Syllabus for Materials Processing  - AVT 111

Course Instructor: Daniel Mattingly  
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Office Hours: Tuesday & Thursday between 10 a.m. and 12 a.m.
Wednesday between 12 p.m. and 1:50 p.m.
Other times can be made available by appointment.
Office Location: Aviation Technologies Helicopter Building room 101

Course Meeting Times: Lecture – Tue and Thur between 8 a.m. and 9:50 a.m.
Lab – Sec 2 (Wednesday) between 2 and 3:50 p.m.
Sec 1 (Thursday) between 1 and 2:50 p.m.
Sec 3 (Thursday) between 3 and 4:50 p.m.

Meeting Locations: AvTech Lecture Room TEC 0182
Laboratory Hangar 129A

Course Description: Students will be able to identify, select, and inspect aircraft hardware & materials. They will be able to select and apply appropriate cleaning materials and to implement corrosion controls. They will become proficient in the use of precision measurement equipment and related inspection tools.

Required Textbooks and Tools:
- Jeppesen A&P Technician Airframe Textbook (JS312692-004) (FAA-H-8083-31, volumes 1 and 2 available for download from FAA website)
- AC 43.13-1B/-2B Acceptable Methods, Techniques & Practices – Aircraft Inspection and Repair (Available for download from FAA website)
- Jeppesen Standard Aviation Maintenance Handbook (JS312624-002)
- Dale Crane Aviation Mechanic Handbook (ASA-MHB-5)

The number tools required for this class are minimal to include standard wrenches/sockets between 3/8” to 3/4”, diagonal cutters, needle nose and standard pliers, phillips and flat tip screwdrivers, etc. The tools required are part of the student’s basic tool kit. Safety glasses are required and will be worn at all times during each laboratory session.

Grading Policy
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 grade you receive in this course will be calculated based upon your performance in three areas consisting of Lecture, Lab, and Final Exam. They are each counted as one third of the course grade and you must the meet the FAA requirement of a 70% average between the three to pass the course.
Lecture
The lecture grade is a combination of exams and quizzes. There will be four exams and they will be announced as the semester progresses. If an hourly exam is missed by the student with an excused absence that has been coordinated with the instructor, they may take the exam at a later time with a 10 point penalty.

Quizzes are usually not announced and the student should be prepared for quizzes during every class period. Also, quizzes may not be taken late and the lowest quiz grade will be thrown out at the end of the semester with the remainder being averaged. This average scores counts as one exam towards the lecture grade.

Laboratory
The lab grades are determined by a combination of graded lab projects and quizzes with the remainder being subjective (50%). The student’s overall daily subjective grades will be determined by the instructor and they will reflect the student’s adherence to safety procedures, performance, attitude, cooperation and willingness of the student to work with others. All weeks will be averaged at the end of the semester. A zero for a specific laboratory period that was missed represents an unexcused absence. The remaining 50% of the lab grade is an average between the quizzes and the graded laboratory projects.

Safe maintenance practices must be adhered to at all times. Safety glasses and ear protection are required and they are part of your tool kit. No open toed or open heeled shoes (sandsal, flip flops, etc.) will be allowed in the lab. You will be asked to leave class and counted absent if wearing shoes that are either open toed or have no heal protection.

Final Exam
The final exam is comprehensive and will cover all subjects discussed and assigned during the semester. The exam will be a multiple choice (scantron style) and consist of 75 to 100 questions. The final exam cannot be taken late without making prior arrangements with the instructor. If prior arrangements are not made, the student will receive a zero on the final and will not pass the course.

Attendance Policy
Attendance is mandatory. As an FAA certified Airframe and Powerplant Mechanic Training Program, we must abide by the FAA's attendance policy. For a student to receive their graduation certificates, they must successfully complete 1900 hours of instruction. 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 hand-outs or other material from classes missed.

Students are expected to be in class and lab on time. Three late arrivals (less than 10 minutes) will be counted against the student as one unexcused absence. Any student leaving class early without previously coordinating with the instructor will be considered absent for the entire class period. Excused absences are those that are due to circumstances outside the control of the student (medical emergencies, death in the family, etc.). Whenever possible, it is the student’s responsibility to provide the instructor with a verbal explanation and/or written documentation prior to the class that will be missed. An illness will require supporting documentation from the SIU Student Health Service or private physician indicating the date and time of appointment. The instructor will make a determination based on the information provided by the student if the missed class will be considered as an excused absence. The student will be given 2 weeks to make up the time for all absences which will normally consist of writing a 1 page paper (double spaced & Times New Roman 12 plus references) for every lecture hour missed and the topic will be related to the missed lecture material. Excused absences for lab will consist of spending time in lab and working on assigned projects for makeup time. In either case, after 2 weeks the time will be considered unexcused. At the discretion of the instructor, unexcused absences may or may not be made up. All of the student’s time must be made up prior to finals week.
**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.

