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A curriculum for a laboratory course in flight operations

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San Bernardino

A CURRICULUM FOR A LABORATORY COURSE IN FLIGHT OPERATIONS

A Project Submitted to

The Faculty of the School of Education

In Partial Fulfillment of the Requirements of the Degree

of

Master of Arts

in

Education: Vocational Option

by

Peggy J. Raidy, BVE, MA

San Bernardino, California

June 1988

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Statement of the Problem:

The purpose of this project was to develop a competency based curriculum for a laboratory course in flight operations for use at the community college or university level. The need for development of curricular materials for such a course was shown through the lack of availability of current materials and evaluation of student needs. The assignments and activities needed involve hands-on, in-flight experiences as well as ground handling of light aircraft, use of flight simulators, and experiences designed to develop private pilot skills. An emphasis on student involvement and "learning by doing" is of paramount importance to the successful use of such course materials. Implementation would require cooperative efforts between the sponsoring college or university and a fixed base operator (flight school) convenient to the general college population. Arrangements for facilities use, and scheduling of aircraft and certified flight instructors, would need to be made well in advance by the sponsoring college.

Procedure:

First, current literature was reviewed in the areas of federally required flight training and availability of current training methods. Next, informal surveys were conducted to determine student training needs. Surveys were administered to Flight Operations students and Aeronautics Department

faculty members at San Bernardino Valley College. Then, fixed based operators and their flight students were surveyed to determine flight training costs and differences between the two student groups. The review of the literature and survey results established the need for development of the proposed curriculum. Once the need was established, the curricular materials were developed and the project was completed.

Description of the Competency Based Curriculum Materials Developed:

The curricular materials for a laboratory course in Flight Operations were developed and packaged for use in the post secondary setting. First, a brief course outline is presented which describes the course topics, instructional methods, resources, and required or recommended course texts. Next, a comprehensive syllabus (and course guide) are provided. The syllabus explains and describes all course requirements, resources, required materials, course activities and assignments. Class session plans are provided along with supplemental materials which explain the objectives of each class session and the criteria for each assignment. Since this course is designed to be offered on the semester system, there are 18 scheduled class sessions. Use of these materials on the quarter system would require some modification to accommodate the difference in term length. Following the syllabus, an instructor's guide is provided which contains materials and information to be used by the course instructor. An introductory section explains how to use the instructor's guide and provides information about the course design, recommended methods for evaluating student performance, keeping records, and the roll of the instructor. The remainder of the guide is broken down into class session sections which contain all the supplemental materials necessary for the course. Master copies are provided for each handout, transparencies, quizzes, and the final exam.

Some supplemental materials were designed for use specifically at San Bernardino Valley College. Therefore, anyone wishing to use this

curriculum at another institution may find it necessary to tailor those materials to the institution and area of intended use.

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Section I - INTRODUCTION
Statement of the Problem

The Objective

The objective of this project was to develop a curriculum for a laboratory course in Flight Operations ("Flight lab"). The proposed course would offer hands-on flight training for students concurrently enrolled in a Private Pilot Ground School course at San Bernardino Valley College (SBVC). The laboratory experiences would utilize both flight simulators and single engine light aircraft.

Context of the Problem

Aviation safety has come to the attention of the nation with media coverage of disasters such as the Cerritos, California mid-air collision between an Aero Mexico DC-9 and a small single engine general aviation airplane. According to Aircraft Owners and Pilots Association (AOPA), emergency changes in Los Angeles airspace have been implemented by the Federal Aviation Administration (FAA), as a direct result of this collision, in an effort to avert recurrence of such a disaster.

The Los Angeles basin contains the world's most congested and complex airspace and presents the greatest challenge to student pilots training in and around southern California. Flight training to obtain pilot certification takes place at a dozen public use airports throughout the San Bernardino / Riverside / Ontario area. Four local community colleges offer aviation course work: SBVC, Mount San Antonio College (Mt. SAC), Riverside City College (RCC), and Chaffee College. Only two of these colleges offer full degree programs in Flight Operations: SBVC and Mt. SAC. Currently there are no laboratory courses given at any of the local colleges which offer in-flight training, using aircraft as well as flight simulators. Therefore, students

enrolled in degree programs which require completion of the private pilot certificate prior to graduation must obtain all of their flight training through fixed based operators (FBOs) at their own cost.

Students obtaining flight training locally may expect to spend from $2,200 to $2,500 to complete their private pilot certificate. While this cost is spread out over the course of their flight training (the average student pilot completes his/her training within one year), it can be a barrier to students who do not have the financial resources. According to enrollment and graduation records at SBVC, many students begin the Flight Operations degree program who never graduate. Informal follow-up interviews of former students show the primary reason for dropping out to be financial considerations. Students become discouraged with classroom activities which are not complemented by hands-on, in-flight training.

The proposed "Flight lab" course would involve students directly in actual in-flight operations of light single engine airplanes. A similar course was offered at SBVC through Spring 1984. The previous course was deleted from the bank of course offerings in April 1985 due to financial considerations. The SBCCD experienced a period of austerity from 1984 through 1987 which forced the curtailment of many excellent programs and the reduction of faculty and staff positions. This reduction in available revenue was due, in part, to declining enrollment figures during the given period.

Course rosters for the 1986-87 school year showed that enrollment figures for the Flight Operations program were up 50% over the previous year and Fall 1987 enrollments were up 100% in the initial pre-requisite course for the program. District-wide increases in enrollment of approximately 30% have been noted in the Fall 87 SBVC President's Report. This across-the-board increase in enrollment figures has given a needed boost to SBCCD finances and will make additional course offerings again possible.

The proposed "Flight lab" course would have a cost to the SBVC Aeronautics Department budget of approximately $2,000 per semester to fund two hours of flight instruction per student enrolled in the course (with a maximum enrollment of 20 students). The funding to cover salary for an

instructor for the course would be a cost to the SBCCD of approximately $1140. Income from enrollment (ADA) would cover all costs associated with this course addition and would be a sound investment. Increased student motivation by participation in the proposed course would lead to greater enrollment retention rates in the Flight Operations program and general studies courses required for the related Associate of Science Degree program, resulting in higher graduation rates and increased transfers to four year degree programs.

Problem Statement

No up-to-date curriculum has been available for a post secondary laboratory course in Flight Operations. The previously existing curriculum had not been up-dated in ten years and was inadequate in view of technological advances and changes to Federal Aviation Regulations and local airspace restrictions. The course has not been offered at SBVC for the past three years and no other college or university in the area offers the course.

Purpose of the Project

The purpose of the project was to develop an updated curriculum for a laboratory course in Flight Operations. The new curriculum has been greatly expanded to include resources, training aids and student activities not covered in the outdated curriculum. This course would be offered as a co-requisite to the existing Private Pilot Ground School course currently offered at SBVC.

Definitions

For the purpose of this project, the following terms will be defined as follows:

Federal Aviation Administration	(FAA) A Department of Transportation Agency which regulates domestic air transportation.
Federal Aviation Regulations	(FAR) Aviation law enacted and enforced by the FAA.
Fixed Based Operator	(FBO) An aviation business which may provide any of the following; flight instruction, aircraft rental, aircraft maintenance, services and supplies to pilots, fuel facilities for aircraft, rental of tie-down or hangar space for aircraft.
Flight Operations	Aircraft operations performed by pilots, both on the ground and in the air.
Flight Operations Degree	A two year, associate degree offered at a community college.
Flight Simulator	A ground based training devise used to familiarize pilots with correct use of flight instruments and controls.
Private Pilot Certificate	FAA certification permitting the holder to exercise the privileges of a private pilot, listed part 61 of the FAR.

Private Pilot Ground School	An FAA approved course of study which culminates in the FAA written examination for private pilot applicants.
San Bernardino Community College District	(SBCCD)The governing body of the two community colleges in San Bernardino, ie. San Bernardino Valley College and Crafton Hills College.

Assumptions

For the purpose of this project, it is assumed that:

1. Questionnaire research reliably produces valid information on the preferences of the respondents.
2. Practical application instruction (lab work) for students increases retention of material covered in lecture.
3. An FBO amenable to participation in the proposed course will be available at the budgeted cost.
4. Equipment, supplies and support services available for courses offered at SBVC will remain available for the proposed course.

Delimitations

The parameters of the project are as follows:

1. The laboratory exercises proposed for this course are limited in app lication to new student pilots. Application to advanced student pilots may be remedial at best.
2. The proposed course is designed for application in community college settings. However, application at the university level would be equally appropriate.

Limitations

The project is limited by:

1. The lack of literature documenting use of flight simulators and in-flight instruction in a laboratory course at the post secondary level.
2. Current costs of flight training at FBOs convenient to SBVC.
3. FAA regulations and requirements for student pilots and private pilot applicants.

Significance of the Project

It is clear that the future safety of the nation's airspace depends on the proper training of tomorrow's pilots. Professional pilots receive their initial flight training through military or civilian avenues, such as FBOs and community colleges. The methods currently used in local community colleges are not providing hands on training to student pilots. Many students do not complete the program due to the financial burden of flight training. The proposed laboratory course in Flight Operations would help alleviate the initial cost to student pilots by providing logged flight time for each participant. It is also projected that the proposed course would increase enrollment retention rates and assure the proper initial training of tomorrow's professional pilots.

Summary of Section I

This introductory segment of the project, A Curriculum for a laboratory Course in Flight Operations, has identified the problem addressed by this project, and has briefly argued the importance of providing hands on flight training to students enrolled in Private Pilot Ground School Courses. In addition, this section has outlined the approximate costs of providing such training at SBCCD expense, and identified the avenues by which the proposed training may be provided.

Organization of the Remainder of the Project

The remainder of the project includes: a comprehensive review of the literature of flight training procedures and a section outlining the methodology used in conducting the research for the project and in compiling the proposed course curriculum. The curriculum section will provide a course outline, comprehensive syllabus and course guide, and instructor's guide for the proposed course.

Section II - REVIEW OF THE LITERATURE

Introduction

The review of the literature of flight operations training will proceed in the following manner. First, a review of current FAA requirements for aeronautical knowledge for private pilot applicants is presented. Next, a review of current FAA requirements for flight proficiency and aeronautical experience for private pilot applicants is provided. Then, the significance of various current and proposed training methods is addressed. At the conclusion of this chapter, a summary is provided.

FAA Requirements for Aeronautical Knowledge for Private Pilot Applicants

The Federal Aviation Regulations (FAR) require all applicants for the private pilot certificate to present evidence that he or she has received ground instruction in compliance with FAR part 61.105; Aeronautical Knowledge. This evidence is to be presented in the form of a passing score (70%) on the FAA Private Pilot Written Examination. (FAR, 1987).

Such ground instruction includes the following topics for private pilot airplane applicants; the FAR applicable to private pilot privileges, limitations and flight operations, accident reporting and use of the Airman's Information Manual (AIM). In addition, ground instruction in Visual Flight Rules (VFR) navigation, pilotage, dead reckoning, and radio navigation must be included. Lastly, the private pilot applicant must have received instruction in the safe and efficient operation of airplanes, including high density airport operations, collision avoidance, and radio communications. (FAR , 1987). This type of ground instruction is offered through Private Pilot Ground School Courses available at community colleges and fixed base operators (FBOs).

FAA Requirements for Flight Proficiency and Aeronautical Experience for Private Pilot Applicants

The FAR require all applicants for the private pilot airplane certificate to present evidence that he or she has received flight instruction in compliance with FAR part 61.107: flight proficiency, and FAR part 61.109; airplane rating: aeronautical experience. This evidence is to be presented in the form of flight time logged by the student and his or her flight instructor. (FAR, 1987).

Flight proficiency instruction consists of the following: (1) Preflight operations including weight and balance, line inspection, and airplane servicing; (2) Airport and traffic pattern operations including controlled fields, radio communications and collision avoidance procedures; (3) Flight maneuvering by ground reference; (4) Flight at critically slow airspeeds, stall recognition and recovery; (5) Normal and crosswind takeoffs and landings; (6) Control and maneuvering the airplane solely by reference to the instruments, including use of radio aids and radar directives; (7) Cross-country flying, using dead reckoning, pilotage, and radio aids; (8) Maximum performance takeoffs and landings; (9) Night flying; (10) Emergency procedures including simulated equipment and aircraft malfunctions. (FAR, 1987). Aeronautical experience consists of the following: (1) Twenty hours of flight instruction, including three hours of cross country flight, three hours of night flight, and three hours of preparation for the private pilot flight test; (2) Twenty hours of solo flight time, including ten hours in airplanes, ten hours of cross country flights, each flight with a landing more than 50 nautical miles from the departure point, three solo takeoffs and landings to a full stop at a controlled airport. (FAR, 1987). This type of flight training is available, separately, at FBOs located on airports convenient to students enrolled in the previously mentioned private pilot ground school courses.

The Significance of Current and Proposed Training Methods for Private Pilot Applicants

The ground instruction referred to earlier is currently received through either a private pilot ground school course, or through individual instruction received from a certified flight or ground instructor. The first method is lacking in that it does not combine classroom instruction with any flight experience, or hands-on training. This is the type of course currently offered at the four community colleges serving the San Bernardino, Riverside, Pomona, and Walnut areas. (College Catalog Survey, 1987). The ground instruction offered at these colleges is in compliance with FAA-approved ground school courses for private pilots. FAA-approved courses must cover all subject matter categories published by the FAA for the private pilot written exam. (Schlenker, 1985).

The second method is offered in combination with flight training, available at a variety of fixed base operators (FBOs), at an average cost to the student of $50.00 per hour. (Cost Survey, 1987). Short of joining the military, government financial assistance for flight training is not available to civilian aviation students. A handful of aviation organizations offer flight training scholarships, but for the majority of general aviation students the entire cost of flight training must be borne by the individual.

A third type of flight and ground instruction, not included in either of the methods mentioned above could be beneficial to the student pilot and reduce overall costs of flight training. This method is the use of flight simulators, or instrument trainers, in ground instruction offered at the community college level. Flight simulators are widely used in advanced training of commercial airline and military pilots. Use of flight simulators allows pilots to learn to fly additional types of aircraft without leaving the ground. Air safety has significantly improved since the FAA-approved the use of flight simulators, and the replacement of a large portion of flight training received in aircraft. (Sorensen, 1983). Community colleges that currently offer instrument pilot training using flight simulators could increase the use of existing equipment

by including flight simulator instruction for student pilots. This could greatly enhance student competence of instrument interpretation prior to flight instruction in actual aircraft. Increased competency could boost student confidence and reduce overall flight instruction time to attain the aeronautical knowledge required by the FAR.

A related flight instruction laboratory method could also be implemented as a part of the existing curriculum at community colleges. Technical/vocational training at the community college level currently consists of two applications; lecture and laboratory courses. The majority of technical courses offered at the sample colleges include both types of courses, with the laboratory course being a co-requisite to the lecture course. Private Pilot Ground School does not require a laboratory co-requisite at any of the sample colleges. (College Catalog Survey, 1987). A laboratory course in Flight Operations was offered until 1984 at SBVC., but included only two short orientation flights and no other ground instruction as required by the FAR. The methods and techniques used in this course are no longer in accordance with current FAR and need updating, adapting and expanding to meet the needs of today's student pilots. (Course Outline, AERO 123, 1977).

The need for a laboratory course in Flight Operations which would be in accordance with the current FAR and meet the needs of today's students has been illustrated by informal surveys of community college aeronautics students and faculty. SBVC beginning Flight Operations students surveyed listed the primary reason for their lack of involvement in flight training to be inadequate financial resources. This student response supports the need for the proposed Flight Laboratory course for beginning students who would otherwise not receive in-flight training during the initial phase of their ground instruction. The flight instruction received in the proposed course would count toward required aeronautical experience for private pilot applicants and decrease the overall cost of flight instruction to the student.

Summary of Section II

The review of the literature began with a citation of FAA requirements for aeronautical knowledge of private pilot applicants followed by the FAA requirements for flight proficiency and aeronautical experience for private pilot applicants. Current and proposed methods of ground and flight instruction were then reviewed along with their apparent shortcomings and benefits forming the concluding element of the chapter.

Section III - METHODOLOGY

Introduction

This section will detail how the proposed project was carried out. First, the project design will be outlined and the populations which were sampled will be described. Next a description of the project setting and the calendar of events will be provided. Then, the sampling scheme and methods used to collect data will be described. Finally, this section will conclude with a summary.

Project Design

The design of this project is as follows. Several tasks had to be accomplished to establish the need for the development of curriculum for a post secondary laboratory course in Flight Operations. First, a telephone survey of FBOs at all (five) local airports was conducted to determine flight training costs in the research area. Second, survey instruments to measure community college aviation student needs were developed and implemented. All Flight Operations students and faculty at SBVC were surveyed in writing. Next, a survey of all (four) local colleges offering aviation curriculum was conducted to determine the availability of an existing Flight Laboratory course.

Once the need was established, the course outline was developed and resource materials were located and obtained. Following this, a comprehensive syllabus and course guide, and instructor's guide were written. The course syllabus, and all other course materials produced by or used as resources in the proposed course, were written at approximately ninth grade level. The level at which the curricular materials were written was chosen to meet the average reading level of students who have enrolled in the prerequisite course (AERO 121, Aviation Fundamentals) in the Flight Operations program at SBVC. Students enrolled in AERO 121 are tested at

the beginning of each semester to determine reading and math skill levels.

The costs of producing this project were minimal. Telephone surveys were conducted using the SBVC Aeronautics Department phone lines, which are available at no additional cost for all related department business. Printing costs for the written surveys were covered through the SBVC Aeronautics Department budget for on campus, quick print materials. All data and printed materials were processed using a Macintosh 512K personal computer.

Populations and Sampling

The surveys used to establish the need for this study were limited to the area within a fifty mile radius of SBVC. Only four colleges offer aviation curriculums within this area, with two offering full two year degree programs. These are the only colleges which draw from the same potential student population as SBVC. By offering the proposed course, SBVC would attract a greater percentage of the total available student population.

The FBOs surveyed for the purpose of this project are located within a twenty five mile radius of SBVC. The justification for this limitation is as follows. The proposed course was developed for implementation at SBVC. It would be impractical to establish a good working relationship with an FBO located further from the campus than those surveyed.

Student needs surveys were administered to all students enrolled in Flight Operations courses at SBVC. All SBVC Flight Operations instructors were surveyed to determine need for the proposed course. In addition, 15 flight students from local FBOs (who are not enrolled in any SBVC Flight Operations courses) were surveyed to determine if there were any significant differences in response to items on the student needs instrument. The primary difference in responses between FBO students and SBVC students was with reference to the item regarding level of flight experience. All of the FBO students had already begun flight training whereas only the students

enrolled in advanced ground training courses at SBVC were involved in flight training.

Project Setting

The setting for the majority of the project was the home of the project developer. All project materials were brought to this location for extrapolation of data. In addition, all word processing was conducted at the same location on the previously mentioned Macintosh 512K.

The office of the Department of Aeronautics at SBVC. was also used as a focal point for implementation of various survey instruments, and collection of data. The project developer has regular access to all facilities, equipment and supplies which were necessary to complete this project at the above locations.

Calendar of Events

Oct. 13, 1987	* Wrote introduction section. * Wrote survey instruments * Validated surveys * Conducted phone survey of FBOs.
Oct. 20, 1987	* Wrote limitations section. * Conducted student needs survey of SBVC faculty and students.
Oct. 27, 1987	* Wrote significance of the project section. * Conducted survey of college catalogs.
Nov. 03, 1987	* Wrote preliminary literature review section. * Submitted application for master's project.
Nov. 10, 1987	* Wrote methodology section.
Dec. 1987	* Wrote course outline. * Located and obtained resource materials. * Wrote syllabus and course guide.

Jan. 1988	* Wrote instructor's guide.
Jan. 1988	* Wrote summary, project completed.
Jan. 19, 1988	* Turned in final draft to readers.
Jan. 26, 1988	* Make any necessary revisions/corrections.
Feb. 12,1988	* Turn in revised project to readers.
Feb. 17,1988	* Turn in approved final draft to M.A. project committee.
Feb. 1988	* Take approved final draft to printers.
Feb. 1988	* Turn in bound project.
Jun. 12, 1988	* Graduation.

Sampling Scheme

Sampling student needs for this project took place in the following manner. Prior to administering the survey instruments, samples of each instrument were distributed to 10 graduate students at California State University, San Bernardino to determine readability, clarity, non-redundancy and validity. The students enrolled in the Flight Operations program at SBVC were informally surveyed, along with their instructors. First, class rosters for all Flight Operations courses were obtained from Aeronautics Department instructors at SBVC. Then, each instructor was given a packet of student needs survey forms to distribute to his or her class, and an instructor survey form to complete and return with the completed student surveys.

