to solve problems associated with electrical measurement (AC and DC), circuit interpretations and inspections, aircraft electrical load analyses, circuit malfunctions, circuit or component servicing, and basic aircraft electronics. Prerequisite: AVT 101 or equivalent approved math course.

COURSE OBJECTIVES:

Upon completion of this course the student will be able to:

1. Read and interpret electrical schematics, using these to describe aircraft system operation and perform troubleshooting analyses.

2. Maintain and service aircraft batteries.

4. Identify characteristics of an airworthy electrical system and perform basic maintenance operations according to accepted standard practices.

5. Demonstrate a fundamental understanding of alternating current concepts including the sinusoidal waveform, phase, inductance, capacitance and reactance.

6. Obtain a basic understanding of solid-state devices and basic logic gates as a prerequisite to more advanced courses.

**Topics:**

**Fundamentals of Basic Aircraft Circuits**

**Direct Current (DC)**

1. Applications of Ohm’s Law and power formulas
2. DC generators and DC electrical components
3. DC circuit design, construction and analysis
4. DC measurements
5. DC electrical schematics

**Magnetism/Electromagnetism**

1. Generation of EMF’s
2. The magnetic circuit
3. Electromagnetic devices

**Aircraft Batteries**

1. Design and construction
2. Standard practices and airworthy installations
3. Maintenance and servicing

**Alternating Current (AC)**

1. AC power generation, AC Generators and AC electrical components
2. Impedance and reactance
3. Phase and power
4. AC to DC rectification
Semi-Condutors

1. Diodes
2. NPN/PNP Transistors

Logic Circuits

1. Basic Logic gates
2. Elementary logic circuit diagrams and schematics

ATTENDANCE POLICY:

Attendance is mandatory. As an FAA certified Airframe and Powerplant Mechanic Training Program, we must abide by the FAA's attendance policy. Instructors are required to take roll each class period. It is the student’s responsibility to contact the instructor in advance of absences whenever possible or immediately thereafter to arrange make-up time where appropriate and to obtain handouts or other material from classes missed.

Students are expected to be in class and lab on time. Three late arrivals will be counted against the student as one unexcused absence. Unexcused absences or habitual tardiness will result in a cumulative reduction of the student's final grade point average: First unexcused absence results in a one-point reduction of the final grade (0-100 scale). Second absence results in a two-point reduction. Third absence results in a four-point reduction. Fourth absence results in an eight-point reduction. Fifth absence results in a sixteen-point reduction. After the fifth unexcused absence the cumulative grade reduction would be 31 points, making it impossible to receive a passing grade for the course.

Make up time may be granted at the discretion of the instructor. Final determination as to whether or not an absence is "excused" rests with the instructor. Performance of make-up time does not reinstate points lost due to unexcused absences. Make up time must be completed within two weeks of absence.

CLASSROOM CONDUCT:

Appropriate classroom conduct at the college level includes being on time and prepared for class. It includes behaving respectfully towards other students and instructors at all times. Disrespectful behaviors are beneath the standards of college level students and may result in your being excused from this class.
Cell phones and electronic devices must be turned off for the duration of the class period with the exception of tablets used solely to present the course required texts. No phone calls, text messages, or other uses of electronic devices will be allowed.

SAFETY/Personal Protective Equipment (PPE):

Safety is of the utmost importance. ANSI Z87.1 approved eye protection, and closed toe shoes are required to be worn while in the labs. Remember Safety First.

GRADING:

The grade, for this class, is made up of three components: lecture, lab, and the final exam. Each of these count as one third of the course grade. You must have at least a 70% overall average to pass the course.

**Lecture:** The lecture grade is based on class participation, scheduled tests, and unscheduled quizzes.

**Lab:** Lab grade will be 25% Subjective and 75% Lab Projects and Lab Tests. For the subjective grade you will start each lab with 5 points. Throughout each lab behavior such as tardiness, excessive breaks, sleeping, improper lab attire/PPE or no tools will result in losing points.

**Final Exam:** A final exam will be given that will cover the information covered during the lecture and lab portions of the class. Appropriate manuals, computer access and other necessary materials will be provided in support of the exam.

Per University policy, a grade of “Incomplete” or “INC” is assigned only when for reasons beyond their control, a student engaged in passing work, is unable to complete all class assignments and/or laboratory projects. The “INC” will be changed to a completed grade within the time period specified by the instructor but will not exceed one year from the close of the term in which the course was taken. Should a student fail to complete all course requirements within the time period designated, the “INC” will be converted to a grade of “F”.

