Course Title: Digital Data Bussing and Electronic Flight Instrument Systems

Course Number: AVT 465

Course Date: Spring 2016

Course Location: Room 145 Loom 142 Lab.

Course Time: Lecture – Monday, Wednesday 8:00-9:30AM
Lab Section Monday and Wednesday 9:30AM– 12:PM

Instructor: Keven Mitchell
Phone Office 453-9203
Cell 618-303-0539
Email mitchell@siu.edu

Office Location Transportation Education Center, room 226F

Office hours Tuesday 9:00 AM till noon
Thursday 9:00AM till noon

Course Description: This course will introduce the student to digital microprocessor concepts and circuits. The student will be introduced to various digital information data bus systems and electronically generated displays. Data bus protocols, controllers, exchange formats, and software used in typical aircraft electronics systems will be explored. Cathode-ray tube display formats used in EFIS indicators will be studied. A study of avionics systems and integration into existing systems.

Prerequisite: AVT 318 or departmental consent.
Learning Objectives:
Upon completion of this course the student will become familiar with:

1. Various types of data busses used in aircraft to affect the exchange of flight, instrument, and navigation information.

2. Different types of data exchange formats and protocols used in information data bus systems.

3. Various bus controller protocols and the software necessary to affect bus control.

4. Cathode-ray tube type and Liquid Crystal Displays used in EFIS presentations, system symbol generation, and time multiplexing concepts.

5. Integrated systems used with the data bus systems.

Instructional Methods: This course is taught using a variety of instruction including lecture, class discussions, demonstrations, DVD training and library and internet research.

ISBN Number 13: 978193318921-5 and accompanying Student Workbook

Textbooks not available at the University Bookstore can be ordered on-line at Half.com, Amazon.com, eCampus.com, bigwords.com, alibris.com, or valorebooks.com, and by special order through Barnes & Noble and most academic bookstores such as 710 Bookstore and Saluki Bookstore.

Materials Instructor developed lecture material, handouts, DVDs and supplemental periodic journal materials.

Assignment of Course Grade

The letter grade issued at the completion of the course will be based on the following grading scale:

100 - 90 A, 89 - 80 B, 79 - 70 C, 69 - 60 D, <60 F
The final grades you receive in this course are calculated based upon your performance in the following four areas:

**Lecture**

Comprises **80% of course grade.** Lecture grade is based upon an objective assessment: your performance on periodic written quizzes and take home workbook assignments with an additional subjective assessment: class participation.

**Objective** assessment 70%: written test/quiz questions will require the student to recall facts and solve problems related to Electronic Flight Instrument Systems, covered both in readings and in class.

**Subjective** assessment 10%: class participation is based on the instructor’s subjective assessment of the level of the student’s participation in lecture throughout the semester. Factors positively affecting this grade include asking the instructor questions and answering questions posed by the instructor. Factors negatively affecting this grade assessment include the student’s inability to answer questions based on reading assignments or giving the impression that the student is sleeping in class, whether they are or not. Repeated incidents of giving the impression that one is sleeping in class will result in a class participation grade of zero.

**Final Exam**

Comprises 20% of course grade. Final exam grade is based on your performance on a comprehensive written test covering all aspects of Electronic Flight Instrument Systems.

**AVT 465 Testing Guidelines**

The following guidelines apply during all lecture and laboratory tests, quizzes and the final exam. They are also the basis for all work associated with laboratory projects.

**TEST DOCUMENT**

The test document and any additional handouts or scratch paper, regardless of source, is the property of the course instructor. Do not remove the staple from the test.

**ANSWERS**

You must place all of your answers on the test. All answers which require anything more than circling a provided answer must be printed legibly. Cursive (handwriting) will not be accepted and the answer will be marked incorrect.

**SCANTRON ANSWER SHEETS**

Scantron answer sheets may be used. When a Scantron answer sheet is used you must still place all of your answers on the test document. When you have completed the test, transfer your answers for multiple choice and true false questions to the Scantron sheet. Be sure to leave the response on the Scantron sheet blank for any questions that were fill in the blank or required you to provide an illustration on the test document. Be sure to use
a number two pencil (which you must supply) and fill in the dot completely.

**CALCULATIONS**
Show all calculations necessary to derive the answer to mathematical questions. Correct answers without necessary calculations will not be accepted. It is your responsibility to bring a calculator to class with you. Calculators cannot be shared or exchanged during a test.

**ROUNDING**
Maintain as many digits of precision as possible (whatever the calculator will carry) while working through the problem. Your final answer should be rounded, as necessary, to the hundredths decimal place, or to the precision required by the question.

**QUESTIONS**
Any questions you may have about a test item should be held until shortly before the end of the testing period. The instructor will let you know when questions may be asked, usually near the end of the testing period.

