



SYLLABUS
AFAB 1004, Fall 2017
Aerospace Structures I

COURSE DESCRIPTION

Aerospace Structures is designed to give students the necessary skills to perform journeyman aerospace structures assembly and repair. Classroom lecture and hands-on practice provide knowledge and experience with drilling holes in aluminum alloys, cold working of holes, installation of special fasteners, the importance of aircraft sealants, and proper preparation of surfaces for application of sealants. The course includes material fabrication experience using sheet metal equipment and the completion of a final project of moderate complexity. The project will include interpretation of engineering drawings, material selection, proper layout, sheet metal cutting and forming, drilling, riveting, and fastening.

COURSE INFORMATION

| | |
|----------------|---|
| Class Time | MW: 2:00-5:30pm |
| Class Location | Aero Lab, TS-100 |
| Credits | 4 SCH |
| Requisites | There are no Prerequisites for this course. |

INSTRUCTOR

| | |
|--------------|---|
| Instructor | Mr. Greg Ferringer |
| Phone | 501-622-4262 |
| E-mail | gferringer@np.edu |
| Office Hours | MW: 2:00 pm - 4:00 pm, T: 11:00 am-1:00 pm Other times by appointment only |

TEXT & MATERIALS

- Aircraft Structural Technician (ISBN: 0-9708109-0-3, Publisher-Avotek) Edition 4
- Aircraft Structural Technician Student Workbook (ISBN 1-933189-11-8, Publisher-Avotek) Edition 4
- Pencil/pen, loose-leaf paper, and the textbook must be brought to every class period.
- Personal protective equipment (PPE) – safety glasses, steel toed shoes. Clothing should be worn that is appropriate for the production setting. No open toed shoes are allowed in the laboratory.

ASSURANCE OF LEARNING

Instructional methods

This course will incorporate a variety of teaching and learning methods - lectures, readings, lab exercises, lab work, video clips, group/field projects, peer teaching, etc

General Educational Outcomes

Upon successful completion of any degree at National Park Community College, the student will

- Communicate effectively by demonstrating proficiency in the English language, utilizing appropriate communication technology, and presenting ideas and information orally and in writing.
- Reason scientifically and quantitatively by demonstrating knowledge of mathematical and scientific principles, applying these principles to solve problems, interpreting information presented in graphic form, and by applying scientific methods to the inquiry process.
- Think critically as demonstrated by the ability to read, understand, analyze complex ideas, locate, evaluate, and apply research information, draw inferences from facts and evaluate and present well-reasoned arguments.
- Develop a global perspective which empowers the student to recognize commonalities and differences among cultures, examine the significance of diversity in social interaction, interpret events and values within a given context.

Course Specific Outcomes

Aero 1

Upon completion of the course, the student will:

- Observe and comply with all shop safety procedures and environmental regulations.
- Recognize and safely use structure assembly hand and power tools.
- Read, interpret, and apply proper procedures for using correct drills and drill speeds through the use of appropriate technical manuals.
- Choose and select the correct drill bit and feed speeds to drill holes in aircraft materials.
- Fabricate simulated aircraft parts from blueprints using learned layout, cutting and drilling techniques.
- Demonstrate the use of sheet metal forming equipment.
- Prepare a surface for sealant and apply sealant correctly.
- Select and measure materials using precision measurement tools.
- Create and assemble a final project using skills acquired in class.
- Demonstrate effective teamwork skills through the successful completion of all group projects.
- Demonstrate good time management through the timely completion of all written and laboratory assignments.
- • Interpret and follow production policies, procedures, and instructions during the fabrication of an aircraft subsystem in a laboratory simulated production environment.
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Aero 2

Upon completion of the course, the student will:

- Observe and comply with all shop safety procedures and environmental regulations.
- Recognize and safely use structure assembly hand and power tools.
- Demonstrate the use of intermediate sheet metal shaping forming equipment.
- Assemble simulated aircraft assemblies from blueprints using learned layout and assembly techniques.
- Understand and demonstrate principles of corrosion control.
- Complete the routing and installation of hoses, tubing and wire harnesses (including safety wire installation) on a simulated aircraft assembly.
- Demonstrate the ability to tear down, clean, repair and re-assemble aerospace structures in accordance with AMMs and CMMS.

- Create and assemble a final project using skills acquired in class.

Progress on achieving these objectives will be measured through the completion of assignments inside and outside the classroom, participation in discussions and lab work, and periodic quizzes and examinations.

Expected Course Outcomes

This course enhances student abilities in the following general education areas:

Communication Skills

Students will demonstrate an understanding of interpersonal communication skills through oral presentations and written assignments. Laboratory experiments and work projects will take place in a simulated real world setting requiring communication of technical information between the students, as coworkers, and the instructor, as the employer.

Technological Skills

Students will gain an understanding of DC and AC electrical components and their use in an industrial environment. They will be prepared to inspect, troubleshoot, identify, and repair circuits and standard electrical power distribution system devices. Use meters to measure current, voltage, and resistance and to locate shorts, opens, and overloads efficiently and safely.

Analytical Skills

Students will demonstrate critical thinking skills that are necessary in understanding series, parallel, and combination electrical circuits. They will analyze these standard circuit configurations by methodically applying Kirchhoff's laws to prove current flow and voltage drops in each of the circuits. The skills gained will prepare students for advanced inquiries into automation.

