Learn to Fly: Private Pilot Ground School DeCal

Fall 2014

General Course Information

When: TuTh (irregular) 6-8pm
Where: TBA
Special Studies Coordinators:
Jeremy Axelrod (jaxelrod@berkeley.edu)
Howard Brown (howard.a.brown.iv@berkeley.edu)
Austen Iverson (austeni@berkeley.edu)
Trevor Nesbitt (tnesbitt@berkeley.edu)
Aaron Wienkers (aaron.wienkers@berkeley.edu)
Course Department: Civil and Environmental Engineering
Faculty Advisor: Professor J. Rakas
Course Number: CE 98 (lower division), CE 198 (upper division)
CCN: By Application (come to first class on 9/9)
Units: 2, P/NP
Prerequisites: None

Course Description

The purpose of this course is to provide students with all necessary "book" knowledge to become a private pilot and pass the FAA private pilot written exam. This DeCal is not designed for students to control a physical aircraft (though a PC-based flight simulator will be available at least once in the semester for students to use during a class period), but rather to prepare a student for flight training and delve into the world of aviation. Similar to driving school, the course will be held in a classroom. Although there are no prerequisites required, students who have science or engineering backgrounds/interests may benefit from the supplementary curriculum that explores the application of engineering in aviation. Pre-law students may also particularly enjoy learning the pertinent Federal Aviation Regulations (Title 14 of the Code of Federal Regulations) for private pilots.

As an introduction to the course, students will be introduced to the airplane as a concept, and the fundamentals of flight. By the end of the course, students will be proficient with the theory of aircraft systems, flight operations, aviation meteorology, airplane performance, aeronautical decision-making, and aeromedical factors.

This course will have a heavier workload than most DeCals. There are two reasons for this:

1) SAFETY
Aviation is much less forgiving of mistakes than, say, driving. We want to make sure that all of our class graduates who leave intending to go on to earn their private pilot licenses are fully capable of performing to, and beyond, FAA knowledge standards.

2) SUBJECT MATTER
Flying is an amalgamation of different disciplines, many of which will be new and unfamiliar to most students. It is of the utmost importance to achieve mastery in all of these subject areas because they will be encountered on a daily basis when flying.

Materials

By the third week, you will need to purchase three items for this course. During lecture we will let you know where the best places to buy these is from. Total is approximately $30 + Shipping.

1. San Francisco VFR Sectional Chart
2. Course Plotter
3. E6B Flight Computer
4. FAR/AIM (Federal Aviation Regulations/Aeronautical Information Manual; available electronically online for free, or for sale in hardcopy)

The textbook for the class is Jeppesen's *Guided Flight Discovery: Private Pilot*. A student can loan out a textbook from the DeCal's supply for an $80 refundable deposit (check preferred, cash acceptable), or purchase the textbook for themselves from an online vendor ($60-$80 depending on vendor and hardcover/paperback).

Faculty

Professor Rakas (jrakas@berkeley.edu) will be the faculty sponsor for this course. While the student facilitators have the primary responsibility of running the course, Professor Rakas has the final authority for inputting course grades. Also, if there are

any complaints about the nature of the DeCal or how the course is run, she is the person to contact.

Professor Rakas may supervise the student course facilitators through occasional communication and follow-ups at her discretion. She may also choose to visit lectures with no prior notice to the students or facilitators.

Method of Instruction

Class: Lecture and activities. Class will meet every TBD for regular discussions. Class will also meet on irregular TBD (dates TBA) for guest lectures from commercial pilots, industry insiders, and aviation researchers, as well as other activities like flight simulation.

Homework: Questions addressing core subject understanding, as well as multiple choice questions from the FAA written test bank will be assigned on a weekly basis. Homework is graded on both completion and correctness.

Student Evaluation

Student attendance counts towards the course grade. All homework must be turned in completed and on time, or else the score for the late homework will be multiplied by 0.7. There will be an optional final exam given at the end of the semester. This exam will be an analog of the actual FAA written exam (questions from the FAA test bank, same number of questions, same time limit, etc.). The student with the highest final exam score above 80% will be given a free “discovery” flight, in which the student will fly with a certificated instructor and control the airplane themselves, at a local flight school (a $150 value!).

The grading breakdown is as follows:
20% attendance
20% the maximum percentage of either the final exam or attendance
60% the maximum percentage of either the final exam or homework

A passing grade is 70% or higher.

Teaching Schedule: Tu and/or Th, 6-8pm
Guest Lectures on some Tu or Th, 6-8pm

Dates/Instructor	Tuesday	Thursday	Weekly Reading
Fundamentals of Flight			
Week 1: Jeremy 9/9	Introduction to General Aviation, Flight Training Overview	**Jasenka Rakas: History of Aviation**	FAR §61: 1; 3; 15; 23; 31; 56; 57
Week 2: Jeremy 9/16	Airplane Systems, Powerplant, Flight Instruments	Airplane Systems, Powerplant, Flight Instruments continued...	Jepp. Ch. 1 (optional); Jepp. Ch. 2 FAR §61: 60; 69; 95; 101;113
Week 3: Aaron 9/23	Forces of Flight, Aerodynamics of Flight, Stability		Jepp. Ch. 3 FAR §91: 3; 7; 9; 15; 17; 103; 105; 107; 111; 113; 115
Flight Operations			
Week 4: Austen 9/30	Safety of Flight, Airports		Jepp. Ch. 4 Sec. A&B AIM Ch. 2, Ch. 4 Sec. 3, Ch. 6
Week 5: Ben 10/7	Aeronautical Charts, Airspace		Jepp. Ch. 4 Sec. C&D FAR §71: 5; 71 AIM Ch. 3
Week 6: Trevor 10/14		Radar and ATC Services, Radio Procedures, Sources of Flight Information	Jepp. Ch. 5 AIM Ch. 4 Sec.1, 2, 5 FAR §91: 117; 119; 121; 123; 125-127 Pilot/Controller Glossary
Aviation Meteorology			
Week 7: Ben 10/21	Basic Weather Theory, Weather Patterns	**Simulator**	Jepp. Ch. 6 Sec. A&B FAR §91: 129; 130; 131; 135; 151; 155; 157; 159
Week 8: Austen/Aaron 10/28	Weather Hazards, Obtaining Weather Information	Airplane Performance, Weight and Balance	Jepp. Ch. 6 Sec. C, Ch. 7, Ch. 8 AIM Ch. 7
Performance and Navigation			

Week 9: Howard **11/4**	Flight Computers, Pilotage/Dead Reckoning, VOR/DME, ADF		Jepp. Ch. 9 AIM Ch. 1 FAR §91: 203; 205; 207; 209; 211; 215; 303
Week 10: Howard **11/11**	**Holiday**	Cross-Country Flight Planning	Jepp. Ch. 11 FAR §91: 307; 309; 313; 319; 403; 405; 407
Week 11: Trevor **11/18**		Applying Human Factors, Aviation Physiology, Aeronautical Decision Making, Review	Jepp. Ch. 10 AIM Ch. 8 FAR §91: 409; 413; 417; NTSB §830: 5; 10; 15
Week 12: **11/25**		**Holiday**	
Week 13 **12/2**	**All: OPTIONAL: Simulated FAA Private Pilot Written Examination** Highest scorer above 80% receives a free flight lesson certificate ($199 value!)		