The telephone survey of local FBOs was carried out by obtaining phone numbers from the California Pilot's Guide, and conducting brief telephone interviews with representatives of each FBO. In addition, written confirmation of the oral interview and flight training costs were requested of each participating FBO. All participating FBOs were provided with a copy of an FBO flight training cost survey form (appendix D) on which to record requested information.

The survey of local college aviation programs was conducted by the project developer. All aviation course offerings listed in current college catalogs available in the SBVC counseling center were compared and recorded for the sample colleges.

Data Collection

Data was collected by the project developer through the previously mentioned surveys and telephone interviews. All survey responses were recorded on the forms developed for each survey (Appendix A-D). All data produced by these surveys was evaluated by the project developer.

Summary of Section III

The methodology section has proceeded in the following manner: First, the project design was outlined and a description of the populations sampled was provided. Next a description of the project setting and a calendar of events was provided. A sampling scheme was provided and methods for collection of data were described. Finally, a summary of this section was provided.

APPENDIX A

Cover Page for Student & Faculty Surveys

AERONAUTICS STUDENT & FACULTY SURVEY

READ BEFORE COMPLETING:

The purpose of this survey is to determine the instructional needs of community college Aeronautics students. This survey is voluntary and completely confidential. Your participation in this survey, although of considerable importance, is entirely optional. There are no consequences to non-participation, but you should realize that your participation will contribute to the growth and improvement of the Aeronautics program at SBVC.

APPENDIX B

Student Survey Instrument

AERONAUTICS STUDENT SURVEY

DIRECTIONS: DO NOT SIGN YOUR NAME.
Please fill this survey out thoughtfully and thoroughly.

Course:_____ Your age :_____

Reason for enrolling in this course (check all applicable boxes):

[ ] Aeronautics degree requirement
[ ] General interest
[ ] Preparation for an FAA examination
[ ] Other: _____

List any flight training experience you currently have:_____
_____

If you have not yet begun flight training, please state reasons:_____
_____

Please indicate your aviation goals (check all applicable boxes):

[ ] Career pilot
  [ ] Military
  [ ] General aviation
  [ ] Major airline
[ ] Aviation management
[ ] Air traffic control
[ ] Personal pleasure flying
[ ] Business (transportation related to your job) flying
[ ] Other:_____

APPENDIX C

Instructor Survey Instrument

AERONAUTICS INSTRUCTOR SURVEY

DIRECTIONS: DO NOT SIGN YOUR NAME.

Please fill this survey out thoughtfully and thoroughly.

Course no.:_____ Number of years in present position:_____

Fall 86 enrollment figures during second week of class:_____

Number completing course:_____

Spring 87 enrollment figures during second week of class:_____

Number completing course:_____

Fall 87 enrollment figures during second week of class:_____

Number completing course (anticipated):_____

Indicate your observations concerning enrollment attrition rates:_____

_____

_____

A study is being conducted to determine the need for, and feasibility of a laboratory course in Flight Operations. The proposed course would provide approximately two hours of in flight training per student, flight simulator use and aircraft ground operations. This course would be offered as a co-requisite to the Private Pilot Ground School courses currently offered. Please indicate your observations, suggestions, and concerns regarding the need for such a course (uses the back of this page if necessary):

_____

_____

_____

_____

_____

_____

_____

APPENDIX D

FBO Flight Training Cost Survey

FBO FLIGHT TRAINING COST SURVEY

Name of FBO:_____

Contact person / title:_____

Airport location:_____

Address:_____

Phone:_____

AIRCRAFT RATES:			INSTRUCTION RATES:	
Type:	$ per hr:	Block rate:	$ per hr:	Block rate:

[ ] Private Pilot Ground School Course:$_____

[ ] Private Pilot Package Deal:$_____

Includes: Hours of dual:_____ Hours of solo:_____

[ ] Ground school: No. of weeks:_____ Days / times:_____

[ ] Pilot supplies:_____

_____

[ ] Payment plan available:_____

_____

[ ] Discounts: School group rate:_____

[ ] Insurance coverage:_____

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A CURRICULUM FOR

AERO 132

A

LABORATORY COURSE

IN

FLIGHT OPERATIONS

Developed by:

Peggy J. Raidy, BVE, MA
(1988)

San Bernardino Valley College, Aeronautics Department

SAN BERNARDINO VALLEY COLLEGE

DIVISION: Technical DEPARTMENT: Aeronautics

COURSE OUTLINE

1. COURSE NAME AND NUMBER: Aero 132
   DESCRIPTIVE TITLE: Flight Laboratory
2. HOURS PER WEEK: LECTURE: 1 LAB: 2 TERM: FALL __ SPRING X
3. UNITS: 2 PREREQUISITE / COREQUISITE: Aero 122 or Aero 142

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4. CATALOG DESCRIPTION:

   Practical application of private pilot skills including the following: Flight planning, preflight actions, aircraft inspection and servicing, engine start up and shut down procedure, taxi and ground operations, takeoff, basic flight maneuvers, traffic pattern operations, navigation, normal approach and landing and radio communications. Flight simulators and training airplanes will be used in this course. The course is held off campus, at an airport facility.

5. RECOMMENDED TEXTBOOKS:

   See attached list.

6. COURSE OBJECTIVES:

   The student will be able to:

   1. Acquire a weather briefing from an FAA Flight Service Station, and differentiate between safe and unsafe weather conditions.
   2. Complete a standard flight plan form correctly, file, open and close a flight plan with an FAA Flight Service Station.
   3. Plan a three leg, 150 nautical mile cross country flight correctly.
   4. Correctly conduct a preflight aircraft inspection and properly service the aircraft.
   5. Demonstrate safe and correct engine start up, run up, taxi and shut down procedure.

6. Demonstrate normal takeoffs, basic flight maneuvers, and normal landings.
7. Demonstrate safe and correct traffic pattern procedures and basic radio communications.
8. Demonstrate correct pilotage, dead reckoning and radio navigation procedure.

7. PLEASE ATTACH SUGGESTED TOPICS TO BE COVERED:
   See attached.
8. DESCRIPTION OR LIST OF TYPICAL ASSIGNMENTS:
   1. Work in groups of three to plan a three leg, 150 nautical mile cross country flight, include headings, altitudes, estimated time enroute, fuel estimate, all frequencies and airport information necessary for the safe completion of the flight.
   2. Individually conduct preflight inspections of "booby-trapped" aircraft, using appropriate checklists, list all discrepancies on the answer sheet provided.
   3. Work in pairs, take turns roll playing Air Traffic Control (ATC) or Unicom and Pilot. ATC or Unicom will respond to Pilot as indicated on the handout. The Pilot will make requests and reports to ATC or Unicom using correct radio communications phraseology.
   4. Work in pairs, operate flight simulators, correctly read back instrument indications when asked, correctly respond to directions of partner for changes in altitude or heading and rate of climb, turn or descent.
   5. Groups of three complete introductory flight lesson with certified flight instructor, taking turns in the pilot's seat while remaining two students observe.
9. DESCRIPTION OF TESTING PROCEDURES:
   1. Completion / short answer type quizzes over each lesson.
   2. Demonstration of competency for each manipulative skill.
   3. Demonstration of competency for each communication skill.
   4. Completion of introductory and cross country flights.
   5. Short answer / completion type final exam.

10. METHODS OF INSTRUCTION:

1. Lecture.
2. Group discussion.
3. Ground demonstration and directed discovery.
4. In-flight demonstration and directed discovery.

11. USE OF VISUAL OR AUDIO AIDS:

1. Mock ups, models, charts, navigation tools.
2. 16 mm films, video tapes, audio tapes.
3. Flight simulators.
4. Four seat, training airplanes.

12. FURTHER COMMENTS:

This course meets once a week for three hours per session (one hour of lecture and two hours of lab).

PREPARED BY: Peggy J. Raidy DATE SUBMITTED: 01/01/88

AERO 132 Flight Lab

Required / recommended texts:

1. US Department of Transportation, Federal Aviation Administration (1988). Federal Aviation Regulations - Airman's Information Manual. Seattle: ASA Publications.

2. Glaeser, D., Gum, S. & Walters, B. (1985). An Invitation to Fly. Bellmont, CA: Wadsworth Publishing.

3. Fouquet, R. J. Ed. (1988). Pilot's Guide to California Airports. Los Altos, CA: Optima Publications.

4. Office of Flight Operations, Washington D.C. (1988). Private Pilot Practical Test Standards for Airplane (Single-Engine Land). Seattle: ASA Publications.

5. Holmes, H. J. (1978). Flight Maneuvers Manual. Palatine, Il: Haldon Books Inc.

6. Aircraft owner's manuals, appropriate to the type of aircraft used in this course.

January 1, 1988

AERO 132

FLIGHT LABORATORY

Course Outline

I. INTRODUCTION

1. Brief Introductions, Explain Course Objectives, Complete Precourse Surveys.
2. Airport and Facilities Tour.

II. FLIGHT PLANNING (Prep)

1. Airport Information
2. Charts
3. Frequencies
4. Owner's Manuals
5. Flight Plan Forms

III. PREFLIGHT ACTION (Aircraft)

1. The Pilot
2. Weather Briefings
3. Filing Flight Plans
4. Weight and Balance Computations
5 Aircraft Performance
6. Aircraft Preflight Inspection
7. Aircraft Servicing

IV. RADIO COMMUNICATIONS (Simulation)

1. Avionics Equipment Use
2. Microphone Technique
3. Phraseology
4. Emergency Procedures

V. AIRCRAFT GROUND OPERATIONS (Aircraft)

1. Engine Start Up
2. Taxi and Engine Run Up and Radio Checks
3. Engine Shut Down
4. Emergency Procedures

VI. AIRCRAFT FLIGHT OPERATIONS (Simulation)

1. Flight Simulators
2. Instrument Interpretation
3. Radio Communications

VII. AIRCRAFT FLIGHT OPERATIONS (In Flight)

1. Normal Takeoffs
2. Climb, Level Flight, Turns, Descent.
3. Landmarks
4. Radio Communications
5. Traffic Pattern Operations
6. Normal Landings
7. Emergency Procedures

VIII. CROSS COUNTRY NAVIGATION (Prep)

1. Cross Country Flight Planning

IX. CROSS COUNTRY NAVIGATION (In Flight)

1. Preflight, Basic Flight Maneuvers Review
2. Radio Communications
3. Pilotage
4. Dead Reckoning
5. Radio Navigation
6. In-flight Computations

AERO 132

Flight Lab

SYLLABUS
&
COURSE GUIDE

Developed by :

Peggy J. Raidy, BVE, MA
(1988)

Student: _____

Term: _____

Location: _____

Instructor: _____

Class Hours: _____

Office Hours: _____

Telephone: _____

Mail: _____

_____

_____

_____

San Bernardino Valley College, Aeronautics Department

CONTENTS

AERO 132 Class Schedule

	DATE	TOPIC / ACTIVITY
1	_____	**INTRODUCTION** *Introductions *Course Objectives *Precourse Surveys *Airport and Facilities Tour
2	_____	**FLIGHT PLANNING (Prep)** *Airport Info *Charts *Frequencies *Owner's Manuals *Flight Plan Forms *Plan & Schedule Intro Flights
3	_____	**PREFLIGHT ACTION (Prep)** *The Pilot *Weather Briefings *Filing Flight Plans *Weight & Balance Computations *Aircraft Performance
4	_____	**PREFLIGHT ACTION (Aircraft)** *Aircraft Preflight Inspections *Aircraft servicing
5	_____	**RADIO COMMUNICATIONS (Simulation)** *Avionics Equipment Use *Microphone Technique *Phraseology *Emergency Radio Procedures
6	_____	**AIRCRAFT GROUND OPERATIONS (Aircraft)** *Engine Start Up *Taxi & Engine Run Up *Radio Checks *Engine Shut Down *Emergency Procedures
7	_____	**AIRCRAFT GROUND OPERATIONS (Aircraft)** *Engine Start Up *Taxi & Engine Run Up *Radio Checks *Engine Shut Down *Emergency Procedures
8	_____	**AIRCRAFT FLIGHT OPERATIONS (Simulation)** *Flight Simulators *Instrument Interpretation *Radio Communications
9	_____	**AIRCRAFT FLIGHT OPERATIONS (Simulation)** *Flight Simulators *Instrument Interpretation *Radio Communications

DATE	TOPIC / ACTIVITY
10	**AIRCRAFT FLIGHT OPERATIONS (In Flight)** *Take off *Climb *Level Flight *Turns *Descent *Radio Com *Landmarks *Pattern *Landings *Emerg
11	**FIELD TRIP** *Riverside Flight Standards District Office *Riverside Flight Service Station
12	**CROSS COUNTRY NAVIGATION (Prep)** *Plan Cross Country Flights *Schedule Cross Country Flights
13	**CROSS COUNTRY NAVIGATION (In Flight)** *Preflight *Basic Maneuvers *Radio Com *Pilotage *Dead Reckoning *Radio Navigation
14	**CROSS COUNTRY NAVIGATION (In Flight)** *Preflight *Basic Maneuvers *Radio Com *Pilotage *Dead Reckoning *Radio Navigation
15	**CROSS COUNTRY NAVIGATION (In Flight)** *Preflight *Basic Maneuvers *Radio Com *Pilotage *Dead Reckoning *Radio Navigation
16	**FIELD TRIP** *Ontario TRACON (Terminal Radar Approach Control) *Ontario Air Traffic Control Tower
17	**FINAL REVIEW** *Review *Sample Problems and Questions
18	**FINAL EXAM** *Final Exam: two and a half hours

AERO 132 **How to Use This Syllabus**

IMPORTANT - READ THIS PAGE

This syllabus presents the **FORMAT** and **MATERIALS** for **AERO 132** in an organized, easy to follow manner. The course meets once a week, three hours per meeting. The **CLASS SCHEDULE** is provided at the beginning of this syllabus. Each class meeting is listed, with a brief description of the topics and activities planned for that session. A one page **CLASS SESSION PLAN** is provided for each meeting. The Class Session Plan pages list all materials provided in that section of the syllabus, materials which the instructor will provide, materials which students must provide, and the **OBJECTIVES** for that class session. Students are expected to **REVIEW** the Class Session Plan for each meeting, prior to coming to class. This will insure that each student knows what they are expected to bring to class, what they need to be prepared to do, and what they should be able to do as a result of instruction. Students who do review these pages and prepare for class accordingly will be successful in this course, those who do not will fail!

The pages in this syllabus are numbered with a four digit numbering system. The first two digits refer to the Class Session Number (class one is indicated by 01, class three is indicated by 03, etc.). the second two digits refer to the page number within that section of the syllabus (page one in class session one would be indicated by 01.01, page two in class session fifteen would be indicated by 15.02, etc.).

Each student is expected to **READ THE ENTIRE SYLLABUS** and save all the materials handed out or produced in this course. **DO NOT THROW ANYTHING AWAY** until you have received your final grade for the course. You will want to keep many of these materials for future reference. Therefore, you are expected to keep a **COURSE NOTEBOOK** by **ORGANIZING** all course materials in a large three ring binder. Use index tabs to make retrieval of information easy.

AERO 132 Class Session 1 Plan

1 _____ INTRODUCTION

*Introductions *Course Objectives *Precourse Surveys
*Airport and Facilities Tour

Materials provided in this section of the syllabus:

Materials which the instructor will provide:

* Course Syllabi and Precourse Surveys for each student.
* Samples of required books and equipment for this course.

Materials which the student must provide:

* A clear mind and enthusiastic attitude.
* A large three ring binder, note paper and pencils.

OBJECTIVES:

At the conclusion of this lesson, each student should be able to:

* Locate info relating to each of the course assignments and activities.
* Locate and acquire all required course equipment and books.
* Address the instructor and fellow students by name.
* Locate and identify facilities and aircraft to be used during this course.

AERO 132 Course Requirements

GRADED ASSIGNMENTS

There are twenty one graded assignments required for successful completion of this course. Specific criteria for each assignment are provided in the appropriate sections of this syllabus. The point values for each are listed below. Course Grading Information and a Student Grade Record are provided on the following pages.

* Four Prep Activities	4 points each
* Two Field Trips	4 points each
* Two Simulations	4 points each
* Two Ground Operations	4 points each
* Two Flight Operations	4 points each
* Eight Quizes	4 points each
* Final exam	20 points

STUDENT PERFORMANCE OBJECTIVES

The assignments and activities listed above are designed to help students acquire the skills and demonstrate the competencies listed below:

* Acquire a weather briefing from an FAA Flight Service Station, and differentiate between safe and unsafe weather conditions.
* Complete a standard flight plan form correctly, file, open and close a flight plan with an FAA Flight Service Station.
* Plan a three leg, 150 nautical mile cross country flight correctly.
* Conduct a preflight inspection and service an aircraft correctly.
* Demonstrate correct engine start up, run up, taxi & shut down procedure.
* Demonstrate normal takeoffs & landings and basic flight maneuvers .
* Demonstrate correct traffic pattern procedures and basic radio com.
* Demonstrate correct pilotage, dead reckoning and radio navigation procedure.

AERO 132 Resources and Materials

In order to successfully complete this course, students will need to acquire or access certain materials and resources. Descriptions of each of the required materials and available resources are as follows:

REQUIRED TEXT:

1. Aircraft Owner's Manual (for the type of aircraft used in this course).

RECOMMENDED TEXTS: (available for use in the TLC)

1. FAR-AIM, by US Department of Transportation, FAA (1988).
2. Pilot's Guide to California Airports, by Fouquet (1988).
3. Private Pilot Practical Test Standards for Airplane (Single Engine Land), by Office of Flight Operations, Washington D.C. (1988).
4. Flight Maneuvers Manual, by Holmes (1978).
5. An Invitation to Fly , by Glaeser, Gum and Walters (1985).

REQUIRED EQUIPMENT:

1. E6-B flight computer and Plotter.
2 Current Los Angeles sectional aeronautical chart.
3. Pocket calculator (recommended).
4. Pilot log book.

ON CAMPUS - TECHNICAL LEARNING CENTER: Offers a wide variety of study aids for all SBVC technical students between the hours of 8 am and 4 pm, Monday through Friday. Aviation audio and video tapes, workbooks, film strips, computer programs, aviation books and magazines, are available (see listing on page 01.08). Tutoring in aviation and general subjects is available free of charge. Take advantage of these services ! Contact Sally Smith, TLC coordinator.

AERO 132 Grading Information

There are 100 points possible in this course. Final grades for this course will be determined by the total number of points accumulated by each student. The following is a breakdown of the total points required for each possible letter grade:

A 100 - 90
B 89 - 80
C 79 - 70
D 69 - 60
F 59 or less

How points are earned: Students can earn the maximum points possible by **reading** all of this syllabus and **complying** with all criteria for each assignment and activity.

How points are lost: Points are lost by not meeting all criteria for each assignment. In addition, each **unexcused absence** and each **late assignment** will result in the loss of one point. An absence is considered excused when the student **informs** the instructor that they must miss class, **ahead of time**, and arranges to turn in any assignments or make up any activities which will be missed. In the event of an **unplanned absence**, the student **must call** the instructor to explain the absence and arrange for make up work **prior to the next class meeting.**

Make up points: Missed assignments or activities due to **excused absences** or points lost due to failure to meet specific criteria may be made up by submitting additional work. All make up work must be **approved by the instructor.**

AERO 132 Student Grade Record

	Possible	Received
PREP ACTIVITIES		
PA1 (Flight Planning)	4	/_____
PA2 (Weather Briefings)	4	/_____
PA3 (Weight & Balance - Aircraft Performance)	4	/_____
PA4 (Cross Country Flight Planning)	4	/_____
FIELD TRIPS		
FT1 (Riverside FSDO & FSS)	4	/_____
FT2 (Ontario TRACON & ATC Tower)	4	/_____
SIMULATIONS		
S1 (Radio Communications)	4	/_____
S2 (Flight Simulators)	4	/_____
GROUND OPERATIONS		
GO1 (Aircraft Preflight & Service)	4	/_____
GO2 (Engine Operations)	4	/_____
FLIGHT OPERATIONS		
FO1 (Introductory Flight)	4	/_____
FO2 (Cross Country Flight)	4	/_____
QUIZZES		
Quiz 1	4	/_____
Quiz 2	4	/_____
Quiz 3	4	/_____
Quiz 4	4	/_____
Quiz 5	4	/_____
Quiz 6	4	/_____
Quiz 7	4	/_____
Quiz 8	4	/_____
FINAL EXAM	20	/_____
Absences (-) Late Work (-) Make up (+)	***	/_____
TOTAL POINTS	100	/_____

AERO 132 Tests and Make Up Work

QUIZZES

Completion of eight take home quizzes are required for this course. Each quiz is worth four (4) points. Quizzes are based on topics which have been discussed, and activities which have been completed, in class. Quizzes are due the class session after they are distributed. All quizzes which require written answers must be **typewritten**, on standard white 8 1/2" x 11" paper. Handwritten work will not be accepted.

