SIUC DEPARTMENT OF AVIATION TECHNOLOGIES

AVT 318 Aviation Electronic Control Systems

SPRING SEMESTER 2016
3 Credits

Instructor: Matt Harrison

Email: harrison@siu.edu

Office: aviation Test Cell 102

Phone: 618-453-9205

Office Hours: TBA

Lecture: Monday and Thursday 10 AM in room 145

Lab: Section One Tuesday 8am to 10 am

Section Two Thursday 8 am to 10 am

Lab Meeting: Avionics Room 143

Course Overview
Coursework is based upon theory and application of analog and digital control systems. Topics include transducers, control input devices, instrument panel displays and feedback sensor circuits. Data recording and monitoring systems will also be presented. Lecture two hours, laboratory two hours. Prerequisite: AVT 317 or departmental consent. Course fee: $30.

Course Objectives

- Perform operations and conversions within numbering systems used in digital and electronic logic circuits
- Demonstrate an understanding of advanced logic gates and resulting data outputs in circuits
- Explain and describe integrated circuit technologies and digital logic families
- Describe the functional application and operation of complex digital circuits including counters and shift registers
- Demonstrate a basic understanding of control input devices and transducers utilized in aircraft electronic control systems
- Explain sensors circuits used in aircraft electronic control systems
- Troubleshooting electronic circuits
- Construct circuits utilizing a computer simulation (Circuit Maker)

Grading Policy
A 90-100 B 80-89 C 70-79 D 60-69 F Below 60

Lecture 40% of Course Final Grade

Lecture grade is based on objective assessment (performance on written tests), which is 2/3 of the lecture grade and a subjective assessment (class participation), which is 1/3 of the lecture grade.
You must pass the lecture portion of the course with a minimum grade of D (60) to receive a passing grade for the AVT 318 course.

Lab 40% of Course Final Grade

There is no food or drink allowed in the Avionics lab.

You must have an Aviation Technologies Computer Account Login. Signup sheets will be passed out.

There are ~10 lab projects, each worth 10 points. The lab grade is received is a function of both objective and subjective assessment made by the instructor in observance of the following but not limited to:

Each Lab has a due date. The lab must be completed by the end of the Lab period on the due date in order to receive full points. *See attached lab due date sheet for specifics*. The points earned from each of the labs have both objective and subjective assessments based on the following:

Completeness and accuracy of student's responses to lab questions
Neatness
Attention to detail exhibited in lab assembly, layout and operation
Ability to work well with other individuals in the lab
Professionalism (attitude, care of equipment, etc)
Ability to use Circuitmaker
Complete a checkout with the Instructor

Final Exam 20 % of Course Final Grade

Final exam grade is based on your performance on a comprehensive written test covering any or all items from the course.

Attendance Policy
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 3-point reduction. Third absence results in a 7-point reduction. Fourth absence results in a 15-point reduction. Fifth absence results in a 31-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.

1st Absence = minus 1 point
2nd Absence = minus 3 points
3rd Absence = minus 7 points
4th Absence = minus 15 points
5th Absence = minus 31 points

General Information
This course requires outside work. Do the readings and practice problems BEFORE we talk about them in lecture. Plan on anywhere from 2 to 8 hours at least of outside classwork. This material is not easy and in order to do well you must be here and do the readings and practice work. You will not have enough time in the lab setting to do everything from construction to checkout.

All general information will be put onto the server, which you will have access to. Replacement copies for you will be there. I will give you one handout. If you lose it you will have to go on the server to get another copy. I may post labs in advance of when I hand them out. If you down load it from the server there is NO guarantee that what you download will be the same as what I hold you liable for. In other words what I hand out is what you will be responsible for. The labs are constantly being redone to make them better.

Required Textbooks, Lab Parts Kit and Required Tools…Not Optional **(If student comes to lab without any of these items it will be considered an unexcused absence)**

You are required to have each of these and your **OWN**!

Text
Kleitz, W. (2001). Digital Electronics: A Practical Approach (6th Ed.) Englewood Cliffs, NJ: Prentice Hall. ISBN: 0-13-089629-2

Lab Kits
A solderless breadboard, battery pack, electronic parts kit will be assigned/furnished to you. These are yours for the duration of this course. They must be returned at the end of the course or if dropping the course in order to not receive an INCOMPLETE for a grade.

You will be required to make or purchase a wire kit. They are 8 dollars from radio shack or 4 bucks from me. (I suggest purchasing them from me)
You are required to purchase four ‘AA’ batteries for your breadboard. These should last all semester but may not.

Tools

Basic Electronics Technician Tools (a good A&P should have these anyways)

- Standard A&P Tool set
- Wire strippers for *small wires* 18 gauge through 24
- Wire cutters
- Digital Voltmeter
- Several Sets of colored jumper leads (some alligator clipped and some just wires)

TESTING GUIDELINES

The following rules of engagement apply to and during all tests, quizzes, labs and final exam.

Answers	All answers must be placed on the test or corresponding lab worksheets. Answers must be legible to be accepted. I suggest using pencil. You will be erasing.
Scantron	Answers must still be on the test document. Transfer answers to scantron once the test is completed. If there are fill in the blank answers be sure to leave those blank on the scantron sheet. Use a Number two pencil or equivalent.
Calculations	Show all calculations necessary to derive the answer to mathematical questions. Correct answers without necessary calculations will NOT be accepted. You may use calculators but they may not be exchanged during tests. If you have a calculator capable of performing the equation we will do you must still show your work or your answer will not be accepted. (Example: There is no way of knowing if you know how to go between the decimal and octal systems without you corresponding work.)
Rounding	Maintain as many digits of precision as possible while working the problem. Round your final answer to the Hundredths decimal place (.00) or to whatever precision is required by the problem.
Cheating	No form of academic dishonesty will be tolerated. If caught you will be Referred to the Student Judical Affaris.

I have been given the opportunity to clarify any questions I have in regards to the syllabus for AVT 318 for Spring 2016

Printed Name _____

Signature _____

Date _____

Printed SIU Email Address _____

Contact Phone Number _____