

### Learning Outcomes

Welcome to Ground School! This course covers the aeronautical knowledge required to operate an airplane as a private pilot. The lectures in this course draw on materials used to train flight students for decades and include topics such as: aerodynamics, flight planning, weather, airspace, communications, regulations, aeromedical factors, and decision-making.

Each of the fourteen topics includes a series of video lectures illustrating concepts with voice over from your instructor. You can supplement the lectures by reading up on the material using the assigned readings listed in the table on the next page. After each video lecture, there are a series of practice questions modeled on the actual FAA test.

After successfully completing this course you will be able to:

- Apply your knowledge toward conducting safe, efficient flight in single-engine aircraft;
- Take the Private Pilot – Airplane knowledge examination administered by the Federal Aviation Administration (FAA) for pilot certification. **Completion of the course entitles you to an endorsement to take this exam.**

### Resources Used in the Course

The following materials can be used to accompany the online resources for this course. A [list of files](#) used in the course is available below.



#### Pilot's Handbook of Aeronautical Knowledge

*This serves as the "textbook" for the course.  
You can access this FAA publication free  
online, or purchase your own*



#### Aviation Weather

*The FAA also publishes an excellent primer on  
aviation weather available free on its website*



#### E6-B Flight Computer/Plotter

*This tool will be used for flight planning:  
computing course, heading, groundspeed,  
wind corrections, times enroute, and  
fuel consumption*



#### Washington Sectional Chart (SWAS)

*Aeronautical chart used for flight planning  
You can access it online at [www.skyvector.com](http://www.skyvector.com)*

### Your Instructor

Dan George is a Certified Flight Instructor based at Freeway and College Park Airports in Maryland. He has accumulated over 4,000 flight hours, mostly through instructing students.

He has guided dozens of pilots through the challenging process of attaining their Private or advanced ratings.

Dan serves as an Adjunct Professor at the University of Maryland, teaching Aviation in the Aerospace Engineering Department.

He is an instrument rated Commercial Pilot with Single and Multiengine Land ratings and is an FAA Gold Seal Flight Instructor and Instrument Instructor.

Email Dan at [training@flightinsight.com](mailto:training@flightinsight.com)

## Lecture Listing

**PHAK** = Pilot's Handbook of Aeronautical Knowledge

**AW** = Aviation Weather

**SWAS** = Washington Sectional Chart

**E6-B** = E6-B Flight Computer/Plotter

**AIM** = Aeronautical Information Manual

| LECTURE    | READINGS                                                                                        | LECTURE SUBJECT                                                                                                                           | TIME TO COMPLETE |
|------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Lecture 1  | <a href="#"><u>PHAK-5</u></a>                                                                   | <b>Aerodynamics</b><br>Forces Acting on an Airplane<br>Stability and Control<br>Aerodynamics of Flight                                    | 90 minutes       |
| Lecture 2  | <a href="#"><u>PHAK-6</u></a><br><a href="#"><u>PHAK-7</u></a><br><a href="#"><u>PHAK-8</u></a> | <b>Airplanes and Systems</b><br>Airframe & Controls<br>Engine & Systems<br>Flight Instruments                                             | 85 minutes       |
| Lecture 3  | <a href="#"><u>PHAK-15</u></a><br><a href="#"><u>PHAK-14</u></a>                                | <b>Flight Environment</b><br>Aeronautical Charts<br>Airspace<br>Airports and Airport Operations                                           | 105 minutes      |
| Lecture 4  | <a href="#"><u>AIM-4</u></a><br><b>SWAS</b>                                                     | <b>Air Traffic Control</b><br>ATC Services<br>Radio Communication<br>DC Special Flight Rules Area                                         | 65 minutes       |
| Lecture 5  | <a href="#"><u>PHAK-11</u></a><br><a href="#"><u>PHAK-10</u></a>                                | <b>Airplane Performance</b><br>V-Speeds<br>Pressure & Density Altitude<br>Takeoff, Landing and Cruise Performance<br>Weight and Balance   | 100 minutes      |
| Lecture 6  | <a href="#"><u>PHAK-9</u></a>                                                                   | <b>Regulations</b><br>Federal Aviation Regulations Part 61 & 91                                                                           | 90 minutes       |
| Lecture 7  | <a href="#"><u>AW</u></a>                                                                       | <b>Weather Part 1</b><br>Heating Effects in the Atmosphere<br>Wind                                                                        | 80 minutes       |
| Lecture 8  | <a href="#"><u>AW</u></a>                                                                       | <b>Weather Part 2</b><br>Clouds and Thunderstorms<br>Air Masses and Frontal Weather<br>Operational Weather Factors                        | 50 minutes       |
| Lecture 9  | <a href="#"><u>PHAK-13</u></a>                                                                  | <b>Sources of Flight Information</b><br>Weather Reports and Forecasts<br>Filing Flight Plans<br>Flight Briefings                          | 85 minutes       |
| Lecture 10 | <a href="#"><u>PHAK-16</u></a>                                                                  | <b>Navigation</b><br>Pilotage & Dead Reckoning<br>Navigating with the Altimeter<br>Choosing and Flying a Course<br>VOR and GPS Navigation | 65 minutes       |
| Lecture 11 | <b>E6-B</b>                                                                                     | <b>Navigation Planning</b><br>Using a Flight Computer<br>Flight Planning                                                                  | 45 minutes       |

| LECTURE    | READINGS                                                        | LECTURE SUBJECT                                                                | TIME TO COMPLETE  |
|------------|-----------------------------------------------------------------|--------------------------------------------------------------------------------|-------------------|
| Lecture 12 | <a href="#"><u>PHAK-17</u></a><br><a href="#"><u>PHAK-2</u></a> | <b>Human Factors</b><br>Aeronautical Decisionmaking<br>Aeromedical Factors     | <b>70 minutes</b> |
| Lecture 13 | <b>SWAS</b><br><b>E6-B</b>                                      | <b>Plan a Cross Country Flight</b><br>College Park (KCGS) to Hagerstown (KHGR) | <b>90 minutes</b> |
| Lecture 14 |                                                                 | <b>Course Recap and Exam Preparation</b>                                       | <b>65 minutes</b> |

## Course Files

In addition to the lectures, reading materials, and online resources, there are a number of files available to you. These files will be useful in planning cross country flights.

### Cessna 172 Pilot's Operating Handbook (For Ground Use Only)

*The Pilot's Operating Handbook (POH) has useful information specific to the aircraft you will fly. Details in the POH are used for flight planning.*

### Empty Weight and Balance Certification (For Ground Use Only)

*Every aircraft is always required to have a certified empty weight and balance sheet on board, to help compute aircraft gross weight.*

### Northeast Chart Supplement

*The FAA published a Chart Supplement to include useful information on airports not found on aeronautical charts.*

### Cross Country Navigation Log

*A NavLog is used to plan out details of a cross country flight like waypoints, time enroute, fuel consumption, weather, and performance figures.*

### Completed NavLog – KCGS to KHGR

*For your reference, a completed NavLog is included for what you might use for a cross country flight.*