San Diego Community College District
Miramar College
Course Syllabus
Fall 2010

Instructor: Wheeler North        Office Hours: 1:00PM - 2:00PM Mondays
Location: F108 D
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Course Title: Aircraft Landing Gear Lab

Subject Area and Course Reference Number:
Aviation Maintenance Technology 104D     CRN 55322

Class Meets: Lab: 10:00-1:00 AM Mondays 3 hours 1.0 units Room F101

Catalog Course Description:
The study of inspection, checking, servicing and repair of landing gear and retraction systems, shock struts, wheels, brakes, tires and steering systems. The inspection, checking troubleshooting, servicing, and repair of speed and take-off warning systems, electrical brake controls, anti-skid systems, landing gear position indicating and warning systems. Ref. (FAR 147 Appendix C: Section II, Subjects A,H)

Course Objectives:
Successful completion will enable the student to demonstrate with entry level proficiency, knowledge of, and manipulative skills in diagnosing, servicing, and repairing landing gear and retraction systems, shock struts, wheels, brakes, tires, steering systems, speed and take-off warning systems, electrical brake controls, anti-skid systems, landing gear position indicating and warning systems.
Successful completion will enable the student to meet the standards for the Federal Aviation Administration comprehensive testing, leading to an Airframe Mechanic certificate.

Evaluation:
A. Lab Course grade determined on the following criteria:
   1. Written assignments and shop projects = 60%
   2. Final Exam = 40%

B. Test and Quizzes will be given at various stages throughout the course. There will be a minimum notice of one class period. Homework due dates will be announced in class when they are assigned. Required Notebook will be due on the day of the final exam.

C. A maximum grade of 70% will be given for all make-up tests and/or projects as a result of unexcused absence. There will be no make-up for Quizzes. (The current College Catalog is a legal extension of this syllabus).

D. Federal Aviation Regulation requires that all grades and attendance be recorded and maintained on file subject to Federal Audit. A copy of the Course Record Sheet used to fulfill this regulation is attached. A student may review this document upon request at any time.
E. Time cards are used to document makeup attendance, failure to punch in and/or out will result in the loss of that time. Time cards must have the student's name and the course title, in ink, and a Program Instructor's signature with every “start” and “stop” time-clock entry stamp. It is required that students document makeup time on one time card per student per course. All makeup time must be spent working on coursework. Time can be made up under the supervision of any Program Instructor, who may assign makeup activities at their discretion. Make-up time may not be “banked” ahead of the missed time. Time cards will be turned in on the day of the Final Exam.

F. All tests, written assignments, lab projects, and final exams are MANDATORY. If any class assignments, projects, test/exams or Federal time minimums are not completed by the end of the semester an "I" incomplete grade may be issued. If the missing work/time is not completed within one year of the end of this semester a less than satisfactory grade will be issued. Course repetition will not remove an incomplete. Copies of these records will be maintained by AMT Dept. for the FAA required period of time.

G. As per SDCCD and FAA requirements students may not miss any class time. You must make up any time missed. The instructor may elect to drop or issue a failing grade to any student who has missed more than 6% of the total class time and the student will be dropped or issued a failing grade if they have more than 12% accumulated missing time. Missed time must be made up by prior arrangement with any Program Instructor. Make-up time may not be “banked” ahead of the missed time. Any student who is late or leaves early in combination three or more times will be dropped from the course or will receive a failing grade if this limit is exceeded after the final drop date. Exceptions to this limit may be made by prior arrangement with the instructor limited to two exceptions and any excused tardiness may not exceed ½ hour. All missed time must be made up per the make-up requirements included in this syllabus (Item E). Withdrawal add/drop dates may be found in the college catalog or online class schedule at http://schedule.sdccd.edu/

H. Homework not turned in by the due date will receive a maximum of 70%. Any homework turned in after the end of the week before finals will receive a grade of zero. Regardless of grades received, all assigned homework is mandatory and must be at least a 70% quality for a final passing grade in the course.