FINAL EXAM

Each student will complete a comprehensive final examination at the conclusion of this course. The final is worth 20 points and will be given on the scheduled final exam date for this course. Students will have 2 1/2 hours to complete the exam. All topics on the final exam will be based on class discussion and completed activities . The topics included on the final exam will be reviewed during the final class meeting (session seventeen).

MAKE UP WORK

Any points lost on assignments, in-class activities, or quizzes, may be made up under the following conditions:

*The original work was submitted on time.

*The work was missed due to an excused absence.

*The make up work must clearly demonstrate that the student has acquired competence in the area in which the points were lost.

*All make up work must be clearly marked as "MAKE UP".

*All re-done work must be attached to the original work and clearly marked as "RE-DO".

*The make up work must be approved by the instructor prior to completion.

AERO 132 Class Standards

The Private Pilot Certificate is a **PRIVILEGE** which must be **EARNED**, it is not a right. In order to be successful in this course, students must clearly demonstrate professionalism in every aspect of their work. The following standards are expected to be met by each student in this course.

ATTENDANCE: Plan to attend all class sessions. If you must miss a class, inform the instructor as soon as possible and arrange for any necessary make up work. Unexcused absences will result in the loss of a point. Any student who has more than three unexcused absences will be dropped from class.

PUNCTUALITY: Arrive on time. Late arrivals interrupt class activities. Any student who habitually arrives late (more than six times) will be dropped from class. Conflict of work schedule with class meeting times should be discussed with the course instructor at the beginning of class.

DEPENDABILITY: Arrive prepared for class, with assignments ready to submit. Students who do not complete scheduled class activities will lose points. Make up work must be completed on student time, flight or simulator time must be made up at student expense.

THE BOTTOM LINE: Any student who is willing to devote the time and effort necessary, will be successful in this course. If you are willing to work, this course will prepare you well for Private Pilot training. Students successfully completing this course can expect to complete their Private Pilot training in minimum time (40 hours). The flight time logged in this course will count toward the required 40 hours, and the skills you acquire will give you a head start on your private pilot training. Students not willing to invest the necessary effort will not pass this class !

AERO 132 Safety Contract

Aviation is inherently unforgiving of mistakes. It is imperative that each student in this course follow strict safety standards during all aviation activities, both in this course, and on their own time. The following is a Contract for Safety which each student will read, sign, and submit to the instructor, agreeing to follow all safety standards herein.

I _____ have read, and agree to follow, each of the following aviation safety standards. I realize that violation of any of these standards may result in my dismissal from class.

Each student WILL:

* Abide by all Federal Aviation Regulations.
* Abide by all class standards.
* Comply with instructions received from the course instructor, Certified Flight Instructors, or other airport or FAA personnel.
* Conduct themselves with professionalism and courtesy at all times on airport or college property.

Each student WILL NOT:

* Engage in any horseplay, pranks or other unsafe acts on airport or college property.
* Attempt to engage in flight activities while under the influence of any type of medication, or alcohol,or while suffering from any physically limiting factors (illness, fatigue, stress, etc.).

_____ _____

Signature Date

AERO 132 Audio Visual Library

The following audio visual materials are available for student use in the Technical Learning Center, located in the Technical Building, on campus. Students may use these materials at any time during normal TLC hours (8:00 am till 4:00 pm), but may not check them out or remove them from the center. Take advantage of these supplemental resources.

SLIDES W/ AUDIO CASSETTES:

1. "On Landings" Parts I,II & III:

AUDIO TAPES W/ WORK SHEET OR BOOK:

1. "Say Again Please": Radio phraseology.
2. Private Pilot Ground School: (Also in Spanish/English)

VIDEO TAPES W/ BOOK:

1. "The Complete Private Pilot" Parts 1, 2, 3 &4

VIDEO TAPES:

1. "An Invitation to Fly" series: vol. 1-8 + demo tape.
   - Vol. 1: Introduction.
     The Principles of Flight parts A & B.
     Flight Instruments part A.
   - Vol. 2: Flight Instruments part B.
     Powerplant.
     Weight and Balance parts A & B.
   - Vol. 3: Airplane Performance parts A & B.
     Airspace and Local Flying parts A & B.
   - Vol. 4: Meteorology parts A & B.
     Weather Information parts A & B.

Vol. 5: Federal Aviation Regulations parts A, B & C.
Flight Information Publications.
Vol. 6: Navigation parts A & B.
Radio Navigation parts A & B.
Vol. 7: Computer / Calculator parts A & B.
Composite Navigation parts A & B.
Vol. 8: Medical Aspects.
Emergencies.

2. Rutan Series:
"Building the Rutan Composites"
"Rutan Audio-Visual Encyclopedia"

3. Astro Video Series:
"History of Space Flight I"
"History of Flight II"
"Lunar Landings"
"Space Propulsion"
"Now You Build Your Spacecraft"
"Aeronautics I"
"Benefits from Space III"
"Benefits from Space IV"
"Benefits from Space VI"

4. AMP Series:
"Oleo Strut Servicing"
"Microwave Landing Systems"
"Aircraft Painting Tips"
"Oxy-Acetylene Welding Part I"
"Oxy-Acetylene Welding Part II"

"Vernier Calipers"
"The Micrometer"
"Continental Cylinder Replacement"
"Aircraft Rivet Replacement"
"Aircraft Rivet Identification"
"Basic Electricity - DC"
"Aircraft Propeller Care"
"Aircraft Propellers & Controls"
"Aircraft Wheels & Brakes"
"Assembly & Use of the Time-Rite Indicator"

5. Misc. Aviation Videos:
   a) "The Everglades and After"
      "Collision Avoidance"
   b) "Wind Shear"
      "Microwave Landing Systems"
      "Tough Sledding"
      "Bob Hoover (Aero Commander)
      "Bob Hoover (P51 Mustang)
   c) "Density Altitude"
      "Mountain Flying"
      "Disorientation"
      "DC-3"

AERO 132 Class Session 2 Plan

2 _____ FLIGHT PLANNING (Prep)

*Airport Info *Charts *Frequencies *Owner's Manuals
*Flight Plan Forms *Plan & Schedule Intro Flights

Materials provided in this section of the syllabus:

* PA1 Flight Planning (information page)..... 02.01
* Introductory flight schedule (form)..... 02.02

Materials which the instructor will provide:

* Pilot's Guide to California Airports (reference copy).
* Current local airport information page (copies for each student).
* Flight plan forms (copies for each student).
* Quiz 1 Flight Planning (for each student).
* E6-B flight computer mock up & plotter.

Materials which the student must provide:

* Current Los Angeles sectional aeronautical chart.
* E6-B flight computer, plotter and pocket calculator.
* Aircraft owners manual.
* Note paper & pencils.

OBJECTIVES:

At the conclusion of this lesson, each student should be able to:

* Identify the aircraft, CFI, date & time scheduled for their intro flight.
* Identify airport information, airspace restrictions, and communication frequencies necessary for a local introductory flight.
* Locate and identify appropriate checklists and aircraft operations info.
* Correctly complete a standard flight plan form.

AERO 132 PA1 Flight Planning

OBJECTIVES: Given appropriate information, each student will be able to: Identify appropriate airport information, airspace restrictions, and communications frequencies necessary for a short local flight. Locate and identify checklists and aircraft operations information appropriate to the aircraft which will be used in their flight. Correctly complete a standard flight plan form.

RATIONALE: Each flight, regardless of length or duration, requires planning to assure safety. The responsibility for the safety of each flight rests with the Pilot in Command. Each student pilot must demonstrate proficiency at flight planning prior to recommendation for the Private Pilot practical exam. This assignment will give each student the opportunity to plan the short local flight that they will complete.

CRITERIA: It is expected that each student will:

1. Provide all necessary materials listed on the Class Session Plan 2 page.
2. Identify airspace restrictions & com frequencies for the planned flight.
3. Locate and identify all necessary checklists and operations info.
4. Answer (orally) questions relative to the above mentioned tasks.
5. Correctly complete a standard flight plan form.

RESOURCES: All materials which you are to bring to class may be used in this Prep Activity. In addition, the handouts and Pilot's Guide to California Airports may be used. Feel free to ask questions and work together.

EVALUATION: There are four points possible for this activity. Each student complying with all criteria listed above will receive full credit for this activity. Students who do not come prepared, or do not participate will lose one point for each criteria that they fail to meet.

AERO 132 Introductory Flight Schedule

Grp.	Student	CFI	Aircraft	Date	Time
1					
1					
1					
2					
2					
2					
3					
3					
3					
4					
4					
4					
5					
5					
5					
6					
6					
6					
7					
7					
7					

AERO 132 Class Session 3 Plan

3 _____ **PREFLIGHT ACTION (Prep)**

*The Pilot *Weather Briefings *Filing Flight Plans

*Weight & Balance Computations *Aircraft Performance

Materials provided in this section of the syllabus:

* PA2 Weather Briefings (information page)..... 03.01
* PA3 Weight and Balance - A/C Performance (information page) 03.02

Materials which the instructor will provide:

* Blank flight plan forms (2 copies for each student).
* Sample weather briefings handout (for each student).
* Sample weight and balance problems handout (for each student).
* Sample aircraft performance problems handout (for each student).
* Quiz 2 Weather Briefing - Weight & Balance (for each student).

Materials which the student must provide:

* Completed flight plan forms (from PA1).
* Aircraft owner's manuals.
* Pocket calculator.
* Note paper & pencils.

OBJECTIVES:

At the conclusion of this lesson, each student should be able to:

* Make appropriate decisions to fly or not, based on sample weather briefings.
* File a flight plan correctly.
* Complete weight and balance computations correctly.
* Determine aircraft performance under various conditions.

AERO 132 PA2 Weather Briefings

OBJECTIVES: Given appropriate information, sample weather briefings, and a completed flight plan form, each student will be able to: Obtain a weather briefing from a Flight Service Station. Make appropriate decisions to fly or not, based on sample briefings. File a flight plan correctly.

RATIONALE: Prior to each flight FARs require that each pilot check the weather conditions affecting their flight. The best way to do this is by obtaining a Weather Briefing from a Flight Service Station. Following the briefing, if a decision has been made to fly, the pilot should file a flight plan for that flight. This activity is intended to give each student the opportunity to obtain a weather briefing, make the appropriate decision to fly or not, based on that briefing, and file a flight plan for the proposed flight.

CRITERIA: It is expected that each student will:

1. Provide all necessary materials listed on Class Session Plan 3 page.
2. Review the sample weather briefings handout, complete the weather section of the flight plan form correctly, and make appropriate decisions to fly or not based on the sample briefings.
3. Correctly simulate filing a flight plan (orally).

RESOURCES: All materials which you are to bring to class may be used to complete this activity. Handouts provided by the instructor may be used. You will work individually, feel free to ask questions of the instructor.

EVALUATION: There are four points possible for this activity. Each student complying with all criteria listed above will receive full credit for this activity. Those who do not come prepared, or do not participate will lose one point for each criteria that they fail to meet.

AERO 132 PA2 Weight/Balance | A/C Performance

OBJECTIVES: Given appropriate information, an appropriate owner's manual, sample weight and balance problems and sample aircraft performance problems, each student will be able to: Complete weight and balance computations correctly. Determine aircraft performance under various conditions.

RATIONALE: Prior to each flight, the pilot in command is required by FARs to determine aircraft weight and balance and performance to be within safe limitations. This activity is intended to give each student the opportunity to complete sample weight and balance computations, and determine aircraft performance under various conditions.

CRITERIA: It is expected that each student will:

1. Provide all necessary materials listed on the Class Session Plan 3 page.
2. Review weight and balance information in the aircraft owner's manual and compute sample weight and balance problems correctly.
3. Review aircraft performance information in the aircraft owner's manual and determine aircraft performance under various conditions on a sample problems handout.

RESOURCES: All materials which you are to bring to class may be used to complete this activity. In addition, handouts provided by the instructor may be used. You will work individually on this activity, feel free to ask questions of the instructor.

EVALUATION: There are four points possible for this activity. Each student complying with all criteria listed above will receive full credit for this activity. Those who do not come prepared, or do not participate will lose one point for each criteria that they fail to meet.

AERO 132 Class Session 4 Plan

4 _____ PREFLIGHT ACTION (Aircraft)

*Aircraft Preflight Inspections

*Aircraft servicing

Materials provided in this section of the syllabus:

* GO1 Aircraft Preflight and Service (information page) 04.01

Materials which the instructor will provide:

* Training aircraft and keys (booby trapped with problems).
* Step stools (for each plane).
* Fuel strainers (for each plane).
* Oil rags (for each student).
* Oil funnels and oil cans (for each plane).
* Tire pressure gauge and compressed air tank (for each plane).
* Soft cloths and window polish (for each plane).
* Quiz 3 Preflight Inspection and Service (for each student).

Materials which the student must provide:

* Aircraft owner's manuals for the type of aircraft to be used in class.
* Note paper and pencils.

OBJECTIVES:

At the conclusion of this lesson, each student should be able to:

* Conduct a preflight inspection of an airplane correctly.
* Identify all problems which may affect airworthiness.
* Simulate servicing an airplane correctly, including fueling procedure, adding oil, checking tire air pressure and strut inflation, and cleaning windows.

AERO 132 GO1 Aircraft Preflight and Service

OBJECTIVES: Given appropriate information, an appropriate owner's manual, a training airplane and aircraft servicing equipment,each student will be able to: Conduct a preflight inspection of a training airplane correctly. Identify all problems which may affect airworthiness. Simulate servicing an airplane correctly

RATIONALE: Prior to each flight, the pilot in command is required by FARs to determine that the aircraft they intend to fly is in airworthy condition. This activity is intended to give each student the opportunity to conduct preflight inspections of "booby trapped" training airplanes and identify all problems affecting airworthiness. In addition, each student will have the opportunity to simulate servicing an airplane.

CRITERIA: It is expected that each student will:

1. Provide all necessary materials listed on the Class Session Plan 4 page.
2 Conduct a preflight inspection, identifying all problems affecting airworthiness.
3. Simulate servicing an aircraft prior to flight (including; fuel, oil, tire air pressure, strut inflation and cleaning windows.

RESOURCES: All materials which you are to bring to class may be used to complete this activity. In addition, materials and equipment provided by the instructor may be used. You will work individually on this activity, feel free to ask questions of the instructor.

EVALUATION: There are four points possible for this activity. Each student complying with all criteria listed above will receive full credit for this activity. Those who do not come prepared, or do not participate will lose one point for each criteria that they fail to meet.

AERO 132 Class Session 5 Plan

5 _____ RADIO COMMUNICATIONS (Simulation)

*Avionics Equipment Use *Microphone Technique
*Phraseology *Emergency Radio Procedures

Materials provided in this section of the syllabus:

* S1 Radio Communications (information page)..... 05.01

Materials which the instructor will provide:

* Avionics panel mock ups.
* Microphones and headsets
* Portable radio operated 720 channel transiever..
* Phraseology handouts (for each student).
* Quiz 4 Radio Communications (for each student).

Materials which the student must provide:

* Note paper and pencils.

OBJECTIVES:

At the conclusion of this lesson, each student should be able to:

* Operate avionics equipment correctly.
* Demonstrate correct microphone technique.
* Demonstrate correct aviation radio communications phraseology.
* Demonstrate correct emergency radio procedures.

AERO 132 S1 Radio Communications

OBJECTIVES: Given appropriate information and radio communications equipment, each student will be able to: Operate avionics equipment correctly. Demonstrate correct microphone technique, radio communications phraseology and emergency radio procedures.

RATIONALE: Southern California is the most congested and complicated airspace in the world. In order to operate an aircraft safely, it is essential that every pilot master correct radio communications techniques. This activity is intended to give each student the opportunity to operate avionics equipment, use aircraft microphones, make a variety of typical radio communications and practice emergency radio procedures.

CRITERIA: It is expected that each student will:

1. Provide all necessary materials listed on the Class Session Plan 5 page.
2 Operate avionics equipment in a simulated setting.
3. Work in pairs and demonstrate correct microphone technique, use correct phraseology and make a variety of typical radio communications including emergency procedures.

RESOURCES: All materials which you are to bring to class may be used to complete this activity. In addition, the handout, materials and equipment provided by the instructor may be used. You will work in pairs on this activity, feel free to ask questions of the instructor.

EVALUATION: There are four points possible for this activity. Each student complying with all criteria listed above will receive full credit for this activity. Those who do not come prepared, or do not participate will lose one point for each criteria that they fail to meet.

AERO 132 Class Session 6 Plan

6 _____ AIRCRAFT GROUND OPERATIONS (Aircraft)

*Engine Start Up *Taxi & Engine Run Up *Radio Checks
*Engine Shut Down *Emergency Procedures

Materials provided in this section of the syllabus:

* GO2 Engine Operations (information page)..... 06.01

Materials which the instructor will provide:

* Training aircraft and service equipment.
* Aircraft checklists (for each aircraft).
* Fire extinguisher (for each aircraft).

Materials which the student must provide:

* Aircraft owner's manual.

OBJECTIVES:

At the conclusion of this lesson, each student should be able to:

* Demonstrate safe and correct engine start up procedure.
* Demonstrate safe and correct taxi procedure.
* Demonstrate safe and correct engine run up procedure.
* Communicate with Unicom and demonstrate correct radio checks.
* Demonstrate safe and correct engine shut down procedure.
* Identify appropriate emergency procedures for ground operations.

AERO 132 GO2 Engine Operations

OBJECTIVES: Given appropriate information, equipment and materials, each student will be able to: Demonstrate safe and correct engine start up, taxi, engine run up, radio checks,and engine shut down procedures. Each student will identify correct emergency procedure for ground fires.

RATIONALE: In order to assure the safety of each flight and to reduce unnecessary wear on the aircraft, each pilot must become proficient in correct engine operations and emergency procedures. This activity is intended to give each student the opportunity to operate aircraft engines, taxi an airplane, make radio communications and simulate emergency situations.

CRITERIA: It is expected that each student will:

1. Provide all necessary materials listed on the Class Session Plan 6 page.
2. Work in groups of three, with an instructor, operate the aircraft and observe.
3. Use checklists correctly and demonstrate safe and correct engine start up, taxi, run up, radio checks, and engine shut down procedure.
4. Identify (orally) the correct sequence for an induction fire on start up.

RESOURCES: All materials which you are to bring to class may be used to complete this activity. All materials and equipment provided by the instructor may be used. You will work in groups of three on this activity with an instructor.

EVALUATION: There are four points possible for this activity. Each student complying with all criteria listed above will receive full credit for this activity. Those who do not come prepared, or do not participate will lose one point for each criteria that they fail to meet.

AERO 132 Class Session 7 Plan

7 _____ AIRCRAFT GROUND OPERATIONS (Aircraft)

*Engine Start Up *Taxi & Engine Run Up *Radio Checks
*Engine Shut Down *Emergency Procedures

Materials provided in this section of the syllabus:

* GO2 Engine Operations (information page)..... 07.01

Materials which the instructor will provide:

* Training aircraft and service equipment.
* Aircraft checklists (for each aircraft).
* Fire extinguisher (for each aircraft).
* Quiz 5 Ground Operations (for each student).

Materials which the student must provide:

* Aircraft owner's manual.

OBJECTIVES:

At the conclusion of this lesson, each student should be able to:

* Demonstrate safe and correct engine start up procedure.
* Demonstrate safe and correct taxi procedure.
* Demonstrate safe and correct engine run up procedure.
* Communicate with Unicom and demonstrate correct radio checks.
* Demonstrate safe and correct engine shut down procedure.
* Identify appropriate emergency procedures for ground operations.

AERO 132 **GO2 Engine Operations**

ACTIVITIES THIS SESSION ARE A CONTINUATION

OF

CLASS SESSION 6

Information about this activity may be found on page 06.01 of the syllabus.

