



Mountain Flying Syllabus

Stage: # I, Lesson 1 Self Study

Stage Objectives: Identify student mountain flying knowledge weakness(es) for ground school discussion and correction, and subsequent planning and safely executing across country flight in the Rocky Mountains. This stage is expected to require 1 ½ to 3 hours.

Instructor Note: Experienced pilots may require little ground instruction beyond this self-study lesson. Instructors may be able to adequately cover the material in stage II during the discussion of the Aspen Mountain Checkout Preparation Self Study Worksheet and subsequent flight in stage III.

Stage Completion Standards: Student will complete the Aspen Mountain Checkout Preparation Self Study Worksheet and review the Denver FSDO Mountain Flying DVD.

Recommended Aids:

- Denver FSDO mountain flying Video
- Aspen Mountain Checkout Preparation Self Study Worksheet
- Mountain Flying Bible – Sparky Imeson
- Aircraft POH
- FAR/AIM
- Current Section Chart [(*) as applicable to expected flight] – Denver, Cheyenne, Albuquerque(*), Salt Lake City (*), Billings (*), Greta Falls (*), Phoenix(*)
- Aspen Flying Club flight policies

Lesson Objectives: Student will acquire the minimum documents required to understand applicable Aspen Flying Club policies and to safely plan and execute a mountain cross country flight.

Review: Appropriate information sources

Introduce: Intent of Aspen Flying Club checkout and instructor expectations

Completion Standards: Student obtains appropriate planning documents, reviews the DVD, and completes the worksheet prior to stage #2.

Optional item: At the instructor's discretion advanced students may be assigned a flight route and be expected to complete the necessary flight planning prior to stage #2.



Stage: # II, Lesson #1: Introduction to Mountain Flying

Stage Objectives: The student will understand the rules, procedures, and aircraft capabilities necessary for safe mountain operations and demonstrate the ability to apply them in planning a multi leg mountain flight. Depending upon student experience level this stage is expected to require 2-6 hours of ground instruction.

Instructor Note: The intent of this stage is to correct student deficiencies identified in the Aspen Flying Club Mountain Checkout Preparation Self Study Worksheet. It is not intended to be a mandatory ground school and it is recognized that coverage of some of the material may be best accomplished with some students while conducting the en-route activity of stage III. Other students may require more extensive ground schooling before moving forward. Lessons in stage II are suggested in what should be a logical order for most students but instructors are encouraged to re-order and/or combine the lessons in this stage to most effectively meet the needs of the individual student.

Stage Completion Standards: The student will satisfactorily plan a multi leg flight to mountain airports utilizing correct information gathering techniques. Student will demonstrate a sound understanding of mountain weather, navigation & flight maneuvers, aircraft performance, communications, aeromedical factors, and risk management.

Recommended Aids:

- Aspen Flying Club Mountain Checkout Preparation Self Study Worksheet questions 15 & 23
- AC 61-91H, Pilot Proficiency Award Program
- FAA-P-8740-60 AFS-803, Tips on Mountain Flying
- Aspen Flying Club flight policies
- FAR/AIM

Lesson Objectives: Ensure student understands unique rules and procedures applicable to mountain flying.

Review:

- Applicable Aspen Flying Club flight policies, Denver FSDO Mountain Flying DVD and Aspen Flying Club Mountain Checkout Preparation answers with student
- FAR 91.119 (minimum safe altitudes), 91.121 (altimeter settings), 91.137 (temporary flight restrictions), 91.151 (VFR fuel requirements), 91.211 (supplemental oxygen), Part 830 (NTSB), AIM chapter 3 (VFR weather minimums)
- Mountain Flying “rules of thumb”



Introduce: FAA “wings” program

Completion Standards: Student demonstrates working knowledge of applicable FARs and other rules and policies applicable to safe mountain flying in Aspen Flying Club aircraft.

Stage: # II, Lesson #2: Mountain Weather

Recommended Aids:

- Aspen Flying Club Mountain Checkout Preparation Self Study Worksheet questions 6,8,11,18,19
- FAA-P-8470-30 AFS-820 How to Obtain a Good Weather Briefing
- Weather & Flight Information Telephone Numbers
- Turbulence Facts
- FAA-P-8470-40 AFO-800-0582 Wind Shear
- ATA-10 NOTAM & Weather Contractions Translator
- Colorado AWOS Stations
- AOPA Weather #1, Aircraft Icing
- AOPA Weather Tactics
- AOPA Weather Strategies
- AOPA Technology #2, ASOS

Lesson Objectives: Ensure student understands sources of mountain weather information and how to interpret and apply the information to flight planning and enroute operations.