I. NOTICE: For safety and the protection of property, video monitoring equipment is being utilized in this facility.

J. Inappropriate utilization of these facilities, to include all shop equipment, buildings, furniture, computer equipment etc. is grounds for dismissal from class and disciplinary action by the appropriate authorities. This can include, but is not limited to unescorted presence in secure areas such as the tool room or faculty office areas, kicking or slamming doors and furniture, modifying settings or software on computing equipment, inappropriate utilization of Internet access such as adult or hate websites, chat rooms or other activities as deemed inappropriate by District policies.

Method of Instruction:
Lecture, demonstration and class discussion, supported by various forms of audio-visual and multi-media aids.

Text and Supplies:
Fluid Power for Aircraft; Kamair Publications Merril, Kroes, Mick (optional)
FAA Advisory Circular AC 65-15A
FAA Advisory Circular AC 43.13-1B/2A
Three-ring loose leaf binder, Pen and #2 Pencil, Scantron Test Answer Sheets
Appropriate tools and tool kit from shop tool list.
CLASS MEETING, ASSIGNMENTS, TESTS, AND WORK DUE SCHEDULE:
The student will complete the various projects that the instructor assigns during the course of the semester.

NOTE: The instructor reserves the right to change the above schedule with prior notice.

Lab assignments are as follows:
Written assignments:
1. Proj #5 Diagram and label the components of an assigned retractable landing gear system. Indicate direction of hydraulic flow through the entire landing gear retraction system. Diagram an electrical wiring schematic and necessary mechanical linkage systems of the same system, indicating all electrical, and electro-mechanical components. Do not reproduce the manufacturer’s diagrams in any manner. This includes copying, scanning, tracing, or any form of imaging. Be prepared to give an oral checkout of this system including the function and operation of each subsystem and potential troubleshooting.
2. Proj #10 Diagram and label the components of an assigned power brake system. Indicate direction of hydraulic flow through the entire power brake control system. Be prepared to give an oral checkout of this system including the function and operation of each subsystem and potential troubleshooting.
3. Each lab project will require a lab group generated worksheet. This worksheet will include at least ten checklist task items to be completed by the technician to completely diagnose, service and repair the item or system being checked out. At least five items must be of the service/repair nature, and at least five items must be of the diagnosis nature. If the manufacturer provides such a list you may emulate this but you must use your own wording.

All written assignments must be type written or word processed. The only exception to this is drawings, diagrams, or schematics. DO NOT turn in copies of any form, tracings, Internet or manufacturer printouts.
Projects / Oral Checkouts:
All students must prepare and give an oral checkout for each lab assignment

1. Describe the construction features and procedures for inspecting, cleaning, maintaining, storing, servicing, mounting and demounting aircraft tires and tubes.
2. Remove an assigned wheel and tire assembly and dismount the tire and tube. Inspect, clean, service, and repair all components as necessary. Produce a written discrepancy list indicating damaged components and corrective action taken. Reassemble upon instructor’s approval.
3. Disassemble, clean and inspect an assigned brake master cylinder. Reassemble upon instructor’s approval.
4. Remove and disassemble an assigned brake assembly. Inspect, clean and repair all components as necessary. Produce a written discrepancy list indicating damaged components and corrective action taken. Reassemble upon instructor’s approval. Service and test the brake assembly.
5. Inspect, check and operate an assigned retractable landing gear system. Explain the inspection, checking and adjustment of all mechanical locking devices and electrical position indicating components.
6. Disassemble, clean, inspect and reassemble all components of an assigned multiple disc or expander tube brake assembly.
7. Diagram the component parts and describe on a 8.5 * 11 sheet of drawing paper the operation of an air-oil strut assembly.
8. Inspect, service and check an assigned aircraft shock strut.
9. Disassemble, clean, inspect, reassemble and service an assigned aircraft shimmy damper. Describe the operation and troubleshooting before reassembly.
10. Describe the operation of an assigned PBCV and hydraulic debooster as used in a power brake control system.
11. Inspect and check an assigned nose, or tail wheel steering assembly.
12. Rivet brake lining to a backing plate. (with #3 and #4).

NOTE: The writing assignments are due when the associated project is presented. The projects may not be completed in the order listed above but as assigned by the instructor.