AERO 132 Class Session 8 Plan

8 _____ AIRCRAFT FLIGHT OPERATIONS (Simulation)

*Flight Simulators *Instrument Interpretation
*Radio Communications

Materials provided in this section of the syllabus:

* S2 Flight Simulators (information page)..... 08.01

Materials which the instructor will provide:

* Flight simulators.
* Flight maneuvers handout (for each student).
* Radio communications handout (for each student).

Materials which the student must provide:

* Note paper and pencils.

OBJECTIVES:

At the conclusion of this lesson, each student should be able to:

* Operate flight simulators correctly.
* Respond correctly to simulated Air Traffic Control instructions to climb, descent, turn or hold a heading and altitude.
* Respond correctly to simulated inquiries from Air Traffic Control regarding heading and altitude.

AERO 132 S2 Flight Simulators

OBJECTIVES: Given appropriate information, equipment and materials, each student will be able to: Operate flight simulators correctly. Respond correctly to simulated ATC instructions to climb, descend, turn or hold a heading and altitude. Respond correctly to simulated inquiries from ATC regarding heading and altitude.

RATIONALE: Prior to recommendation for the Private Pilot practical exam, each student pilot must demonstrate competency at instrument interpretation,basic flight maneuvers, and radio communications with ATC. This activity is intended to give each student the opportunity to simulate these procedures using flight simulators and roll playing.

CRITERIA: It is expected that each student will:

1. Provide all necessary materials listed on the Class Session Plan 8 page.
2 Work in pairs roll playing ATC and pilot.
3. Operate flight simulators and demonstrate basic flight maneuvers in response to simulated ATC instructions.
4. Respond correctly to simulated ATC inquiries for heading & altitude.

RESOURCES: All materials which you are to bring to class may be used to complete this activity. All materials and equipment provided by the instructor may be used. You will work in pairs on this activity feel free to ask questions of the instructor.

EVALUATION: There are four points possible for this activity. Each student complying with all criteria listed above will receive full credit for this activity. Those who do not come prepared, or do not participate will lose one point for each criteria that they fail to meet.

AERO 132 Class Session 9 Plan

9 _____ AIRCRAFT FLIGHT OPERATIONS (Simulation)

*Flight Simulators *Instrument Interpretation
*Radio Communications

Materials provided in this section of the syllabus:

* S2 Flight Simulators (information page)..... 09.01

Materials which the instructor will provide:

* Flight simulators.
* Flight maneuvers handout (for each student).
* Radio communications handout (for each student).

Materials which the student must provide:

* Note paper and pencils.

OBJECTIVES:

At the conclusion of this lesson, each student should be able to:

* Operate flight simulators correctly.
* Respond correctly to simulated Air Traffic Control instructions to climb, descent, turn or hold a heading and altitude.
* Respond correctly to simulated inquiries from Air Traffic Control regarding heading and altitude.

AERO 132 **S2 Flight Simulators**

ACTIVITIES THIS SESSION ARE A CONTINUATION

OF

CLASS SESSION 8

Information about this activity may be found on page 08.01 of the syllabus.

AERO 132 Class Session 10 Plan

10_____ AIRCRAFT FLIGHT OPERATIONS (In Flight)

*Take off *Climb *Level Flight *Turns *Descent
*Radio Com *Landmarks *Pattern *Landings *Emerg

Materials provided in this section of the syllabus:

* FO1 Introductory Flight (information page)..... 10.01

Materials which the instructor will provide:

* Training aircraft.
* Aircraft service equipment.
* Aircraft checklists.

Materials which the student must provide:

* A clear mind and healthy body.
* Aircraft owner's manual.

OBJECTIVES:

At the conclusion of this lesson, each student should be able to:

* Demonstrate basic flight maneuvers, including takeoff, climb, level flight, turns, descent, traffic pattern operations and landing.
* Demonstrate correct microphone technique and radio communications phraseology in flight.
* Identify major local landmarks in flight.
* Describe in flight emergency procedures, including in flight fires, lost communications, and engine failures.

AERO 132 FO1 Introductory Flight

OBJECTIVES: Given appropriate information, equipment and materials, each student will be able to: Perform basic flight maneuvers, including takeoff, climb, level flight, turns, descent, traffic pattern operations and landing. Demonstrate correct radio communications. Identify major landmarks. Describe emergency procedures, including engine fires, lost com, and engine failure.

RATIONALE: Prior to recommendation for the Private Pilot practical exam, each student pilot must demonstrate competency at basic flight maneuvers, radio com, pilotage, and emergency procedures. This activity is intended to give each student the opportunity to practice basic maneuvers, communicate in flight, navigate locally, and respond to emergency situations.

CRITERIA: It is expected that each student will:

1. Provide all materials listed on the Class Session Plan 10 page.
2 Work in groups of three, with an instructor, flying and observing.
3. Perform basic flight maneuvers and correct radio communications.
5 Identify landmarks and navigate locally by pilotage.
6 Describe procedures for engine fires, lost com, and engine failures.

RESOURCES: All materials which you are to bring to class may be used to complete this activity. All materials and equipment provided by the instructor may be used. You will work in groups of three on this activity with an instructor.

EVALUATION: There are four points possible for this activity. Each student complying with all criteria listed above will receive full credit for this activity. Those who do not come prepared, or do not participate will lose one point for each criteria that they fail to meet.

AERO 132 Class Session 11 Plan

11_____ FIELD TRIP

*Riverside Flight Standards District Office

*Riverside Flight Service Station

Materials provided in this section of the syllabus:

* FT1 Riverside FSDO and FSS (information page)..... 11.01

Materials which the instructor will provide:

* Maps with instructions to Riverside airport (for each student).
* Riverside airport diagram (for each student).
* Quiz 6 FSDO & FSS (for each student).

Materials which the student must provide:

* Transportation to Riverside airport.
* Note paper and pencils.

OBJECTIVES:

At the conclusion of this lesson, each student should be able to:

* Locate and identify the Riverside Flight Standards District Office and Flight Service Station.
* Identify contact persons and phone numbers for the FSDO and FSS.
* Identify services available to pilots from the FSDO and FSS offices.

AERO 132 FT1 Riverside FSDO & FSS

OBJECTIVES: Given appropriate information, each student will be able to: Locate and identify the Riverside Flight Standards District Office and Flight Service Station. Identify contact persons and phone numbers for the FSDO and FSS. Identify services available to pilots from the FSDO and FSS.

RATIONALE: In the interest of promoting better FAA / pilot relations and education, every pilot needs to be able to locate,and identify the services provided by, the local FAA facilities. This activity is intended to give each student the opportunity to visit a Flight Standards District Office,ask questions and find out more about exactly what the FAA does to promote safety, and visit a Flight Service Station, ask questions and find out more about the weather and related services available to pilots.

CRITERIA: It is expected that each student will:

1. Provide all materials listed on the Class Session Plan 11 page.
2 Attend the scheduled visit to Riverside FSS and FSDO.
3. Listen and ask questions regarding services to pilots, note phone numbers and contact persons at each facility.

RESOURCES: All materials which you are to bring to class may be used to complete this activity. All materials and equipment provided by the instructor may be used. You will complete this activity as a group,with the instructor.

EVALUATION: There are four points possible for this activity. Each student complying with all criteria listed above will receive full credit for this activity. Those who do not come prepared, or do not participate will lose one point for each criteria that they fail to meet.

AERO 132 Class Session 12 Plan

12_____ CROSS COUNTRY NAVIGATION (Prep)

*Plan Cross Country Flights

*Schedule Cross Country Flights

Materials provided in this section of the syllabus:

* PA4 Cross Country Flight Planning (information page)..... 12.01
* Cross Country Flight Schedule (form)..... 12.02

Materials which the instructor will provide:

* Cross country route handouts & flight plan forms (for each student).
* Pilot's Guide to California Airports (reference copy).
* Quiz 7 Cross Country Navigation (for each student).
* E6-B flight computer mock up & plotter.

Materials which the student must provide:

* Current Los Angeles sectional aeronautical chart.
* E6-B flight computer and plotter.
* Pocket calculator, note paper and pencils.
* Aircraft owner's manual.

OBJECTIVES:

At the conclusion of this lesson, each student should be able to:

* Identify the aircraft, CFI, date and time of their cross country flight.
* Plan a 3 leg, 150 nautical mile cross country flight, indicate headings, altitudes, ETEs, fuel consumption, alternate airports, and communi cations and navigation frequencies appropriate to the planned flight.
* Complete a flight plan form correctly for the planned flight.
* Compute weight and balance and performance for the proposed flight.

AERO 132 PA4 Cross Country Flight Planning

OBJECTIVES: Given appropriate information, equipment and materials, each student will be able to: Plan a three leg, 150 nautical mile cross country flight correctly. Indicate correct headings, altitudes, ETE, fuel consumption, alternate airports, and com and nav frequencies. Complete a flight plan form correctly for the proposed flight. Correctly compute weight and balance and performance for the flight.

RATIONALE: Prior to recommendation for the Private Pilot practical exam, each student pilot must demonstrate proficiency at cross country planning. This activity is intended to give each student the opportunity to plan a cross country flight, which they will complete in this course.

CRITERIA: It is expected that each student will:

1. Provide all materials listed on the Class Session Plan 12 page.
2. Work in groups of three to plot a three leg cross country course of 150 nautical miles, indicate headings, altitudes, ETEs, fuel consumption, alternate airports, and frequencies appropriate to the flight.
4. Complete a flight plan form for the proposed flight correctly.
5. Compute weight and balance and performance for the proposed flight.

RESOURCES: All materials which you are to bring to class may be used to complete this activity. All materials and equipment provided by the instructor may be used. You will complete this activity in groups of three, feel free to ask questions of the instructor.

EVALUATION: There are four points possible for this activity. Each student complying with all criteria listed above will receive full credit for this activity. Those who do not come prepared, or do not participate will lose one point for each criteria that they fail to meet.

AERO 132 Cross Country Flight Schedule

Grp.	Student	CFI	Aircraft	Date	Time
1					
1					
1					
2					
2					
2					
3					
3					
3					
4					
4					
4					
5					
5					
5					
6					
6					
6					
7					
7					
7					

AERO 132 Class Session 13 Plan

13_____ CROSS COUNTRY NAVIGATION (In Flight)

*Preflight *Basic Maneuvers *Radio Com *Pilotage
*Dead Reckoning *Radio Navigation

Materials provided in this section of the syllabus:

* FO2 Cross Country Flight (information page)..... 13.01

Materials which the instructor will provide:

* Training aircraft
* Aircraft service equipment.
* Aircraft checklists.

Materials which the student must provide:

* A clear mind and healthy body.
* Aircraft owner's manual.
* Cross country flight plans, completed.

OBJECTIVES:

At the conclusion of this lesson, each student should be able to:

* File, open, follow and close a flight plan correctly.
* Demonstrate cross country navigation by pilotage, dead reckoning, and radio navigation.
* Communicate with ATC and Unicom using correct radio technique.

AERO 132 FO2 Cross Country Flight

OBJECTIVES: Given appropriate information, equipment and materials, each student will be able to: File, open, follow and close a plight plan correctly. Demonstrate cross country navigation by pilotage, dead reckoning, and radio nav. Communicate with ATC and Unicom using correct technique.

RATIONALE: Prior to recommendation for the Private Pilot practical exam, each student pilot must demonstrate proficiency at cross country navigation, using flight plans, and communications with ATC and Unicom. This activity is intended to give each student the opportunity to fly a typical cross country flight, navigate and communicate with various radio facilities.

CRITERIA: It is expected that each student will:

1. Provide all materials listed on the Class Session Plan 13 page.
2. Work in groups of three with an instructor, fly and observe a three leg cross country of 150 nautical miles, use pilotage, dead reckoning,and radio navigation.
3. File, open, follow and close a flight plan correctly.
4. Communicate with ATC and Unicom using correct radio technique.

RESOURCES: All materials which you are to bring to class may be used to complete this activity. All materials and equipment provided by the instructor may be used. You will complete this activity in groups of three with an instructor.

EVALUATION: There are four points possible for this activity. Each student complying with all criteria listed above will receive full credit for this activity. Those who do not come prepared, or do not participate will lose one point for each criteria that they fail to meet.

AERO 132 Class Session 14 Plan

14_____ CROSS COUNTRY NAVIGATION (In Flight)

*Preflight *Basic Maneuvers *Radio Com *Pilotage
*Dead Reckoning *Radio Navigation

Materials provided in this section of the syllabus:

* FO2 Cross Country Flight (information page)..... 14.01

Materials which the instructor will provide:

* Training aircraft
* Aircraft service equipment.
* Aircraft checklists.

Materials which the student must provide:

* A clear mind and healthy body.
* Aircraft owner's manual.
* Cross country flight plans, completed.

OBJECTIVES:

At the conclusion of this lesson, each student should be able to:

* File, open, follow and close a flight plan correctly.
* Demonstrate cross country navigation by pilotage, dead reckoning, and radio navigation.
* Communicate with ATC and Unicom using correct radio technique.

AERO 132 **FO2 Cross Country Flight**

ACTIVITIES THIS SESSION ARE A CONTINUATION

OF

CLASS SESSION 13

Information about this activity may be found on page 13.01 of the syllabus.

AERO 132 Class Session 15 Plan

15_____ CROSS COUNTRY NAVIGATION (In Flight)

*Preflight *Basic Maneuvers *Radio Com *Pilotage
*Dead Reckoning *Radio Navigation

Materials provided in this section of the syllabus:

* FO2 Cross Country Flight (information page)..... 15.01

Materials which the instructor will provide:

* Training aircraft
* Aircraft service equipment.
* Aircraft checklists.

Materials which the student must provide:

* A clear mind and healthy body.
* Aircraft owner's manual.
* Cross country flight plans, completed.

OBJECTIVES:

At the conclusion of this lesson, each student should be able to:

* File, open, follow and close a flight plan correctly.
* Demonstrate cross country navigation by pilotage, dead reckoning, and radio navigation.
* Communicate with ATC and Unicom using correct radio technique.

AERO 132 **FO2 Cross Country Flight**

ACTIVITIES THIS SESSION ARE A CONTINUATION

OF

CLASS SESSIONS 13 & 14

Information about this activity may be found on page 13.01 of the syllabus.

AERO 132 Class Session 16 Plan

16_____ **FIELD TRIP**

*Ontario TRACON (Terminal Radar Approach Control)

*Ontario Air Traffic Control Tower

Materials provided in this section of the syllabus:

* FT2 Ontario TRACON & ATC Tower (information page).....16.01

Materials which the instructor will provide:

* Maps with instructions to Ontario airport (for each student).
* Ontario airport diagram (for each student).
* Quiz 8 TRACON & ATC Tower (for each student).

Materials which the student must provide:

* Transportation to Ontario airport.
* Note paper and pencils.

OBJECTIVES:

At the conclusion of this lesson, each student should be able to:

* Locate and identify the Ontario TRACON and ATC Tower.
* Identify contact persons and phone numbers for ONT TRACON and Tower.
* Identify services available to, and procedures required of, pilots using the ATC system.

AERO 132 FT2 Ontario TRACON & ATC Tower

OBJECTIVES: Given appropriate information, each student will be able to: Locate and identify the Ontario TRACON and ATC Tower. Identify contact persons and phone numbers for these facilities. Identify services available to, and procedures required of, pilots using the ATC system.

RATIONALE: In the interest of promoting better ATC / pilot relations and education, every pilot needs to be able to locate,and identify the services provided by, typical ATC facilities. This activity is intended to give each student the opportunity to visit a Terminal Radar Approach Control (TRACON) and an Air Traffic Control Tower,ask questions and find out more about exactly what ATC does to promote safety, and what procedures are required of pilots using the system.

CRITERIA: It is expected that each student will:

1. Provide all materials listed on the Class Session Plan 16 page.
2 Attend the scheduled visit to Ontario TRACON and ATC Tower.
3. Listen and ask questions regarding services to pilots, note phone numbers and contact persons at each facility.

RESOURCES: All materials which you are to bring to class may be used to complete this activity. All materials and equipment provided by the instructor may be used. You will complete this activity as a group,with the instructor.

EVALUATION: There are four points possible for this activity. Each student complying with all criteria listed above will receive full credit for this activity. Those who do not come prepared, or do not participate will lose one point for each criteria that they fail to meet.

AERO 132 Class Session 17 Plan

17_____ FINAL REVIEW

*Review

*Sample Problems and Questions

Materials provided in this section of the syllabus:

* Final Review (information page)..... 17.01

Materials which the instructor will provide:

* Final Exam (instructor reference copy).
* Pilot's Guide to California Airports (reference copy).

Materials which the student must provide:

* Aircraft owner's manual.
* Current Los Angeles sectional aeronautical charts.
* E6-B flight computer and plotter.
* Pocket calculator, note paper and pencils.

OBJECTIVES:

At the conclusion of this lesson, each student should be able to:

* Prepare for, and successfully complete the final examination for this course.

AERO 132 Final Review

OBJECTIVES: Given appropriate information, each student will be able to: Prepare for, and successfully complete, the final examination for this course.

RATIONALE: This syllabus, and the activities described herein, are designed to help each student acquire the skills and information necessary to successfully meet each of the objectives listed for this course. This activity is intended to give each student the opportunity to practice answering questions relating to the course objectives in order to prepare for successful completion of the final exam.

CRITERIA: It is expected that each student will:

1. Provide all materials listed on the Class Session Plan 17 page.
2 Use all appropriate resources, equipment and materials to answer sample questions and problems in preparation for the Final Exam..

RESOURCES: All materials which you are to bring to class may be used to complete this activity. All materials and equipment provided by the instructor may be used. You will complete this activity individually, feel free to ask questions of the instructor.

EVALUATION: There are no points associated with this activity, however completion is mandatory. It will benefit each student to take full advantage of this opportunity to prepare for the final exam, and clarify any areas of uncertainty concerning the objectives they are required to meet for the final exam.

AERO 132 **Class Session 18 Plan**

18_____ FINAL EXAM

*Final Exam: two and a half hours

Materials provided in this section of the syllabus:

* None

Materials which the instructor will provide:

* Final exam (for each student)

Materials which the student must provide:

* Aircraft owner's manual.
* Current Los Angeles sectional aeronautical chart.
* E6-B flight computer and plotter.
* Pocket calculator, note paper and pencils.

OBJECTIVES:

At the conclusion of this lesson, each student should be able to:

* Successfully demonstrate each of the objectives listed for this course.

AERO 132 **Class Session 18 Plan**

18_____ FINAL EXAM

*Final Exam: two and a half hours

Materials provided in this section of the syllabus:

* None

Materials which the instructor will provide:

* Final exam (for each student)

Materials which the student must provide:

* Aircraft owner's manual.
* Current Los Angeles sectional aeronautical chart.
* E6-B flight computer and plotter.
* Pocket calculator, note paper and pencils.

OBJECTIVES:

At the conclusion of this lesson, each student should be able to:

* Successfully demonstrate each of the objectives listed for this course.

AERO 132
Flight Lab

INSTRUCTOR'S GUIDE
(CONFIDENTIAL)

This guide contains materials and information for the course instructor.

Developed by: Peggy J. Raidy, BVE,MA
(1988)

San Bernardino Valley College, Aeronautics Department

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AERO 132

INTRODUCTION

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AERO 132 Using this Guide

This guide presents INFORMATION and MATERIALS necessary for instructing AERO 132. In order to use this guide most effectively, the instructor will need to READ everything in this guide and USE the instructional materials provided herein.

A section of this guide is set aside for each class session. Master copies for all handouts, transparencies, and quizzes are included in the class session section for which they are intended to be used. A few class session sections have no material provided, however, a section page has been included. The instructor may wish to insert additional materials which they believe to be of value in these, or other, sections.

All materials in this quide are numbered with a five digit numbering system, similar to the numbering system used in the course syllabus. The first two digits represent the class session number (01 represents session number one). The second two digits represent the type of material and the individual material number within that section. Handouts are numbered H1, H2, H3, etc.; Transparency Masters are numbered T1, T2, etc.. The eight quizzes are numbered Q1, Q2, etc., regardless of the class session in which they are included. The fifth digit is incorporated when a handout has more than one page. The first page will be indicated by an "a" following the four digit page number, the second page will be indicated by a "b", etc.

The instructor will need to arrange for duplication of these materials in advance of the scheduled class meetings. In addition, some materials must be up dated each time the course is taught in order to remain current. Keeping this guide in a three ring loose leaf binder will facilitate ease of use and updating.