**Class Behavior**

Within the aviation industry, we are expected to conduct ourselves with dignity and professionalism. The following behaviors will not be tolerated during the lecture or laboratory sessions:
- The reading of newspapers
- The excessive use of foul or vulgar language
- Sexual harassment of any type
- Racially demeaning comments or slurs
- Use of headphones or ear buds
- Unnecessary talking or sleeping in class or any other distractions

Students engaging in unprofessional behavior will be advised and if the unacceptable behavior continues, the student may be asked to leave the class with an unexcused absence being recorded for that day.

**Cell Phones**

It is recommended that cellular phones be left in your car or backpack and not on your person. Otherwise, cellular phones are to be turned off during class and not to be visible at any time other than the scheduled breaks. Text messaging during class will not be tolerated. The potential of a medical or personal emergency is understandable, but if your phone rings during class or if you choose to answer your phone during class, you will be counted as absent for the class. Advise the instructor if there is a potential medical or personal problem so that he is aware and can preplan for it.

**New Smoking Policy**

As of July 1, 2015 smoking is no longer permitted on property owned or operated by SIU.

**Academic Dishonesty & Social Misconduct**

All courses offered by the college will be conducted in concert with the ethical standards of the aviation profession and the SIU Student Conduct Code for academic dishonesty or social misconduct. The student is responsible for understanding and making themselves aware of the policies and procedures within the Student Conduct Code. These policies deal with cheating, fabrication, falsification and forgery, multiple submissions, plagiarism, complicity and computer misuse. If there is reason to believe that a student has been involved in academic dishonesty or social misconduct, the procedures set forth in the Student Conduct Code will be followed in order to resolve all allegations against the student. The website for the SIUC Student Conduct Code can be found at [http://policies.siuc.edu/policies/conduct.html](http://policies.siuc.edu/policies/conduct.html).
Syllabus Attachment
Fall 2015

http://pcaa.siu.edu/

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://safesiu.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 salukicares@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. Please reference the Building Emergency Response Protocols for Syllabus attachments on the following pages. 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://tutoring.siu.edu/math tutoring/index.html

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/co/home/displayContent
ADVISEMENT: http://advisement.siu.edu/
SIU ONLINE: http://online.siu.edu/

Fall 2015 R.O’Rourke
AVT 111 Lecture Outline

UNIT ONE – STANDARD AIRCRAFT BOLTS AND FASTENERS
- How threads are made, thread nomenclature and classifications of threads
- Aircraft hardware systems – AN, MS, NAS, other
- Identification, nomenclature and usage of aircraft bolts, nuts, washers and locking devices
- Torquing of fasteners, torque charts and torque adjustment formulas
- Nomenclature, identification and use of aircraft screws
- Studs and special purpose bolts

TEST 1

UNIT TWO – AIRCRAFT HARDWARE AND SHOP PRACTICES
- Solid shank aircraft rivets, their nomenclature, identification and use
- Turnlock fasteners & miscellaneous hardware
- Repair or replacement of damaged threads to include Helicoils
- Use of taps and dies
- Twist drills and drilling techniques
- Use and care of precision measurement instruments
- Metal working file types and procedures for use
- Hydraulic fittings and seals

TEST 2

UNIT THREE – NONDESTRUCTIVE TESTING
- Visual inspections, techniques and inspection aids
- Penetrant inspections
- Magnetic particle inspection
- Ultrasonic inspection
- Eddy current inspection
- X-ray inspection
- Other inspection methods to include inspection of welds

TEST 3

UNIT FOUR – METALLIC ELEMENTS IN AIRCRAFT STRUCTURES
- Introduction to metallic elements, their characteristics, uses and terminology
- Aluminum
- Magnesium
- Titanium
- Steel
- Other Metals
- Corrosion control – how materials are attacked, treated and protected

TEST 4
FINAL EXAM