Review:

- METARS
- Thunderstorms, windshear & turbulence
- Flight watch
- Sources of local mountain weather
- Fog
- Diurnal and terrain impacts upon mountain weather
- Icing

Introduce:

- Colorado AWOS system



- Rules of thumb for winds aloft

Completion Standards: Student will obtain a complete weather briefing for a mountain flight, correctly decode and interpret data obtained, and properly plan a mountain flight.

Student will correctly interpret enroute weather conditions and adjust flight accordingly.

Stage: # II, Lesson #3: Aircraft Performance

Recommended Aids:

- Aspen Flying Club Mountain Checkout Preparation Self Study Worksheet questions 4,7,11,12,14,17,19,21,22,23,24,25
- Aircraft POH
- Fact Sheet on Leaning & Mixture control at High Altitudes
- High, Hot, and (sometimes) Humid
- FAA-P-8740-5 AFS-800 Weight & Balance
- Breathing Easy
- FAA-P-8740-2 AFS-803 Density Altitude
- Aspen Flying Club Aircraft Checkout Quiz
- AIM Chapter 7-2.3, Altimeter Errors

Lesson Objectives: Student will demonstrate familiarity with various tables required to predict aircraft performance. Students will understand proper operation and troubleshooting of major aircraft systems. Student will understand limitations of light aircraft in mountainous terrain.

Review:

- E6B operation
- Aircraft performance tables
- Take off and landing distances
- Rate of climb
- Fuel consumption
- Crosswind component
- Weight and balance calculations
- Leaning techniques
- Manual density altitude calculation
- Aircraft systems and troubleshooting
- Short field technique



- Go arounds
- Aborted takeoffs
- Va

Introduce:

- Koch Chart
- Operation and maintenance of portable and installed oxygen systems
- Weight “download” concept
- Rules of thumb for takeoff performance

Completion Standards:

Student understands all aircraft performance calculations required for safe mountain flight and is able to calculate all aircraft performance requirements to Private Pilot PTS accuracy. NOTE: If student utilizes electronic devices for calculations instructor should ensure that student is capable of reasonable levels of manual calculation in case of electronics failure.

- Student has working knowledge (Private Pilot PTS) of major aircraft systems and can successfully resolve system scenarios presented by instructor.

Stage: # II, Lesson #4: Communications

Recommended Aids:

- Aspen Flying Club Mountain Checkout Preparation Self Study Worksheet questions 2,13,15

Lesson Objectives: Ensure student understands communications sources in the mountains and operational limitations.

Review:

- FSS frequencies
- Flight Watch
- Unicom operation
- ASOS/AWOS operation
- Pilot controlled lighting
- Flight following

Introduce: IFR charts and Center frequencies



Completion Standards: Student flight plan shows recognition of available communication sources and their limitations, and includes a backup plan in case of failed communications. Student obtains correct frequencies for all legs of Stage III flight.

Stage: # II, Lesson #5: Mountain Flight Planning

Recommended Aids:

- Aspen Flying Club Mountain Checkout Preparation Self Study Worksheet questions 2,5,7,16,20,22,24,25
- Aspen Flying Club flight plan
- FAA-P-8740-61 AFS-803 Mountain Flying Checklist
- Commonly Flown Mountain Passes
- Mountain Gaps
- Un-named Passes
- AC 91-36D, VFR Flight Near Noise Sensitive Areas
- Denver Sectional
- Cheyenne Sectional
- E6B & plotter
- Aspen Flying Club flight policies

Lesson Objectives: Ensure student is capable of accurately planning a safe VFR flight into the mountains.

Review:

- Aspen Flying Club flight planning and cross country policies
- Sectional chart symbology
- E6B operation
- Preferred mountain routes & passes

Introduce:

- Need for planning alternatives
- Increase fuel reserves
- Colorado passes

Completion Standards: Student will accurately plan a multi-leg VFR flight as specified by the instructor, to Private Pilot PTS.



Stage: # II, Lesson #6: Mountain Flight Operations and Maneuvers

Recommended Aids:

- Aspen Flying Club Mountain Checkout Preparation Self Study Worksheet questions 1,8,9,11
- AOPA Operations & Proficiency #3 Operations at Non-towered Airports
- FAA-P-8740-44 AFO-800 Impossible Turn
- Mountain Flying Bible-Sparky Imeson

Lesson Objectives: Prepare student for maneuvers and techniques required for safe mountain flying.

Review:

- Operations at non-towered airports
- Emergency procedures
- IAS versus TAS at altitude
- Carburetor heat
- Vapor lock
- Stall recognition & recovery
- Use of checklists

Introduce:

- Advanced course reversal techniques (ie; Chandelle, wing over, use of flaps, etc.)
- High altitude take off and landing technique
- Approach & crossing a mountain pass
- Flying canyons

Completion Standards: Student demonstrates understanding of elements of critical mountain flying operations and maneuvers, and conditions requiring their use.