AERO 132 About this Course

AERO 132 is a two unit, eighteen week course that meets one day per week, for three hours per meeting. The first hour of each meeting is a lecture, discussion, demonstration period, during which the class session objectives are explained and activities are described. The second two hours of each meeting are laboratory work, set aside for student practice and directed discovery. In some cases, more or less time may be needed in lecture or lab portions of the course. The structure of this course allows for enough flexibility to accommodate any such needs. Ultimately, the instructor needs to insure that all students have the opportunity to complete each class activity during class time, and management of that time is of utmost importance.

This course has been designed around a COMPREHENSIVE COURSE SYLLABUS which describes each class session objective and activity in detail. The instructor of this course needs to READ the syllabus and prepare to explain and facilitate each of the activities and assignments. There are twenty one graded assignments in this course for which points may be earned. With a maximum of twenty one students enrolled, there should be ample time to accomplish each of the objectives spelled out in the syllabus. The following are brief descriptions of each type of assignment and activity.

PREP ACTIVITIES: There are four Prep Activities. These activities are designed to help the students prepare for other course activities. All of these activities will take place in the classroom, using a variety of handouts, and active instructor guidance. Students will work either individually or in groups. Work groups of three should be set up at the beginning of the term and remain the same throughout the course. Work groups may be arranged as necessary to accomodate student needs.

FIELD TRIPS: There are two Field trips. These activities are designed to provide the students with the opportunity to visit a variety of FAA

facilities and discover more about the services provided by each facility. The instructor needs to arrange each field trip with the appropriate facilities well in advance of the scheduled meeting date. It is suggested that this be accomplished prior to the beginning of the term. Students will be responsible for providing their own transportation for the field trips, however, it is suggested that the instructor meet with the group at a predetermined location and lead a car pool to the field trip site. An off-campus meeting form needs to be submitted to the division chair prior to each field trip, and each student must complete and sign a field trip waiver form prior to the trip.

SIMULATIONS: There are two Simulations. These activities are designed to give each student an opportunity to practice a variety of pilot procedures in a controlled, ground based setting. The instructor needs to arrange for the use of the flight simulator room well in advance of the scheduled class meeting date. Students will work in groups of three with instructor guidance.

GROUND OPERATIONS: There are two Ground Operations. These activities are designed to give each student the opportunity to observe and practice aircraft preflight, servicing, and ground engine operations procedures in a controlled environment. Students will work in groups of three with a Certified Flight Instructor and a four seat trainer airplane. The course instructor needs to arrange for the availability of an adequate number of CFIs and the use and preparation of trainer aircraft well prior to the scheduled class meeting date.

FLIGHT OPERATIONS: There are two Flight Operations. These activities are designed to give each student the opportunity to observe and practice in flight operations in a controlled environment. Students will work in groups of three with a Certified Flight Instructor and a four seat trainer airplane. The course instructor needs to arrange for the

availability of an adequate number of CFIs and the use and preparation of trainer aircraft well prior to the scheduled class meeting date.

QUIZZES: There are eight take home quizzes. These assignments are designed to measure student competence of the objectives specified for all of the ground based activities and topics in this course. There are four questions on each quiz. Quizzes will be distributed at the end of the class session for which they are scheduled. Students will complete and submit the quizzes at the following class session. The instructor needs to arrange for duplication of quizzes well in advance of their scheduled use. The instructor will, WITHOUT FAIL, evaluate and return the quizzes by the class session after they have been submitted.

FINAL EXAM: A comprehensive final exam is scheduled to conclude this course. Questions are based on topics and activities covered in class. The exam will take place on the scheduled Final Exam date for AERO 132. Students will have two and a half hours to complete the exam, they will work individually, using all materials required. The instructor will need to arrange for duplication of the final exam well in advance of the scheduled exam date. The instructor will evaluate the final exams and total course grades during the following week. Students who wish to review their finals and find out their total course grade should arrange to meet with the course instructor after grades have been completed. The instructor will need to announce this to the class and set up office hours to facilitate final reviews.

AERO 132 Evaluating Student Performance

There are one hundred points possible in this course. Any student who reads the course syllabus, and listens, with comprehension should be able to complete each course activity and assignment successfully. Students who complete each activity and assignment and meet all criteria specified will earn full credit and maximum points. The instructor needs to be sure to clarify the objectives and instructions for each activity prior to the beginning of class activities.

This is a competency based course, which means that the way in which students are evaluated is through satisfactory demonstration of the specified course objectives. During each activity, the instructor needs to note satisfactory completion of each criteria for each student. Any student not meeting specified criteria will need to re-do that portion of the assignment and demonstrate competency. Students who do not meet all criteria, and do not re-do the sub-standard work, will lose one point for each criteria not met. This method of grading will insure objectivity.

Total points accumulated for each student will determine course grades. It is entirely possible for all students enrolled in any given section of this course to earn 'A's. There is no 'curve' used to produce a 'normal' distribution. This method of grading will insure fairness and give each student equal opportunity to achieve the grade they desire.

It is the instructor's responsibility to insure that each student does indeed have the opportunity to complete every assignment and activity. The instructor needs to provide the opportunity for make up work to students who have not received full credit (despite sincere and timely efforts on their part). The criteria for make up work are described in detail in the course syllabus.

AERO 132 Instructor's Records

It is the responsibility of the course instructor to keep well organized and accurate records of student performance. A grade record form (pg 00.07) is provided to facilitate this duty. The instructor will need to duplicate the grade record page as necessary to accommodate the total number of students in the course.

Students should be advised to keep their own record of performance during the course by using the student grade record form provided in the syllabus. Students should also be advised to keep all returned (graded) work until they have received their course grades. This will serve as a check against the instructor's grade records. Students should be allowed to check their own record against the instructor's record to assure accuracy.

In addition to keeping accurate records during the course, the instructor also needs to keep records of student performance in a permanent file for five years or until the student has graduated from the program. It is recommended that the instructor keep a copy of the final exams for each student along with the permanent file. Disputes over final grades can be handled by having complete and accurate records at the instructor's fingertips.

STUDENT GRADE RECORD

AERO 132

STUDENT NAME

PA's				FT's		S's		GO's		FO's		QUIZZES								FINAL EXAM	X A	FINAL GRADE
1	2	3	4	1	2	1	2	1	2	1	2	1	2	3	4	5	6	7	8			

00.07

AERO 132 Suggestions for the Instructor

PREPARATION: The instructor of this course will need to read everything in the course syllabus and instructor's guide and prepare accordingly for each class session. It is NOT APPROPRIATE for the instructor to read from the syllabus or guide to the students. The instructor needs to be familiar enough with both the materials and assignments to facilitate instruction without reading from his or her notes. It IS APPROPRIATE for the instructor to bring the syllabus and guide to class and refer to it in order to assure following with the class session plan.

THE INSTRUCTOR'S ROLL: The primary roll of the course instructor is as an INSTRUCTIONAL FACILITATOR, not as a lecturer. The activities and assignments in this course have been designed to provide hands on learning, which means that students in this class will learn by doing. The instructor needs to be sure that class time is spent productively, by actively involving students in the scheduled class activities, rather than by simply telling them about the topic.

ATTITUDE: The instructor must create a POSITIVE, MOTIVATIONAL, learning environment. An instructor's ATTITUDE is contagious and should show ENTHUSIASM for the subject matter. In order to instill student confidence in the instructor, PROFESSIONALISM should be displayed in every instructor action. Stick by the course guidelines and objectives, and give credit where credit is due. Use lots of POSITIVE REINFORCEMENT to encourage continued high performance. In sum, give your students every opportunity and encouragement possible within the guidelines of this course.

AERO 132

SESSION 1

Precourse Survey

AERO 132 Precourse Survey

NAME:_____ AGE:_____

ADDRESS:_____

CITY:_____ STATE:_____ ZIP:_____

HOME PHONE:_____ MESSAGE:_____

Reason for enrolling in this course (check all applicacable boxes):

- [ ] Aeronautics degree requirement
- [ ] Co-requisite to Private Pilot Ground School
- [ ] General interest
- [ ] Preparation for an FAA examination
- [ ] Other:_____

List any flight experience that you currently have:_____

_____

If you have not yet begun flight training, list reasons:_____

_____

Please indicate your aviation goals (check all applicable boxes):

- [ ] Career pilot
  - [ ] Military
  - [ ] General aviation
  - [ ] Major airline
- [ ] Aviation management
- [ ] Air traffic control
- [ ] Personal pleasure flying
- [ ] Business (transportation related to your job) flying
- [ ] Other:_____

AERO 132

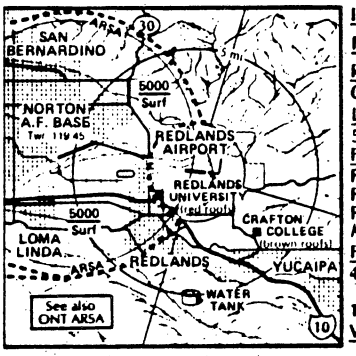
SESSION 2

Local Airport Information Page
Flight Plan Form (handout)
Flight Plan Form (transparency master)
Quiz 1 Flight Planning

AERO 132 Local Airport Information Page

Redlands Muni

CTAF: 122.7 Field Elevation: 1572 ft MSL
Pattern Altitude: 2400 ft MSL (828 ft AGL)



IDENT: L12

FSS: Riverside (122.05)

Radar traffic advisory: Ontario ApCon-127.0

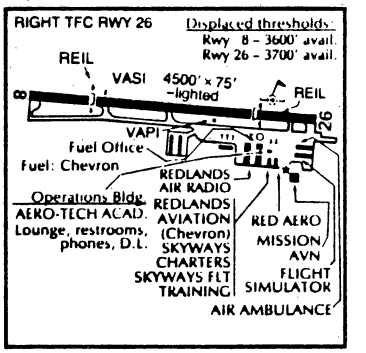
LOCATION:
5 nmi NE of Redlands

From VORs:(✓=DME)

PDZ	112.2✓	047°	21
POM	110.4✓	073°	32
PSP	115.5✓	275°	38
KCAL	*1410*	*151°*	*2*

From other airports:
4.5 nmi E of Norton AFB
6 nmi NE of Tri-City
18 nmi W of Banning

VARIATION: 14°E



CAUTION–Ontario ARSA and Norton AFB ATA are immediately W of field. Do not enter this area unless in contact with Norton Twr on 119.45 or Ontario ApCon on 127.0.

PARKING: Transient spaces E of fuel island. Overnight fee is $2 single; $2.50 twins.

SERVICES: **Redlands Aviation** (824-6486) CHEVRON fuel (100LL, Jet A–8am-6pm, to 5pm winter, call if unattended) Piper Flight Center instruction, rental, charter, sales, maintenance, FAA Examiner. **Aero-Tech Academy** (794-4046) pilot supplies, instruction, rental, charter, DL. **Skyways Charter** (794-1225) instruction, rental, charter. **Skyways Flight Training** (794-2420) instruction, rental, ground school. **Red Aero** (794-3244) modification. **Redlands Air Radio** (794-3158) avionics, A&E inspections, repair. **Mission Avn Fellowship** (794-1151) World Hdqtrs. **Flight Simulator** (794-4005) instrument training.

F/L/T: Vending machines./ Stardust Motel* (793-2571). Redland Travelodge (793-2536). Sandman Motel (793-2001) restaurant nearby./ Taxi: Redlands Taxi (798-1111). Car rental: Budget-Rent-A-Car (793-8006).

PHONES: Airport Office: (714) 794-5993; Riverside FSS (direct line): 794-4046.

CHANGE: Minor/FBOs. FSS-11-87 Rev 52

US Department of Transportation
Federal Aviation Administration

— FLIGHT PLANNER —

(INFORMATION THAT YOU ENTER ON THIS FORM IS FOR PILOT'S USE ONLY.)

PREFLIGHT				EN ROUTE					
DEPARTURE PT.	ROUTE			ESTIMATED			ACTUAL		
CHECK POINTS	VIA	CRS	DIST	GS	ETE	ETA	GS	ATE	ATA

	FUEL MANAGEMENT					
OFF						
ON						
TIME						

TIME EN ROUTE	
TOUCH-DOWN	
TAKE-OFF	
ATE	

FAA Form 8740-2 (9-80) SUPERSEDES FAA FORM 8740-2 (8-77)

FOLD ALONG THIS LINE

USE OF FAA FORM 7233-1 Approved: OMB No. 04-R0072

FLIGHT PLAN

CIVIL AIRCRAFT PILOTS: FAR Part 91 requires you file an IFR flight plan to operate under instrument flight rules in controlled airspace. Failure to file could result in a civil penalty not to exceed $1,000 for each violation (Section 901 of the Federal Aviation Act of 1958, as amended). Filing of a VFR flight plan is recommended as a good operating practice. See also Part 99 for requirements concerning DVFR flight plans.

1 TYPE	2 AIRCRAFT IDENTIFICATION	3 AIRCRAFT TYPE / SPECIAL EQUIPMENT	4 TRUE AIRSPEED	5 DEPARTURE POINT	6 DEPARTURE TIME		7 CRUISING ALTITUDE
VFR / IFR / DVFR			KTS		PROPOSED (Z)	ACTUAL (Z)	

8 ROUTE OF FLIGHT

9 DESTINATION (Name of airport and city)	10 EST. TIME ENROUTE		11 REMARKS
	HOURS	MINUTES	

12 FUEL ON BOARD		13 ALTERNATE AIRPORT(S)	14 PILOT'S NAME, ADDRESS & TELEPHONE NUMBER & AIRCRAFT HOME BASE	15 NUMBER ABOARD
HOURS	MINUTES			

16 COLOR OF AIRCRAFT	CLOSE VFR FLIGHT PLAN WITH _____ FSS ON ARRIVAL

CLEARANCES/RADIO FREQUENCIES:

SPECIAL EQUIPMENT SUFFIX

- A – DME, TRANSPONDER WITH ALTITUDE ENCODING
- B – DME, TRANSPONDER WITH NO ALTITUDE ENCODING
- C – RNAV, TRANSPONDER WITH NO ALTITUDE ENCODING
- D – DME, NO TRANSPONDER
- F – RNAV, TRANSPONDER WITH ALTITUDE ENCODING
- T – TRANSPONDER WITH NO ALTITUDE ENCODING
- U – TRANSPONDER WITH ALTITUDE ENCODING
- W – RNAV, NO TRANSPONDER
- X – NO TRANSPONDER

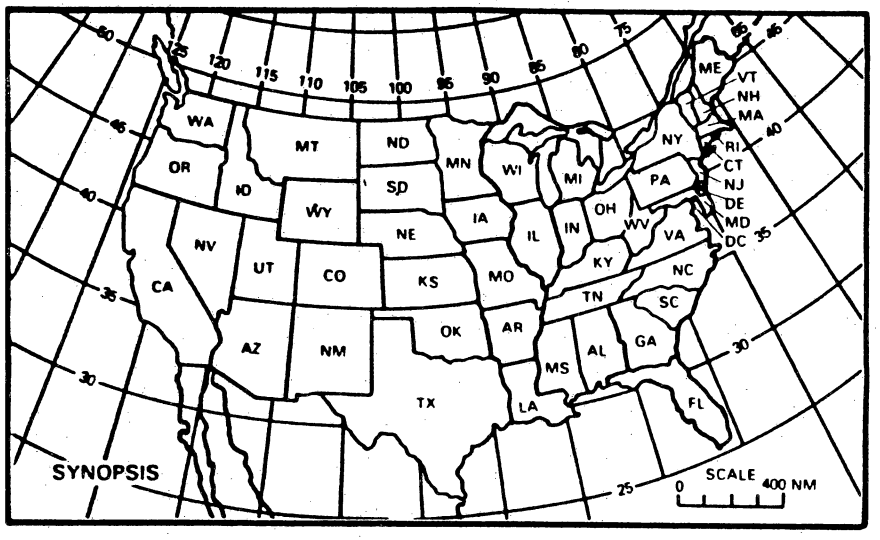
EST +5 = GMT	EDT +4 = GMT
CST +6 = GMT	CDT +5 = GMT
MST +7 = GMT	MDT +6 = GMT
PST +8 = GMT	PDT +7 = GMT

A COOPERATIVE PROJECT BY THE –
FEDERAL AVIATION ADMINISTRATION
ACCIDENT PREVENTION PROGRAM
GENERAL AVIATION MANUFACTURERS ASSOCIATION
OHIO STATE UNIVERSITY

AERO 132

Flight Plan Form

02.H2a



LOCATION	EN ROUTE WEATHER TREND		
	Time: _____	Time: _____	Time: _____

LOCATION	TERMINAL FORECASTS

LOCATION	WINDS & TEMPERATURES ALOFT FORECASTS			
	Alt. _____	Alt. _____	Alt. _____	Alt. _____

LOCATION	PIREPS/SIGNIFICANT WEATHER/NOTAMS

OTHER DATA:

PILOTS WEATHER "GO OR NO GO" CHECKLIST

	SYNOPSIS & AREA WX		DESTINATION WX FORECAST		TEMP DEW POINT SPREAD (FOG)
	ADVERSE WX, INCLUDING SIGMETS AIRMETS		WINDS & TEMPERATURES ALOFT FORECAST		BETTER WX AREA FORECAST
	CURRENT EN ROUTE WX		PIREPS, INCLUDING TOP REPORTS		ALTERNATE AIRPORT WX FORECAST
	FORECAST EN ROUTE WX		FREEZING LEVELS		NOTAMS

US Department of Transportation
Federal Aviation Administration

— FLIGHT PLANNER —

(INFORMATION THAT YOU ENTER ON THIS FORM IS FOR PILOT S USE ONLY.)

PREFLIGHT				EN ROUTE					
DEPARTURE PT.	ROUTE			ESTIMATED			ACTUAL		
CHECK POINTS	VIA	CRS	DIST	GS	ETE	ETA	GS	ATE	ATA

	FUEL MANAGEMENT					
OFF						
ON						
TIME						

TIME EN ROUTE	
TOUCH-DOWN	
TAKE-OFF	
ATE	

FAA Form 8740-2 (9-80) SUPERSEDES FAA FORM 8740-2 (8-77)

FOLD ALONG THIS LINE

USE OF FAA FORM 7233 1 Approved:OMB No. 04-R0072

FLIGHT PLAN

CIVIL AIRCRAFT PILOTS FAR Part 91 requires you file an IFR flight plan to operate under instrument flight rules in controlled airspace. Failure to file could result in a civil penalty not to exceed $1,000 for each violation (Section 901 of the Federal Aviation Act of 1958, as amended). Filing of a VFR flight plan is recommended as good operating practice. See also Part 99 for requirements concerning DVFR flight plans

1 TYPE	2 AIRCRAFT IDENTIFICATION	3 AIRCRAFT TYPE SPECIAL EQUIPMENT	4 TRUE AIRSPEED	5 DEPARTURE POINT	6 DEPARTURE TIME		7 CRUISING ALTITUDE
VFR / IFR / DVFR			KTS		PROPOSED (Z)	ACTUAL (Z)	

8 ROUTE OF FLIGHT

9 DESTINATION (Name of airport and city)	10 EST TIME ENROUTE HOURS	MINUTES	11 REMARKS

12 FUEL ON BOARD HOURS	MINUTES	13 ALTERNATE AIRPORT(S)	14 PILOT S NAME ADDRESS & TELEPHONE NUMBER & AIRCRAFT HOME BASE	15 NUMBER ABOARD

16 COLOR OF AIRCRAFT

CLOSE VFR FLIGHT PLAN WITH _____ FSS ON ARRIVAL

CLEARANCES/RADIO FREQUENCIES:

SPECIAL EQUIPMENT SUFFIX

- A – DME, TRANSPONDER WITH ALTITUDE ENCODING
- B DME, TRANSPONDER WITH NO ALTITUDE ENCODING
- C – RNAV, TRANSPONDER WITH NO ALTITUDE ENCODING
- D – DME, NO TRANSPONDER
- F – RNAV, TRANSPONDER WITH ALTITUDE ENCODING
- T – TRANSPONDER WITH NO ALTITUDE ENCODING
- U – TRANSPONDER WITH ALTITUDE ENCODING
- W – RNAV, NO TRANSPONDER
- X – NO TRANSPONDER

EST +5 = GMT	EDT +4 = GMT
CST +6 = GMT	CDT +5 = GMT
MST +7 = GMT	MDT +6 = GMT
PST +8 = GMT	PDT +7 = GMT

A COOPERATIVE PROJECT BY THE –
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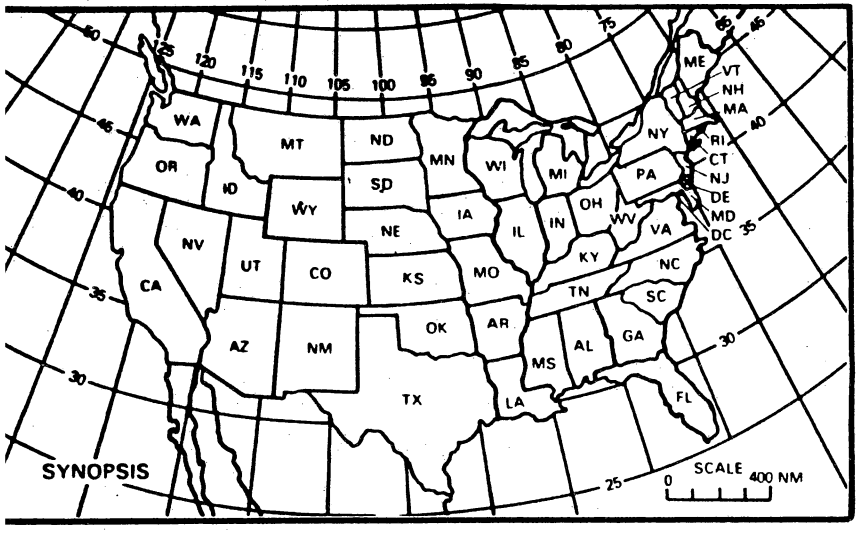
ACCIDENT PREVENTION PROGRAM
GENERAL AVIATION MANUFACTURERS ASSOCIATION
OHIO STATE UNIVERSITY

AERO 132

Flight Plan Form

02.T1a



LOCATION	EN ROUTE WEATHER TREND		
	Time: _____	Time: _____	Time: _____

LOCATION	TERMINAL FORECASTS

LOCATION	WINDS & TEMPERATURES ALOFT FORECASTS			
	Alt. _____	Alt. _____	Alt. _____	Alt. _____

LOCATION	PIREPS/SIGNIFICANT WEATHER/NOTAMS

OTHER DATA:

PILOTS WEATHER "GO OR NO GO" CHECKLIST

	SYNOPSIS & AREA WX		DESTINATION WX FORECAST		TEMP. DEW POINT SPREAD (FOG)
	ADVERSE WX, INCLUDING SIGMETS, AIRMETS		WINDS & TEMPERATURES ALOFT FORECAST		BETTER WX AREA FORECAST
	CURRENT EN ROUTE WX		PIREPS, INCLUDING TOP REPORTS		ALTERNATE AIRPORT WX FORECAST
	FORECAST EN ROUTE WX		FREEZING LEVELS		NOTAMS

AERO 132 Quiz 1 Flight Planning

DIRECTIONS:

PRINT your name NEATLY on the lower right hand corner of this page. Read each of the following questions carefully. Write complete answers for each on a separate sheet. Staple all pages together with this quiz sheet on top. Be sure your answers are NEAT and LEGIBLE, illegible answers will receive no credit. Each question is worth one point, partial answers will receive partial credit. Any student who does not recieve full credit will need to complete additional work to make up the points lost. This quiz is DUE at class session 2.