**PROPERTY**
Do not exchange any materials with any other student during the testing period.

**REMAIN SEATED**
Do not leave your seat unless you have completed the test. If you have a problem such as a broken pencil or dead batteries in your calculator, raise your hand until you draw the instructors’ attention.

**COMPLETION**
Turn in the document and the Scantron answer sheet when you finish.

**SILENCE**
Please maintain silence during the testing period.

**CHEATING**
No form of academic dishonesty will be tolerated. (see SIU Student Conduct Code, Division IV)

**Attendance**
There is a direct correlation between attendance and performance in a course. Students who are absent can expect their performance on projects and tests to suffer. Makeup instruction will only be provided if the instructor considers an absence to be an excused absence. Each unexcused absence will result in the course Subjective grade being reduced.

**Absence Definition**
Absence will be classified as excused or unexcused. An absence will be classified as excused only if the absence was due to a significant mental or physical problem, or circumstances outside the control of the student. Determination of "significance" or validity of "circumstance" will be made by the instructor, based upon verbal explanation by the student and any pertinent written documentation (i.e. written statement from a medical doctor or psychologist, court document or summons, or military orders). *It is the student’s responsibility to provide the instructor with this information prior to the class that will be missed, when possible, or in the case of illness, immediately upon his/her return to class.*

For consideration as an "excused absence, illness will always require supporting
documentation from the SIU Student Health Service or a private physician indicating date and time of appointment.

Missed tests can only be made up if the absence is determined to be an excused absence. Unexcused absence missed tests will be assigned a grade of zero.

If you are not present when attendance is taken you will be marked absent. If you arrive late, but less than 10 minutes late, it is your responsibility to approach the instructor upon your arrival or in lecture, at the end of the period to have your "absence" changed to a "late" in the instructor's attendance journal. Failure of the student to approach the instructor upon arrival or at the end of a lecture period will result in the absence as recorded.

**Unexcused Absence Grade Reduction:**

Each unexcused absence, as defined above, will result in the reduction of the student's course grade.

**Emergency Procedures:**

Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the SIUC Emergency Response Plan and Building Emergency Response Team (BERT) program. Emergency response information is available on posters in buildings on campus, available on the BERT’s website at www.bert.siu.edu, Department of Public Safety’s website www.dps.siu.edu (disaster drop down) and in the Emergency Response Guidelines pamphlet. Know how to respond to each type of emergency.

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.** The Building Emergency Response Team will provide assistance to your instructor in evacuating the building or sheltering within the facility.

**ADA Statement**

Students with disabilities who may need accommodations, or who have any emergency medical information the instructor should know of, or who need special arrangements in the event of evacuation, should make an appointment with the instructor as early as possible, no later than the first week of the term. Students also need to contact the SIUC Disabilities Support Services Office in Woody Hall B-150. Call 453-5738
AVT 465-3 Topical Outline

The following is the basic outline and addition material will be added during the course. The structure of the course will support course AVT 465 Lab assignments and will change accordingly as materials and equipment availabilities vary. Reading assignments are given at the end of every course, however, if a student wishes to read ahead please see the instructor for advanced planed reading.

Chapter 1
Aircraft Manuals

Chapter 2
Power Distribution System
Digital data Bus Systems
Analog to Digital Converters
Flat Panel Displays
LCDs
ESD

Chapter 3
HIS
ADI
Early EFIS
DPU
MFD
King EFS-10
EFIS-85/86
Advanced EFIS
Faults

Chapter 4
Integrated Monitoring and Warning Systems
Alerting
Engine Indicating
ECAM

Chapter 5
BIT
CMS
CFDS
Chapter 6
Auto Pilot and Auto flight systems
Compass
IRS
INS
Servos
APS-85
747 -400
Yaw Damper

Chapter 7
Crew Communications and Passenger entertainment
ACARS
Interphone
Video

Chapter 8
GPS
Navigation
IMPORTANT DATES *
Semester Class Begins: ........................................... 01/19/2016
Last day to add a class (without instructor permission): .......... 01/24/2016
Last day to withdraw completely and receive a 100% refund: . . . 01/31/2016
Last day to drop a course using SalukiNet: ............................ 04/03/2016
Last day to file diploma application (for name to appear in Commencement program): .......................................... 02/12/2016
Final examinations: ................................................................ 05/09 – 05/13/2016
Note: For outreach, internet, and short course drop/add dates, visit Registrar’s Academic webpage: http://registrar.siu.edu/

SPRING SEMESTER HOLIDAYS
Martin Luther King, Jr.’s Birthday Holiday 01/18/2016
Spring Break 03/12 – 03/20/2016

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-uc/graduatecatalog/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://sr.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 more information on Saluki Cares: (618) 453-5714, or suicares@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 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

ADVISEMENT: http://advisement.siu.edu/

PROVOST & VICE CHANCELLOR: http://pvcaa.siu.edu/

SIU ONLINE: http://online.siu.edu/