NOTE: Inexperienced students may be asked to demonstrate some or all of these maneuvers in the practice area prior to the stage III flight into mountainous terrain.

Stage: # II, Lesson #7: Aeromedical Factors

Recommended Aids:



- Aspen Flying Club Mountain Checkout Preparation Self Study Worksheet questions 15,23
- AIM Chapter 8, Medical Facts for Pilots
- FAA-H-8083-25 Pilot's Handbook of Aeronautical Knowledge
- AM-400-91/1 AAM-900 Hypoxia
- Altitude Decompression Sickness
- The Air Up There
- Fighting Fatigue
- 14CFR91.211

Lesson Objectives: Ensure student understands aeromedical factors affecting mountain flight with special emphasis on hypoxia and optical illusion.

Review:

- AIM Chapter 8, Medical Facts for Pilots
- Pilot's Handbook of Aeronautical Knowledge, Chapter 15

Introduce:

- Oxygen requirements
- Decompression sickness

Completion Standards: Student can recognize personal aeromedical related symptoms and understands effective countermeasures.

Stage: # II, Lesson #8: Risk Management

Recommended Aids:

- Aspen Flying Club Mountain Checkout Preparation Self Study Worksheet questions 3,8,9,10,12,14,17,24
- FAA-P-8740-68 Flying in Flat Light
- FAA-P-8740-59 AFS-803 Land Survival
- FAA-P-8740-61 AFS-803 Mountain Flying Checklist
- FAA-H-8083-25 Pilot's Handbook of Aeronautical Knowledge

Lesson Objectives: Ensure student understands risks inherent in mountain flying and is capable of applying sound judgment to real or simulated mountain flying scenarios.

Review:



- Pilot's Handbook of Aeronautical Knowledge, chapter 16, Decision Making
- PAVE model

Introduce:

- Scenario(s) designed to test student's knowledge of mountain flying factors and decision making abilities
- Survival kit
- Night and IFR not recommended in Aspen aircraft

Completion Standards: Student is able to recommend safe courses of action to resolve Aspen Flying Club Mountain Checkout Preparation Self Study Worksheet questions 3,8,9,10,12,14,17,24, and any additional scenarios as presented by instructor. Student solutions should always reflect a conservative approach.

Stage: # III, Lesson #1: Mountain Flight – Practical Exercise

NOTE: Student must have 100 hours total time before attempting this stage. Flights must be in 180hp C172 or more powerful aircraft.

Stage Objectives: Student is able to plan and safely execute a flight over mountainous terrain. This stage is expected to require 4-8 hours for completion.

Stage Completion Standards: Private Pilot PTS

Recommended Aids:

- Aircraft POH
- Denver sectional
- Cheyenne sectional
- Checklists
- Aspen Flying Club Aircraft Checkout Quiz
- Colorado Airport Directory

Lesson Objectives: Student can correctly plan and safely execute a multi-leg day VFR flight into mountainous terrain.

Review:

- Flight planning procedures as necessary



- Operational and emergency procedures (while enroute) as necessary for student to demonstrate adequate knowledge of mountain flying techniques

Completion Standards: Student must successfully plan and safely complete a day VFR mountain cross country flight with take offs and landings at a minimum of three different mountain airports, although more are recommended. Depending upon student interest and weather conditions any of a number of airports can be selected but at least two of the airports must be above 7000' msl and at least one of the airports must be above 8000' msl.

Qualifying Colorado airports are listed below:

- Alamosa (ALS) 7539' Aspen (ASE) 7820' Blanca (05V) 7720'
- Buena Vista (7V1) 7946' Center (1V8) 7598' Creede (Q39) 8680'
- Del Norte (8V1) 7049' Granby (GNB) 8203' Gunnison (GUC) 7678'
- Kremmling (20V) 7411' LaVeta (07V) 7153' Leadville (LXV) 9927'
- Monte Vista (MVI) 7608' Pagosa Springs (2V1) 7700' Saguache (04V) 7826'
- Salida (0V2) 7489' Telluride (TEX) 9078' Walden (33V) 8149'
- Westcliffe (C08) 8290'

Additionally, the route must include at least two different mountain passes.

Airports in other Rocky Mountain States may be utilized at the instructor's discretion as long as the above three-airport/two mountain pass standard is complied with.

Instructors are encouraged to also expose student to common mountain situations such as short runways, narrow runways, difficult surrounding terrain, or one-way in-one way out, etc. in selecting airports.