1. For a direct flight from Redlands airport to Rialto airport:
   List the preferred calm wind runways at each airport, traffic pattern direction and altitude, and availability of fuel for the type aircraft you will be flying.

2. For the same flight mentioned above:
   List all types of airspace which will be crossed to complete the direct flight.
   List a safe and appropriate altitude at which to complete the flight.
   List all communications frequencies necessary to complete the flight

3. Explain the purpose of using checklists for specific ground and flight operations.

4. Explain the purpose of filing and using a flight plan.

NAME:_____

AERO 132

SESSION 3

Sample Weather Briefing
Sample Weight and Balance Problem
Sample Aircraft Performance Problems
Flight Plan Form (masters are on pages 02.H2a & 02.H2b of this guide)
Q2 Weather Briefings, Weight and Balance & Aircraft Performance

AERO 132 Sample Weather Briefing

This is a pilot weather briefing from the FSS at Boston, Massachusetts, for a flight to Buffalo, New York. The pilot advises that the departing time will be 18Z and the ETA is approximately 3 hours.

"Conditions are for marginal VFR and occasionally IFR conditions for the entire flight. AIRMET DELTA TWO calls for occasional moderate icing in the clouds and precipitation from Buffalo to central Massachusetts from 4 thousand to 6 thousand. SIGMET NINE BRAVO warns of scattered embedded thundershowers along coastal Massachusetts continuing beyond 18Z.'

'At 12Z a warm front extended from a low centered near Toledo, Ohio, eastward across central Pennsylvania and into the Atlantic just south of Long Island.'

'Current weather here at Boston is 2 thousand scattered, ceiling 4 thousand overcast, 6 miles in light rain and fog, temperature 43, dew point 39, wind 110 at 15, altimeter 29 point 90. Here at Boston at departure time, we should have 2 thousand scattered 3 thousand 5 hundred overcast, 5 miles in light rain and fog.'

'You should experience VFR conditions through eastern and central Massachusetts with marginal and occasionally IFR conditions from western Massachusetts through central New York and VFR the remainder of the route. Currently, Buffalo is reporting 15 hundred overcast, 5 miles visibility in light rain and fog, wind 090 at 10 gusting to 20.'

'En route, clouds are layered from 1 thousand to above 25 thousand. Visibilities will be 5 miles, occasionally 3 miles in precipitation and fog. AIRMET DELTA TWO warns of occasionally moderate mixed icing in the clouds and precipitation from 4 to 6 thousand from New York to central Massachusetts. Convective SIGMET NINE BRAVO forecasts a freezing layer, 4 to 6 thousand New York to central Massachusetts, otherwise the freezing level is 12 thousand at Buffalo sloping to 14 thousand at Boston. At 1435Z the pilot of a B747 reported mixed icing during descent from 6 thousand to 4 thousand.'

'At 21Z Buffalo should have 12 hundred overcast, 5 miles visibility in light rain and fog.'

'Winds aloft forecast: From Boston to Albany, 3 thousand 150 at 18, 6 thousand 160 at 35, 9 thousand 270 at 35, 12 thousand and above 270 at 45. From Albany to Buffalo, 3 thousand 100 at 18, 6 thousand 120 at 30, 9 thousand and above 240 at 35 to 45."

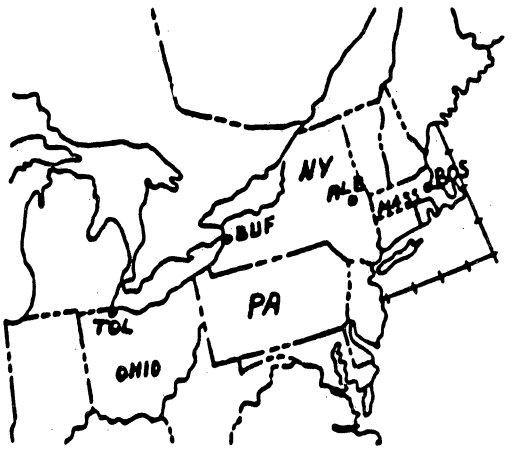


Figure 52

54.
1758. What change in weather conditions is indicated at Boston from the time of the briefing until departure time? (See Figure 52.)

1—IFR to VFR conditions.
2—Second layer of clouds and visibility lowering.
3—Rain decreasing with pressure and temperature remaining stable.
4—Lowering of ceiling and visibility to 1,000 ft. and 3 mi. in thundershowers.

Answer (2) is correct (1758). (AvW Chap 8)
Boston weather at the time of the briefing is "2,000 scattered, ceiling 4,000 overcast, 6 miles in light rain and fog." At the expected departure time, it is forecast to be "2,000 scattered, 3,500 overcast, 5 miles in light rain and fog." The second layer of clouds will lower from 4,000 to 3,500 feet, and visibility will lower from 6 to 5 miles.
Answers (1) and (3) are incorrect because Boston is VFR in light rain at the briefing and forecast to continue. Answer (4) is incorrect because the ceiling is forecast to be 3,500 feet with visibility of 5 miles.

55.
1759. Why are there two separate levels of freezing temperatures reported? (See Figure 52.)

1—Freezing temperatures from 4,000 ft. up reported at the cloud layers only.
2—Freezing temperatures at one level on each side of the temperature inversion.
3—Only the levels where airframe icing has been forecast or reported by pilots.
4—One layer contains conditions for airframe icing and the other contains conditions for carburetor icing.

Answer (2) is correct (1759). (AvW Chap 8)
There are two separate levels of freezing temperatures due to the temperature inversion caused by the warm front. The warm front has caused a current of warm air to overrun the cold air nearer the surface; i.e., the warmer air above the 4,000 - 6,000 ft. layer of freezing is due to the warm front.
Answer (1) is incorrect because mixed icing, not freezing, is forecast in the clouds. Answer (3) is incorrect because freezing temperatures are not caused either by forecasts or pilot reports. Answer (4) is incorrect because the freezing level has to do with temperature alone.

56.
1760. Where is there a possibility of turbulence on the proposed route? (See Figure 52.)

1—Below the freezing level along the entire route.
2—Between 12,000 and 14,000 ft.
3—In the Boston area.
4—Albany to New York.

Answer (3) is correct (1760). (AvW Chap 8)
SIGMET NINE BRAVO indicates a possibility of turbulence in scattered embedded thundershowers along coastal Massachusetts, i.e., near Boston, to continue past the departure time.
Answers (1) and (2) are incorrect because there is no mention of turbulence either along the entire route or between 12,000 and 14,000 feet. Answer (4) is incorrect because the only mention of Albany concerns winds aloft.

57.
1761. Which portion of the route indicates questionable VFR conditions? (See Figure 52.)

1—Western Massachusetts through central New York.
2—Eastern Massachusetts to the New York border.
3—Central New York through to Buffalo.
4—In the Buffalo area.

Answer (1) is correct (1761). (AvW Chap 8)
The fourth paragraph of the briefing in Fig. 52 indicates VFR conditions until western Massachusetts, then occasional IFR conditions through central New York, and VFR the remainder of the route. Thus, from western Massachusetts through central New York there are questionable VFR conditions.
Answers (2) and (3) are incorrect because the briefing explicitly states that there will be VFR conditions through eastern Massachusetts and from Central New York to Buffalo. Answer (4) is incorrect because, at 21Z, Buffalo should have 1,200 overcast and 5 miles visibility.

58.
1757. What is the widespread system affecting the en route weather described in the weather briefing in Figure 52?

1—Temperature inversion.
2—Low pressure trough.
3—Occluded front.
4—Warm front.

Answer (4) is correct (1757). (AvW Chap 8)
The third paragraph of the briefing indicates a warm front extended eastward from a low centered at Toledo to the Atlantic just south of Long Island. This warm front is just south of the route of flight.
Answer (1) is incorrect because a temperature inversion is an increase in temperature with height. Answer (2) is incorrect because a low pressure trough is an elongated area of low pressure, not a warm front. Answer (3) is incorrect because an occluded front is a situation where a cold front catches up with a warm front and they occlude (close together).

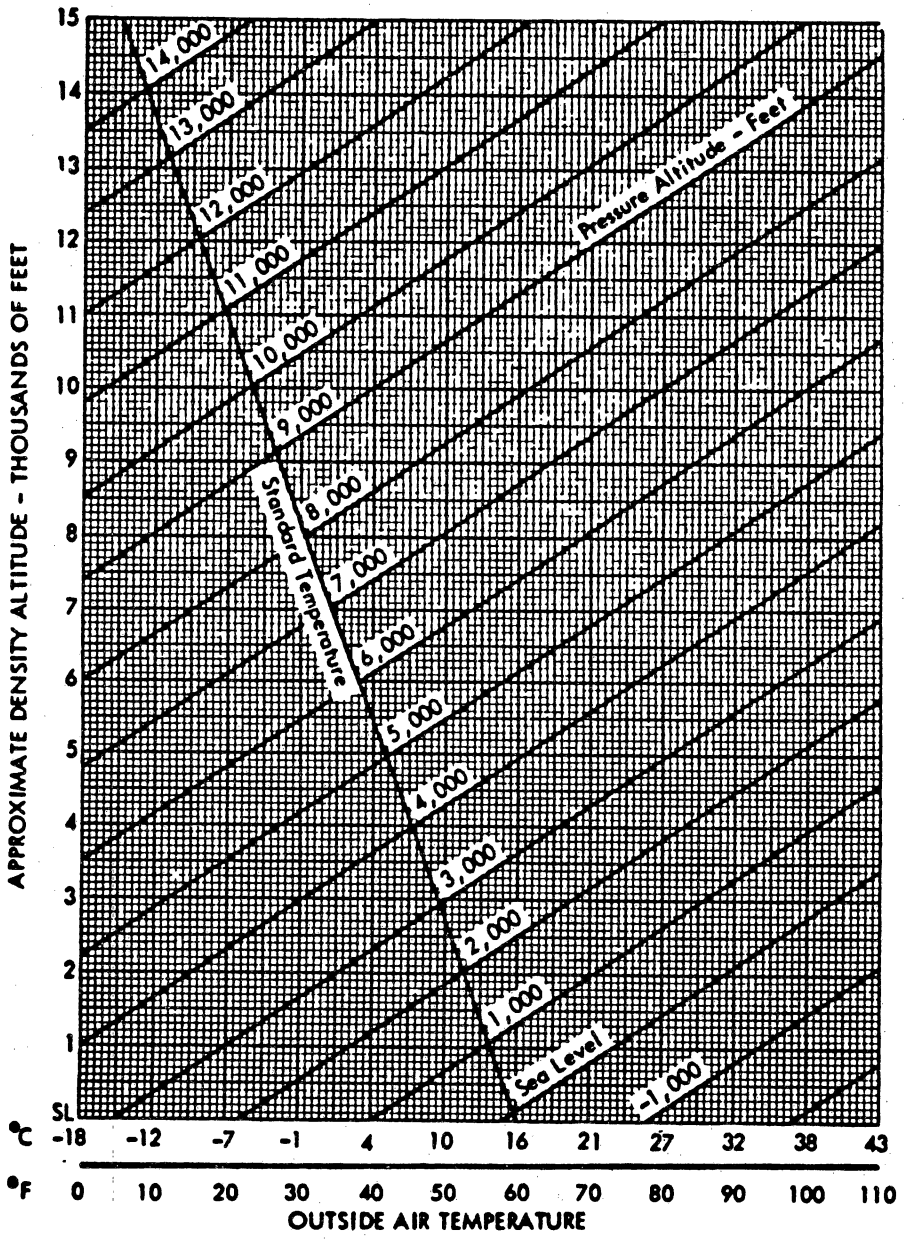
WEIGHT and BALANCE FORM

ITEM	WEIGHT (pounds)	ARM (inches)	MOMENT (pound–inches)
1 BASIC EMPTY WEIGHT	1,730.0	+80.7	139,611
2 FUEL (50 GALS)	300.0	+90.0	+27,000
3 PILOT	170.0	+80.0	+13,600
4 FRONT PASSENGER	220.0	+80.0	+17,600
5 REAR SEAT PASSENGER	180.0	+120.0	+21,600
6 REAR SEAT PASSENGER	120.0	+120.0	+14,400
7 BAGGAGE	80.0	+140.0	+11,200
8			
9			
10			
TOTAL	2800.0		+245,011

C.G. = 87.5 (approximately) INCHES

AERO 132 Sample Aircraft Performance Problems

DENSITY ALTITUDE CHART



Altimeter Setting (In. Hg.)	*Pressure Altitude Conversion Factor*
28.0	1,824
28.1	1,727
28.2	1,630
28.3	1,533
28.4	1,436
28.5	1,340
28.6	1,244
28.7	1,148
28.8	1,053
28.9	957
29.0	863
29.1	768
29.2	673
29.3	579
29.4	485
29.5	392
29.6	298
29.7	205
29.8	112
29.9	20
29.92	0
30.0	-73
30.1	-165
30.2	-257
30.3	-348
30.4	-440
30.5	-531
30.6	-622
30.7	-712
30.8	-803
30.9	-893
31.0	-983

Figure 1

8.
1021. Determine the density altitude for the following conditions: (See Figure 1.)

Altimeter setting.....30.35
Rwy temperature.....+25° F
Airport elevation.....3,894 ft.

1—2,900 ft.
2—3,500 ft.
3—3,800 ft.
4—2,000 ft.

Answer (4) is correct (1021). (PHAK Chap 4)
With an altimeter setting of 30.35" Hg, 394 feet must be subtracted from a field elevation of 3,894 to obtain a pressure altitude of 3,500 feet. The 394 feet was found by interpolation: 30.3 on the graph is -348, and 30.4 was -440 feet. Adding one-half the -92 feet difference gives -394 feet. Once you have found the pressure altitude, use the chart to plot 3,500 feet pressure altitude at 25°F, to reach 2,000 density altitude. Note that since the temperature is lower than standard, the density altitude is lower than the pressure altitude.

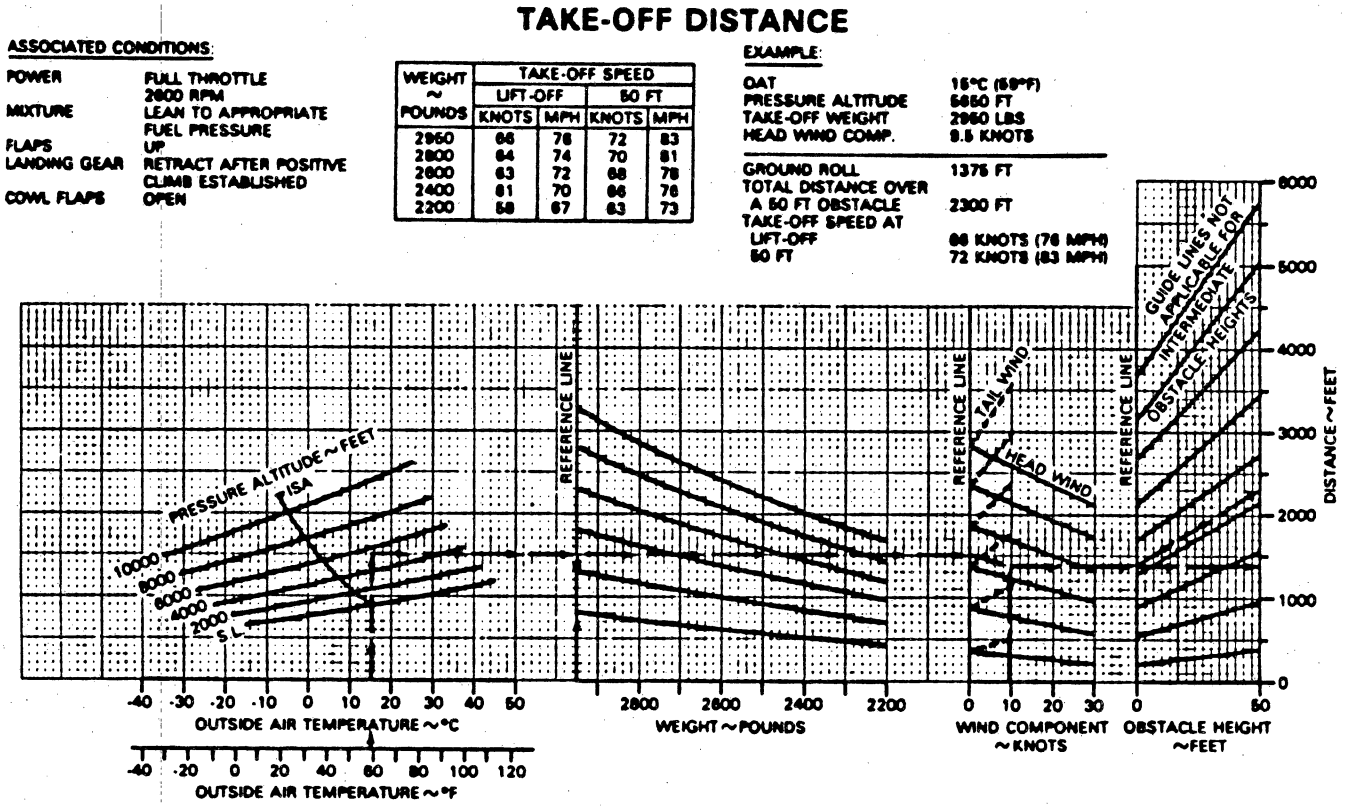


Figure 9

15.
1065. Determine the total distance for a takeoff to clear a 50-foot obstacle. (See Figure 9.)

OAT.....Std.
Pressure altitude.....4,000 ft.
Takeoff weight.....2,800 lb.
Headwind component.....Calm

1—1,250 ft.
2—1,500 ft.
3—1,750 ft.
4—1,900 ft.