Grade Scale:

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 - 90%</td>
<td>A</td>
</tr>
<tr>
<td>89 - 80%</td>
<td>B</td>
</tr>
<tr>
<td>79 - 70%</td>
<td>C</td>
</tr>
<tr>
<td>69 - 60%</td>
<td>D</td>
</tr>
<tr>
<td>59% and less</td>
<td>F</td>
</tr>
</tbody>
</table>
Syllabus Attachment

Summer 2016

http://pvcaa.siu.edu/

IMPORTANT DATES *
Full Session Courses Begin .................................................. 06/13/2016
Last day to add a class (without Dean’s permission) .................. 06/19/2016
Last day to withdraw completely and receive a 100% refund: ...... 06/26/2016
Last day to drop a course using SalukiNet: .............................. 07/17/2016
Final examinations: ......................................................... 08/04/2016-08/05/2016
Commencement...............................Ceremonies now held only in May & December

Note: For outreach, internet, and short course drop/add dates, visit Registrar’s Academic webpage: http://registrar.siu.edu/

SUMMER SEMESTER HOLIDAYS
Independence Day Holiday 07/04/2016

WITHDRAWAL POLICY – Undergraduate only
Students who officially register for a session may not withdraw merely by the stopping of attendance. An official withdrawal form needs to be initiated by the student and processed by the University. For the proper procedures to follow when dropping courses and when withdrawing from the University, please visit http://registrar.siu.edu/catalog/undergraduatecatalog.html

INCOMPLETE POLICY – Undergraduate only
An INC is assigned when, for reasons beyond their control, students engaged in passing work are unable to complete all class assignments. An INC must be changed to a completed grade within one semester following the term in which the course was taken, or graduation, whichever occurs first. Should the student fail to complete the course within the time period designated, that is, by no later than the end of the semester following the term in which the course was taken, or graduation, whichever occurs first, the incomplete will be converted to a grade of F and the grade will be computed in the student's grade point average. For more information please visit: http://registrar.siu.edu/grades/incomplete.html

REPEAT POLICY
An undergraduate student may, for the purpose of raising a grade, enroll in a course for credit no more than two times (two total enrollments) unless otherwise noted in the course description. For students receiving a letter grade of A,B,C,D, or F, the course repetition must occur at Southern Illinois University Carbondale. Only the most recent (last) grade will be calculated in the overall GPA and count toward hours earned. See full policy at http://registrar.siu.edu/catalog/undergraduatecatalog.html

GRADUATE POLICIES
Graduate policies often vary from Undergraduate policies. To view the applicable policies for graduate students, please visit http://gradschool.siu.edu/about-us/grad-catalog/index.html

DISABILITY POLICY
Disability Support Services provides the required academic and programmatic support services to students with permanent and temporary disabilities. DSS provides centralized coordination and referral services. To utilize DSS services, students must come to the DSS to open cases. The process involves interviews, reviews of student-supplied documentation, and completion of Disability Accommodation Agreements. http://disabilityservices.siu.edu/

PLAGIARISM
Student Conduct Code http://orr.siu.edu/student_conduct_code/
MORRIS LIBRARY HOURS
http://www.lib.siu.edu/about

SAFETY AWARENESS FACTS AND EDUCATION
Title IX makes it clear that violence and harassment based on sex and gender is a Civil Rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc. If you or someone you know has been harassed or assaulted, you can find the appropriate resources here: http://safe.siu.edu

SALUKI CARES
The purpose of Saluki Cares is to develop, facilitate and coordinate a university-wide program of care and support for students in any type of distress—physical, emotional, financial, or personal. By working closely with faculty, staff, students and their families, SIU will continue to display a culture of care and demonstrate to our students and their families that they are an important part of the community. For Information on Saluki Cares: (618) 453-5714, or siucares@siu.edu, http://salukicares.siu.edu/index.html

EMERGENCY PROCEDURES
Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. We ask that you become familiar with the SIU Emergency Response Plan and Building Emergency Response Team (BERT) programs. Emergency response information is available on posters in buildings on campus, available on BERT’s website at www.bert.siu.edu, Department of Safety’s website at www.dps.siu.edu (disaster drop down) and the Emergency Response Guideline pamphlet. Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency.

INCLUSIVE EXCELLENCE
SIU contains people from all walks of life, from many different cultures and sub-cultures, and representing all strata of society, nationalities, ethnicities, lifestyles, and affiliations. Learning from and working with people who differ is an important part of education as well as an essential preparation for any career. For more information please visit: http://www.inclusiveexcellence.siu.edu/

LEARNING AND SUPPORT SERVICES
Help is within reach. Learning support services offers free tutoring on campus and math labs. To find more information please visit the Center for Learning and Support Services website:
Tutoring: http://tutoring.siu.edu/
Math Labs http://math.siu.edu/courses/course-help.php

WRITING CENTER
The Writing Center offers free tutoring services to all SIU students and faculty. To find a Center or Schedule an appointment please visit http://write.siu.edu/

AFFIRMATIVE ACTION & EQUAL OPPORTUNITY
Our office's main focus is to ensure that the university complies with federal and state equity policies and handles reporting and investigating of discrimination cases. For more information visit: http://diversity.siu.edu/#

Additional Resources Available:
SALUKINET: https://salukinet.siu.edu/cp/home/displaylogin
ADVICEIMENT: http://advisement.siu.edu/
PROVOST & VICE CHANCELLOR: http://pvcaa.siu.edu/
SIU ONLINE: http://online.siu.edu/

Spring 2016 R.O'Bourke