Quantitative Reasoning

Students will use scientific calculators and Ohm's law formulas to compute circuit values mathematically to solve for current, voltage, resistance, and power values.

COURSE REQUIREMENTS

Assignments

Problems and textbook problems will be assigned to provide additional practice on the concepts. These assignments may be collected and graded to provide feedback.

Quizzes

Announced or unannounced quizzes may be given. Makeup quizzes are at the discretion of the Instructor.

Examinations

There will be 3 to 5 examinations worth 100 points each. Students will be required to take the exams in class or in a proctored environment. Alternative testing sites are acceptable but **MUST BE APPROVED BY THE INSTRUCTOR PRIOR TO THE EXAM**. Exams will consist of problems, fill-in-the-blank, and short essay.

Final Exam

There will be a final comprehensive assessment of the course material worth approximately 200 points.

Lab requirements (if appropriate)

What has to be accomplished in lab? What sort of testing, participation, skills.

Evaluation

Your grade will be determined by your relative performance on the following:

| | |
|--------------------------|------|
| Exams | 55% |
| Homework/Quizzes..... | 20% |
| Comprehensive Final..... | 15% |
| Attendance..... | 10% |
| Total | 100% |

Grading Scale:

| | |
|---------|--------------|
| A | 90% - 100% |
| B | 80% - 89% |
| C | 70% - 79% |
| D | 60% - 69% |
| F..... | 59% or Below |

Topical Outline and schedule

| Chapter | Topic |
|---------|---|
| 1 | Topic 1 |
| 2 | Topic 2 |
| 3 | Topic 3 |
| 4 | Test 1: September 25 |
| 5 | Topic 4 |
| 6 | Topic 5 |
| 7 | Topic 6 |
| 8 | Test 2: October 23 |
| 9 | Topic 7 |
| 10 | Topic 8 |
| 11 | Topic 9 |
| | Test 3: December 4 |
| | Final Exam Period: December 11, 3:00 PM |

COURSE POLICIES

Student Responsibility

Students are responsible for reading the textbook material and completing homework assignments on time, documenting their lab projects, writing assigned technical research reports, and keeping a notebook to document their learning progress. Points will be deducted for work that is turned in late! A dedicated 3-ring binder is recommended for the Basic Electricity notebook.

Attendance policy

The College assumes that regular class attendance is essential to its academic operations. Students not attending regularly scheduled classes are considered absent. Faculty members have the responsibility to deal with absences, to decide makeup work required, if any, and to drop students for absences that exceed the instructor's policy. Students are personally responsible for the academic consequences of a poor attendance record.

Students may be administratively dropped if they fail to do ALL of the following:

- 1) Attend at least 85% of class meetings to date
- 2) Satisfactorily complete at least 85% of all assignments, quizzes, exams, online discussions, etc.
- 3) Make satisfactory academic progress

Cell Phone Policy/Classroom Etiquette

- The use of pagers and cellular phones is prohibited during class time and site visits. The instructor must approve exceptions to this policy in advance. Follow **all** campus rules, policies, and expectations outlined in the *OTC Student Handbook/Calendar*.
- Students are expected to behave as adults, be attentive & participate in a *positive manner* in this class. Unacceptable behaviors which will warrant dismissal from class include, but are not limited to:
 - *Sleeping, talking or passing notes to neighbors, "Texting," working on other assignments during lecture, gum popping/smacking, or any other disruptive or distracting behaviors.*
- Certain foods and drink are permitted during lecture as long as they are not disruptive to the class.
- As outlined by COTO policy, children are not allowed in classrooms or labs. Do not ask for exceptions to this rule.
- Please make it a habit to turn cell phones to silent before class begins each day
- Demonstrate respect and regard for the ideas of others.
- No horseplay

Laboratory Policy

At all times, students are expected to comply with all Shop Rules. Clothing should be worn that is appropriate for the electrical trades. No short pants or open toed shoes are allowed in the laboratory.

Make-up Policy

Make-ups on regular exams will be given at the instructor's discretion. It is the student's responsibility to work this out with the instructor. If an exam date is missed, the student must provide a written request for makeup work. Any supporting documentation may be attached. Any missed projects; quizzes, discussion board postings, papers, and any other class assignments may be made-up only at the discretion of the instructor.

Academic Integrity

Students are responsible for familiarizing themselves with the College policies on academic integrity. Any instance of academic dishonesty, especially cheating or plagiarism, will be dealt with harshly and may result in failure on the exam or assignment, failure in the course, or dismissal from the College.

ADA statement

Students with Disabilities: It is the policy of National Park Community College to create inclusive learning environments. If there are aspects of the instruction or design of this course that result in barriers to your inclusion or to accurate assessment of achievement—such as time-limited exams, inaccessible web content, or the use of non-captioned videos—please notify the instructor as soon as possible, preferably

during the first or second week of class. Then, it is the student's responsibility to contact the campus Disability Specialist, Audrey Annette Smelser, to verify disability and to request one or more accommodations. Students should contact the Disability Specialist by telephone at 501-760-4227 (v/tty) or via email at asmelser@npcc.edu. For more information, visit the Disability Services website at http://www.npcc.edu/Students/StudentServices/student_services_description.htm#Disability

Legal Disclaimer

The schedule, policies, and assignments in this course are subject to change in the event of extenuating circumstances or by mutual agreement between the instructor and the students. The instructor will always inform the students of any changes in a timely manner.