Answer (3) is correct (1065). (PHAK Chap 4)
The takeoff distance to clear a 50-foot obstacle is required. Begin on the left side of the graph at standard temperature (as represented by the curved line labeled "ISA"). From the intersection of the standard temperature line and the 4,000-foot pressure altitude, proceed horizontally to the right to the first reference line, and then follow the curved lines downward, maintaining the same vertical distance from (i.e., parallel to) the curved line to 2,800 lbs. From there, proceed horizontally to the right to the third reference line (skip the second reference line because there is no wind), and move parallel to the closest guide line all the way to the far right. You are at 1,750 feet, which is the takeoff distance to clear a 50-foot obstacle.

CRUISE POWER SETTINGS

65% MAXIMUM CONTINUOUS POWER (OR FULL THROTTLE)
2800 LBS

PRESS ALT.	ISA −20°C (−36°F)								STANDARD DAY (ISA)								ISA +20°C (+36°F)							
	IOAT		ENGINE SPEED	MAN. PRESS	FUEL FLOW PER ENGINE		TAS		IOAT		ENGINE SPEED	MAN. PRESS	FUEL FLOW PER ENGINE		TAS		IOAT		ENGINE SPEED	MAN. PRESS	FUEL FLOW PER ENGINE		TAS	
FEET	°F	°C	RPM	IN HG	PSI	GPH	KTS	MPH	°F	°C	RPM	IN HG	PSI	GPH	KTS	MPH	°F	°C	RPM	IN HG	PSI	GPH	KTS	MPH
SL	27	−3	2450	20.7	6.6	11.5	147	169	63	17	2450	21.2	6.6	11.5	150	173	99	37	2450	21.8	6.6	11.5	153	176
2000	19	−7	2450	20.4	6.6	11.5	149	171	55	13	2450	21.0	6.6	11.5	153	176	91	33	2450	21.5	6.6	11.5	156	180
4000	12	−11	2450	20.1	6.6	11.5	152	175	48	9	2450	20.7	6.6	11.5	156	180	84	29	2450	21.3	6.6	11.5	159	183
6000	5	−15	2450	19.8	6.6	11.5	155	178	41	5	2450	20.4	6.6	11.5	158	182	79	26	2450	21.0	6.6	11.5	161	185
8000	−2	−19	2450	19.5	6.6	11.5	157	181	36	2	2450	20.2	6.6	11.5	161	185	72	22	2450	20.8	6.6	11.5	164	189
10000	−8	−22	2450	19.2	6.6	11.5	160	184	28	−2	2450	19.9	6.6	11.5	163	188	64	18	2450	20.3	6.5	11.4	166	191
12000	−18	−26	2450	18.8	6.4	11.3	162	186	21	−6	2450	18.8	6.1	10.9	163	188	57	14	2450	18.8	5.9	10.8	163	188
14000	−22	−30	2450	17.4	5.8	10.5	159	183	14	−10	2450	17.4	5.8	10.1	160	184	50	10	2450	17.4	5.4	9.8	160	184
16000	−29	−34	2450	16.1	5.3	9.7	156	180	7	−14	2450	16.1	5.1	9.4	156	180	43	6	2450	16.1	4.9	9.1	156	178

NOTES: 1. Full throttle manifold pressure settings are approximate.
2. Shaded area represents operation with full throttle.

Figure 3

21.
1038. What fuel flow should a pilot expect at 11,000 ft. on a standard day with 65 percent maximum continuous power? (See Figure 3.)

1—10.6 gal./hr.
2—11.2 gal./hr.
3—11.8 gal./hr.
4—12.1 gal./hr.

Answer (2) is correct (1038). (PHAK Chap 4)
Note that the entire chart applies to 65% maximum continuous power (regardless of the throttle), so just use the middle section of the chart for a standard day.
The fuel flow at 11,000 ft. on a standard day would be 1/2 of the way between the fuel flow at 10,000 ft. (11.5 gph) and the fuel flow at 12,000 ft. (10.9 gph). Thus, the fuel flow at 11,000 ft. would be 11.5 - .3, or 11.2 gph.

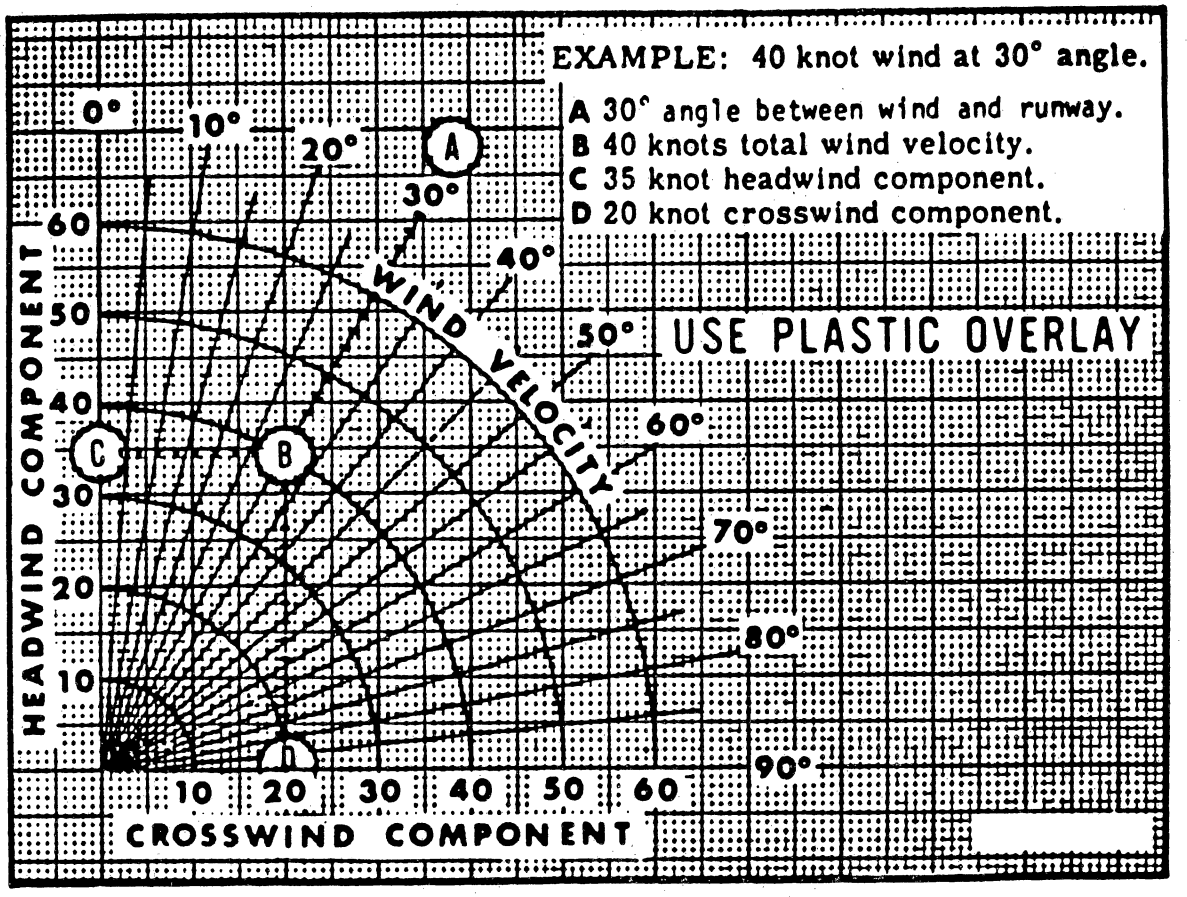


Figure 2

27.
1030. What is the headwind component for a landing on Rwy 18 if the tower reports the wind as 220° at 30 kts.? (See Figure 2.)

1—19 kts.
2—23 kts.
3—30 kts.
4—34 kts.

Answer (2) is correct (1030). (PHAK Chap 4)
The headwind component is on the vertical axis (left-hand side of the graph). Find the same intersection as in the preceding question, i.e., the 30° wind speed arc, and the 40° angle between wind direction and flight path (220° - 180°). Then move horizontally to the left and read approximately 23 knots.

28.
1031. Determine the maximum wind velocity for a 45° crosswind if the maximum crosswind component for the airplane is 25 kts. (See Figure 2.)

1—18 kts.
2—25 kts.
3—29 kts.
4—35 kts.

Answer (4) is correct (1031). (PHAK Chap 4)
Start on the bottom of the graph's horizontal axis at 25 knots and move upward to the 45° angle between wind direction and flight path line (half-way between the 40° and 50° lines). Note that you are half-way between the 30 and 40 arc-shaped windspeed lines, which means that the maximum wind velocity for a 45° crosswind is 35 knots if the airplane is limited to a 25-knot crosswind component.

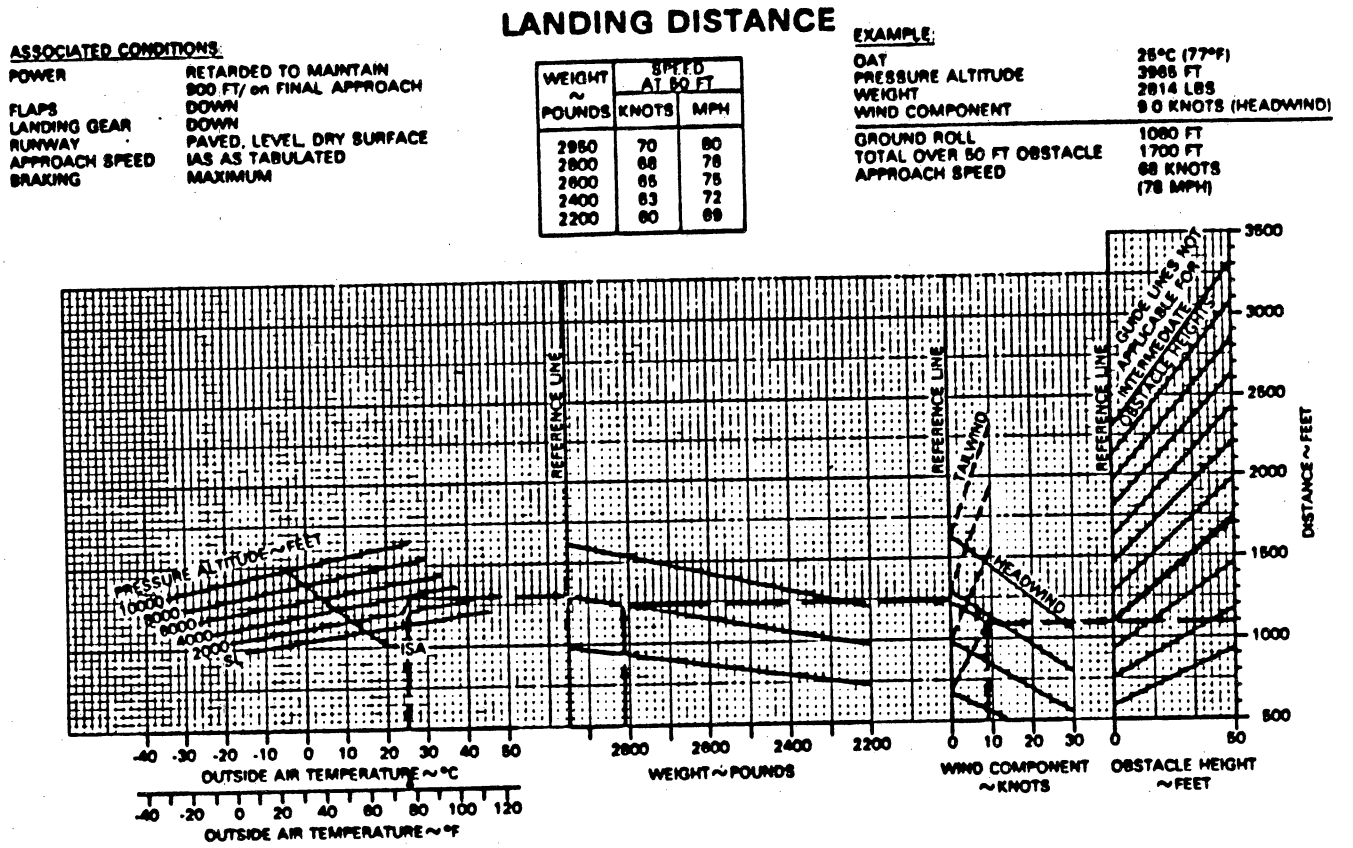


Figure 6

33.
1052. What is the approximate ground roll distance after landing under the following conditions? (See Figure 6.)

OAT.....90° F
Pressure altitude.....4,000 ft.
Weight.....2,800 lb.
Tailwind component.....10 kts.

1—1,200 ft.
2—1,575 ft.
3—1,725 ft.
4—1,950 ft.

Answer (4) is correct (1052). (PHAK Chap 4)
To find the ground roll, begin on the 4,000 ft. pressure altitude line at the intersection of 90°F. Proceed horizontally to the right to the first reference line. Follow parallel to the weight line to 2,800 lbs., and then straight across to the second reference line. Since the tailwind component is 10 knots, follow the tailwind upward to the 10 knots line. Then move directly to the right, past the third reference line (because it is only landing roll; there is no obstacle to clear) to determine a distance of approximately 1,950 ft.

34.
1053. What is the total landing distance under the following conditions? (See Figure 6.)

OAT.....90° F
Pressure altitude.....3,000 ft.
Weight.....2,900 lb.
Headwind component.....10 kts.
Obstacle.....50 ft.

1—1,300 ft.
2—1,450 ft.
3—1,550 ft.
4—1,725 ft.

Answer (4) is correct (1053). (PHAK Chap 4)
To determine the landing distance, begin with pressure altitude of 3,000 ft. (between the 2,000 and 4,000 ft. lines) at its intersection with 90°F. Proceed horizontally to the right to the first reference line, and then downward parallel to the weight line to 2,900 lbs. From that point proceed horizontally to the second reference line. Since there is a headwind component of 10 knots, follow parallel to the headwind line down to 10 knots and then horizontally to the right to the third reference line. Given a 50-ft. obstacle, follow parallel to the guideline for obstacles to find the landing distance of approximately 1,725 ft.

—LANDING DISTANCE— FLAPS LOWERED TO 40°- POWER OFF
HARD SURFACE RUNWAY - ZERO WIND

GROSS WEIGHT LBS.	APPROACH SPEED, IAS, MPH	AT SEA LEVEL & 59° F.		AT 2500 FT. & 50° F.		AT 5000 FT. & 41° F.		AT 7500 FT. & 32° F.	
		GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS	GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS	GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS	GROUND ROLL	TOTAL TO CLEAR 50 FT. OBS
1600	60	445	1075	470	1135	495	1195	520	1255

NOTES: 1. Decrease the distances shown by 10% for each 4 knots of headwind.
2. Increase the distance by 10% for each 60°F. temperature increase above standard.
3. For operation on a dry, grass runway, increase distances (both "ground roll" and "total to clear 50 ft. obstacle") by 20% of the "total to clear 50 ft. obstacle" figure.

Figure 7

35.
1054. With the following conditions, determine the landing ground roll from the Landing Distance Chart. (See Figure 7.)

Pressure altitude.....Sea level
Headwind.....4 kts.
Temperature.....Std.

1—356 ft.
2—401 ft.
3—490 ft.
4—534 ft.

Answer (2) is correct (1054). (PHAK Chap 4)
At sea level, the ground roll is 445 ft. The standard temperature needs no adjustment. According to note 1 in Fig. 7 above, the distance should be decreased 10% for each 4 knots of headwind, so the headwind of 4 knots means that the landing distance is reduced by 10%. The result is 401 ft. (445 ft. x 90%).

36.
1055. What is the total landing distance required to clear a 50-foot obstacle with the following conditions using the Landing Distance Chart? (See Figure 7.)

Pressure altitude.....7,500 ft.
Headwind.....8 kts.
Temperature.....Std.
Runway.....Dry grass

1—1,004 ft.
2—1,205 ft.
3—1,506 ft.
4—1,757 ft.

Answer (2) is correct (1055). (PHAK Chap 4)
Under normal conditions, the total landing distance required to clear a 50-ft. obstacle is 1,255 ft. The temperature is standard, requiring no adjustment. The headwind of 8 knots reduces the 1,255 by 20% (10% for each 4 knots). Then, landing distance is to be increased by 20% because of the dry grass runway. Thus, the 20% reduction for the headwind is partially offset by the increase of 20% for the dry grass runway.

1,255 ft. x 80% = 1,004
1,004 x 120% = 1,205 ft. (rounded)

37.
1056. Determine the approximate landing roll distance from the Landing Distance Chart. (See Figure 7.)

Pressure altitude.....3,750 ft.
Headwind.....12 kts.
Temperature.....Std.

1—193 ft.
2—338 ft.
3—628 ft.
4—772 ft.

Answer (2) is correct (1056). (PHAK Chap 4)
The landing roll distance for a 3,750-ft. pressure altitude is required. Note that this altitude lies half-way between 2,500 ft. and 5,000 ft. Half-way between the ground roll at 2,500 ft. of 470 ft. and the ground roll at 5,000 ft. of 495 ft. is 483 ft. Since the headwind is 12 knots, the landing distance must be reduced by 30% (10% for each 4 knots).

70% x 483 = 338 ft.

AERO 132 Q2 Weather Briefings, Weight and Balance & Aircraft Performance

DIRECTIONS:

PRINT your name NEATLY on the lower right hand corner of this page. Read each of the following questions carefully. Write complete answers for each on a separate sheet. Staple all pages together with this quiz sheet on top. Be sure your answers are NEAT and LEGIBLE, illegible answers will receive no credit. Each question is worth one point, partial answers will receive partial credit. Any student who does not recieve full credit will need to complete additional work to make up the points lost. This quiz is DUE at class session 4.

1. What facility provides pilot weather briefings?
   When and why should a pilot obtain a weather briefing?
   List all info a pilot should give when calling for a weather briefing

2. List the kind of information that a good weather briefing should include.
   What are PIREPs and why should a pilot ask for them during a briefing?
   When should a pilot make a PIREP?

3. Write out the formula for determining an aircraft's center of gravity.
   Why is computing weight and balance necessary prior to flight?

4. List factors which may effect the following performance characteristics:
   a) Take off distance.
   b) Landing distance.
   c) Fuel flow rate.
   d) Acceleration and climb performance.

NAME:_____

AERO 132

SESSION 4

Q3 Preflight Inspection - Service

AERO 132 Q3 Preflight Inspection - Service

DIRECTIONS:

PRINT your name NEATLY on the lower right hand corner of this page. Read each of the following questions carefully. Write complete answers for each on a separate sheet. Staple all pages together with this quiz sheet on top. Be sure your answers are NEAT and LEGIBLE, illegible answers will receive no credit. Each question is worth one point, partial answers will receive partial credit. Any student who does not recieve full credit will need to complete additional work to make up the points lost. This quiz is DUE at class session 5.

1. How often does a pilot need to complete a preflight inspection?
   What is the purpose of the preflight inspection?

2. List the actions taken during a complete preflight inspection.

3. What is the purpose of the static line for fueling an aircraft?
   List three other safety actions used while fueling an aircraft.

4. List the actions taken during a complete aircraft servicing for a Cessna 172.

NAME:_____

AERO 132

SESSION 5

Phraseology
Q4 Radio Communications

AERO 132 Phraseology

INITIAL CALL UP:

1) Who you are talking to:
   Traffic, UNICOM, FSS, Approach, Tower, Center, or other A/C.
2) Who you are:
   Make of aircraft & Aircraft identification number. (Cessna 60226)

REQUESTS: (Following response to initial call up)

1) Repeat number 1 & 2 above.
2) Aircraft type:
   Cessna 172, Mooney 231, etc.
3) Position:
   Over some recognizable landmark or area, or distance and direction from the airport.
4) Altitude:
5) Request:
   What you want. Service, clearance, information, etc.

READ BACKS:

1) Altitudes, headings, instructions.

SAMPLES:

1) PILOT: Redlands UNICOM, Cessna 60226.
   UNICOM: 60226, Go ahead.
   PILOT: Redlands UNICOM, Cessna 60226, Cessna 150, 5 miles south, 3,500, airport advisory.
   UNICOM: Redlands advises right traffic for 26, pattern altitude 2,400, wind from the North at 5 knots, one reported in the pattern.
   PILOT: Right traffic for 26. (readback optional if the freq is busy).

2) PILOT: Ontario Approach, Cessna 60226.
   ONT APP: 60226, Go ahead.
   PILOT: Ontario Approach, Cessna 60226, Cessna 150, over Banning at 6,500, Requesting VFR advisories to Burbank.

ONT APP: 226, squawk 0234 and ident.
PILOT: 226, squawking 0234.
ONT APP: 226, radar contact, 1 mile west of Banning, traffic, two o'clock, eastbound, altitude unknown.
PILOT: 226, looking. (or "has the traffic").
ONT APP: 226, traffic no longer a factor.

*Changing sectors of ONT APP's airspace:

ONT APP: 226, contact ONT APP on 125.5, good day.
PILOT: 125.5, thank you.
PILOT: Ontario Approach, 226, with you on 125.5.

*Traffic advisories will be called during your flight through this sector. Services will be terminated when you leave the Ontario Approach service area.

ONT APP: 226, radar service terminated, contact Burbank Approach on 135.05

3) *First listen to ATIS. (information Alpha, Bravo, Charlie, etc.)
PILOT: Burbank Approach, Cessna 60226.
BUR APP: 60226, Go ahead.
PILOT: Burbank Approach, Cessna 60226, Cessna 150, over the Rose Bowl, 6,500, landing at Burbank, with information Bravo.
BUR APP: 226, squwak 0453 and ident.
PILOT: 226, squawking 0453.
BUR APP: 226, radar contact, ten miles east.
BUR APP: 226, contact the tower on 118.7.
PILOT: Burbank Tower, 226.
TOWER: 226, report left downwind, 15, midfield.
PILOT: 226, will report left downwind, 15, midfield. (readback optional if freq is busy).
PILOT: 226, downwind, 15, midfield.
TOWER: 226, cleared to land 15.
PILOT: 226, cleared to land.
PILOT: 226, clear of the active, 15.
TOWER: 226, contact ground on 123.9

AERO 132 Q4 Radio Communications

DIRECTIONS:

PRINT your name NEATLY on the lower right hand corner of this page. Read each of the following questions carefully. Write complete answers for each on a separate sheet. Staple all pages together with this quiz sheet on top. Be sure your answers are NEAT and LEGIBLE, illegible answers will receive no credit. Each question is worth one point, partial answers will receive partial credit. Any student who does not recieve full credit will need to complete additional work to make up the points lost. This quiz is DUE at class session 6.

1. List the information that should be included in an intial call up to any radio facility.
   When can a pilot abbreviate the aircraft call sign?

2. List the info to be included in a request for information or services.
   What should a pilot do if the facility to which the request is made responds with the words: "Stand by"?

3. What is the international emergency communications frequency?
   Who monitors this frequency?
   List the information that should be included in an emergency communication.

4. What should a pilot do if two way communications are lost?
   List the meanings of the following transponder codes:
   a) 7500
   b) 7600
   c) 7700

NAME:_____

AERO 132

SESSION 6

AERO 132

SESSION 7

Q5 Ground Operations

AERO 132 Q5 Ground Operations

DIRECTIONS:

PRINT your name NEATLY on the lower right hand corner of this page. Read each of the following questions carefully. Write complete answers for each on a separate sheet. Staple all pages together with this quiz sheet on top. Be sure your answers are NEAT and LEGIBLE, illegible answers will receive no credit. Each question is worth one point, partial answers will receive partial credit. Any student who does not recieve full credit will need to complete additional work to make up the points lost. This quiz is DUE at class session 8.

1. Describe the recommended procedure for dealing with an enduction fire during engine start up.
   How long should you wait for oil pressure to register within the green arc?
   What should you do if oil pressure does not register in the green arc within the stipulated time?

2. How fast should you taxi an aircraft?
   List the equipment that should be turned on prior to taxi.
   What color are taxi way lines?

3. Why should checklist be used for engine start up and run up.
   What is the purpose of the "Mag check" during an engine run up?
   Describe what action should be taken if one mag checks out rough?

4. List proper phraseology for a radio check with UNICOM.
   If you can hear other aircraft,why is a radio check necessary?

NAME:_____

AERO 132

SESSION 8

Flight Maneuvers
Radio Communications

AERO 132 Flight Maneuvers

The following basic flight maneuvers will be completed by each student, using a simulator. One student will roll play instructor and give instructions, the other will fly the simulator and comply with instructions. The student flying the simulator will read back all instructions in correct radio phraseology. Once the exercise is completed, switch rolls and begin again.

Start the simulator and assume the first aircraft attitude:

1) LEVEL FLIGHT: 3,500 feet, Cruise power, Heading 360°. (maintain one minute.).

2) CLIMBS: 500 fpm, To 4,000 feet, Level off. (1 min climb, maintain heading and airspeed).

   Repeat to 4,500 feet.
   Repeat to 5,000 feet.

3) TURNS: Right, Standard Rate (15° bank), Roll out 180° (one minute), (maintain altitude).

   Repeat twice right, three times left. (Maintain altitude).
   Repeat with 90° heading changes. (Maintain altitude).
   Repeat with 45° heading changes. (Maintain altitude).

   Repeat all of these using 30° of bank. (Maintain altitude).
   Repeat using 45° of bank. (Maintain altitude).

4) DESCENTS: 500 fpm To 4,500 feet, Level off (1 min descent, maintain heading and airspeed).

   Repeat to 4,000 feet & 3,500 feet.

AERO 132 Radio Communications

During the simulator exercise, the student roll playing instructor will make requests for information from the student flying the simulator, and give instructions for various maneuvers, in correct radio phraseology. The student flying the simulator will respond to requests for information, and instructions , in correct radio phraseology. The following are suggested requests for information and instructions:

1) Cessna 123, say altitude.

2) Cessna 123, say altitude leaving.

3) Cessna 123, say heading.

4) Cessna 123, turn right, heading _____.

5) Cessna 123, turn left, heading _____.

6) Cessna 123, climb to _____.

7) Cessna 123, descent to _____.

8) Cessna 123, maintain _____. (heading or altitude).

AERO 132

SESSION 9

The activities for this class session are a continuation of session 8.

Handout masters for this section are on pages 08.H1 and 08.H2 of this guide.

AERO 132

SESSION 10

AERO 132

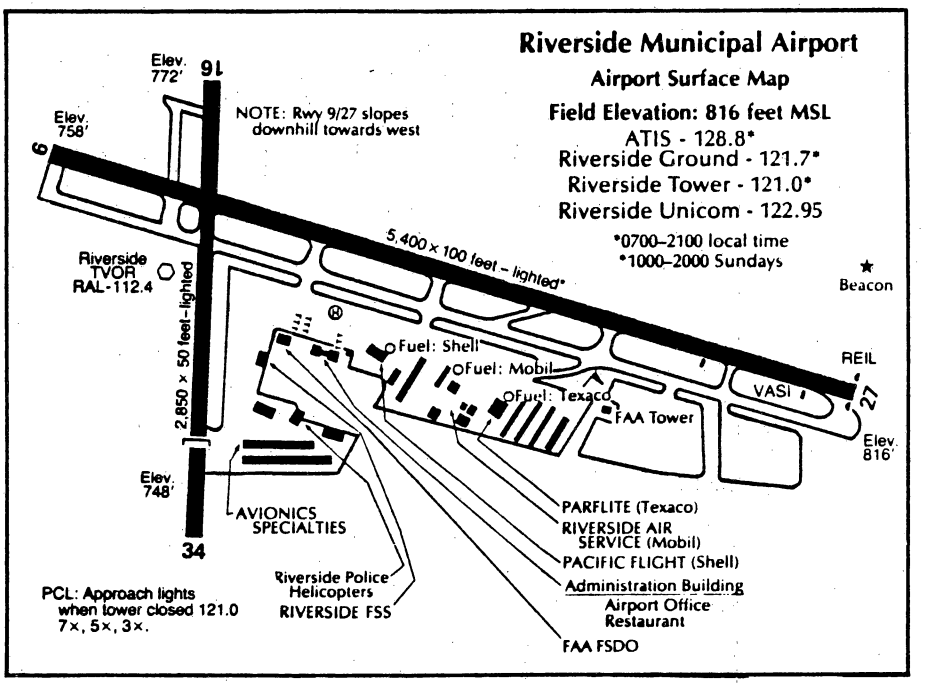
SESSION 11

Map to Riverside Airport
Riverside Airport Diagram
Q6 FSDO & FSS

AERO 132 Map to Riverside Airport

AERO 132 Riverside Airport Diagram

RIVERSIDE - 141



AERO 132 Q6 FSDO & FSS

DIRECTIONS:

PRINT your name NEATLY on the lower right hand corner of this page. Read each of the following questions carefully. Write complete answers for each on a separate sheet. Staple all pages together with this quiz sheet on top. Be sure your answers are NEAT and LEGIBLE, illegible answers will receive no credit. Each question is worth one point, partial answers will receive partial credit. Any student who does not recieve full credit will need to complete additional work to make up the points lost. This quiz is DUE at class session 12.

1. List the name of our local FSDO Accident Prevention Specialist.
   List the phone number of out local FSDO.
   List the location of our local FSDO.

2. List the services available to airmen from the FDSO.
   How does the FSDO help improve and promote flight safety?

3. List the name of our local FSS supervisor.
   List the phone number of out local FSS.
   List the location of our local FSS.

4. List the services available to airmen from the FSS.
   How does the FSS help improve and promote flight safety?

NAME:_____

AERO 132

SESSION 12

Cross Country Flight Route

Flight Plan Form (masters are on pages 02.H2a & 02.H2b of this guide)

Q7 Cross Country Navigation

AERO 132 Cross Country Flight Route

Each group of three will plan a three leg cross country flight of 150 nautical miles. Use this sheet to make notes before filling out the flight plan forms. The route of flight will be as follows:

POINT OF DEPARTURE:
Redlands

FIRST DESTINATION:
Oceanside

SECOND DESTINATION:
Barrego Springs

THIRD DESTINATION:
Redlands

FOR EACH LEG:
Plot your course, note headings, altitudes, ETEs, fuel consumption, frequencies and alternate airports. Fill out a separate flight plan form for each leg, and have your plans checked by the instructor.

AERO 132 Q7 Cross Country Navigation

DIRECTIONS:

PRINT your name NEATLY on the lower right hand corner of this page. Read each of the following questions carefully. Write complete answers for each on a separate sheet. Staple all pages together with this quiz sheet on top. Be sure your answers are NEAT and LEGIBLE, illegible answers will receive no credit. Each question is worth one point, partial answers will receive partial credit. Any student who does not recieve full credit will need to complete additional work to make up the points lost. This quiz is DUE at class session 13.

1. Using the weight and balance data from the airplane you will use on your cross country flight, compute a weight and balance problem, using the actual weights of the intended pilot and passengers, full fuel, full oil, and 5 lbs of baggage per person.

2. What is the total gross weight?
   What is the center of gravity?
   Is the aircraft within limits? If not, what changes need to be made?

3. With which facilities will you open and close your flight plans for each leg of your flight?
   List the frequencies of these facilities.

4. Which radio navigation aids will you use on your flight?
   List the frequencies of these navaids.

NAME:_____

AERO 132

SESSION 13

AERO 132

SESSION 14

AERO 132

SESSION 15

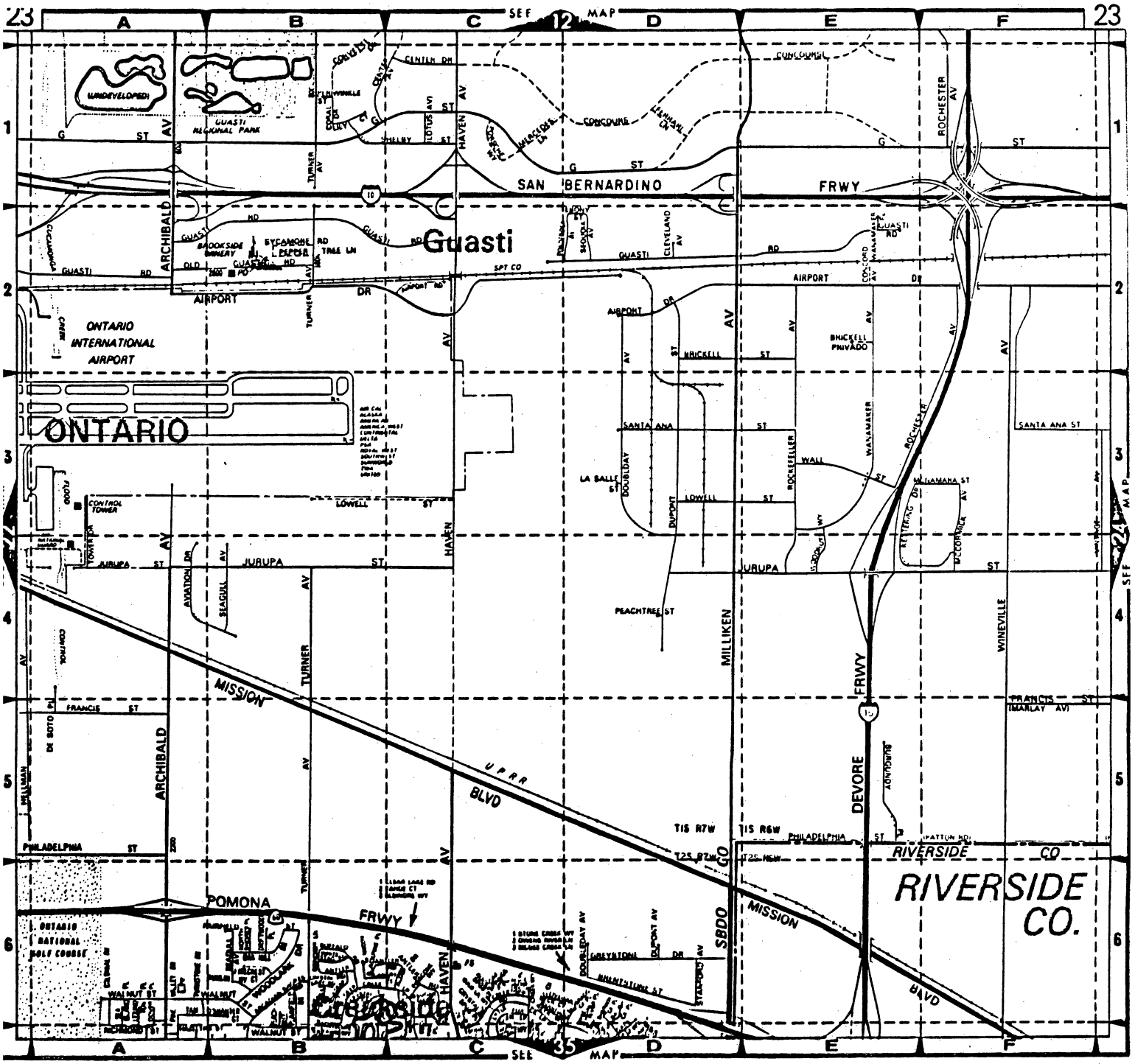
AERO 132

SESSION 16

Map to Ontario Airport
Ontario Airport Diagram
Q8 TRACON & ATC Tower

AERO 132

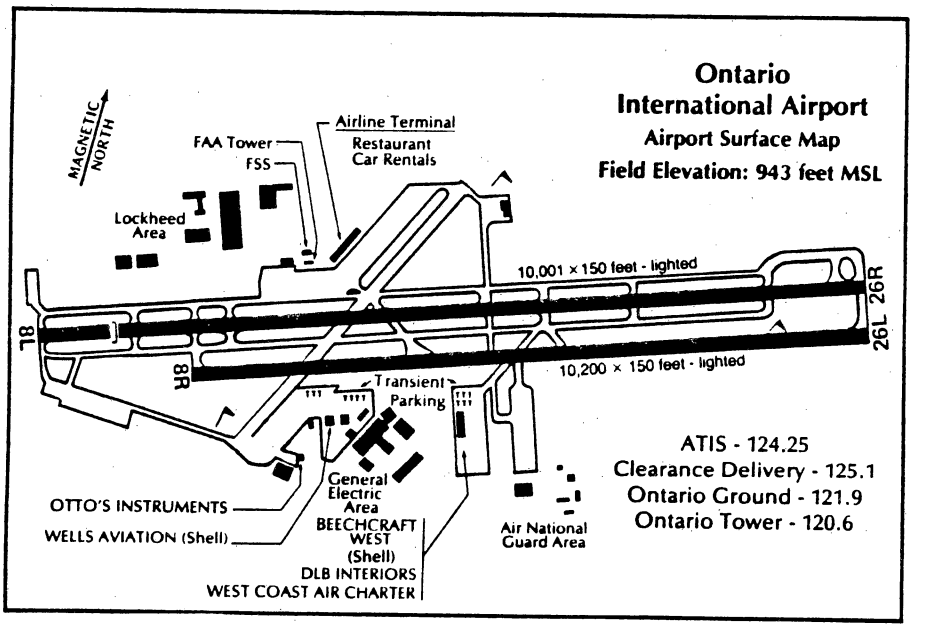
Map to Ontario Airport



AERO 132

Ontario Airport Diagram

ONTARIO - 116



AERO 132 Q8 TRACON & ATC Tower

DIRECTIONS:

PRINT your name NEATLY on the lower right hand corner of this page. Read each of the following questions carefully. Write complete answers for each on a separate sheet. Staple all pages together with this quiz sheet on top. Be sure your answers are NEAT and LEGIBLE, illegible answers will receive no credit. Each question is worth one point, partial answers will receive partial credit. Any student who does not recieve full credit will need to complete additional work to make up the points lost. This quiz is DUE at class session 17.

1. List the name of the Ontario TRACON supervisor.
   List the phone number of the Ontario TRACON.
   List the location of the Ontario TRACON.

2. List the services available to airmen from the Ontario TRACON.
   How does the Ontario TRACON help improve and promote flight safety?

3. List the name of the Ontario ATC Tower supervisor.
   List the phone number of the Ontario ATC Tower.
   List the location of the Ontario ATC Tower.

4. List the services available to airmen from the Ontario ATC Tower.
   How does the Ontario ATC Tower help improve and promote flight safety?

NAME:_____

AERO 132

SESSION 17

Final Exam

AERO 132 Final Exam

NAME _____

DIRECTIONS:

PRINT your name NEATLY above. Read each of the following questions carefully. Write complete answers for each on a separate sheet of lined paper. Staple all pages together with this exam sheet on top. Be sure your answers are NEAT and LEGIBLE, illegible answers will receive no credit. Each question is worth two points, partial answers will receive partial credit. There will be no make up opportunities available for points lost on this exam. You have two and a half hours to complete the exam.

1. For a direct flight from Redlands airport to Riverside airport:
   a) List the preferred calm wind runways, traffic pattern direction and altitude at each airport.

   b) List the availability of fuel for a Cessna 172 at each airport.

2. For the above mentioned flight:
   a) List all types of airspace which will be crossed to complete the flight.

   b) List a safe and appropriate altitude at which to complete the flight, and all communications frequencies necessary to complete the flight.

3. For the above mentioned flight:
   a) List all information you should give the weather briefer when you call for a weather briefing (as noted on a standard flight plan form).

   b) List the types of information that you need to receive from the briefer concerning your flight.

4. Concerning aircraft weight and balance and performance:
   a) Write out the formula for determining an aircraft's center of gravity.

   b) List the factors which effect aircraft performance characteristics for:Take off distance, Landing distance, fuel flow rate, and acceleration & climb performance.

5. Concerning aircraft preflight inspection:
   a) List all of the steps involved in a complete preflight inspection of a Cessna 172 (be sure to include all safety actions).

6. Concerning aircraft servicing:
   a) List all of the steps involved in a complete aircraft servicing of a Cessna 172 (be sure to include all safety actions)

7. Regarding correct radio communications procedures:
   a) List the information that should be included in an initial call up to any radio facility.

   b) List the information which should be included in a request for information or services from an ATC facility.

8. Regarding correct emergency radio communications procedures:
   a) List the international two way radio communications frequency and list the information which should be included in an emergency communication.

   b) List the meanings of 7700, 7600 and 7500 codes, and explain when and how they are to be used.

9. Regarding local FAA facilities:

   a) List the location of the local FSDO and list the types of service which are offered to pilots, and the ways in which the FSDO promotes air safety.

   b) List the location of the local FSS and list the types of service which are offered to pilots, and the ways in which the FSS promotes air safety.

10. Regarding local FAA facilities:

    a) List the location of the Ontario TRACON and list the types of service which are offered to pilots, and the ways in which TRACON promotes air safety.

    b) List the location of the Ontario ATC Tower and list the types of service which are offered to pilots, and the ways in which the ATC Tower promotes air safety.

When you have completed this exam, re-check your answers, staple these exam pages to your answer pages and turn in.