



United States Hang Gliding & Paragliding Association

Hang Gliding Instructor Syllabus

Unit 2 – Ground School Topics

GROUND SCHOOL

1) Weather

- a. Winds
 - i. Aloft
 - ii. Surface
 - iii. Direction
 - iv. Gusts
 - v. Limitations
 - vi. Local
 - vii. General winds
- b. Fronts
- c. Valley Winds
- d. Gust Fronts
- e. Wind Shadow
- f. Wind gradient
- g. Density altitude
- h. Waves
- i. Stability calculations (lapse rate, pressure, isobars)
- j. Thermal block, Inversion
- k. Jet Stream
- l. Clouds
 - i. Cumies
 - ii. Cumulonimbus
 - iii. Lennies
 - iv. Cirrus
 - v. Stratus
 - vi. Thunder storms
- m. Large weather patterns
 - i. Fronts
 - ii. Foehn winds
- n. Dust devils and thermals
 - i. Thermal turbulence
- o. Anabatic, catabatic flow
 - i. Wonder winds
- p. Lee side
- q. Convergence

2) Lift sources

- a. Thermal
- b. Ridge
- c. Convergence
- d. Wave
- e. Cloud suck
- f. Restitution (wonder wind, glass off, magic air)

3) Turbulence

- a. Mechanical turbulence
- b. Rotors



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- c. Lee side
- d. Sheer turbulence
- e. Wake turbulence
- 4) Ground Speed vs Airspeed
- 5) Landings
 - a. Approach patterns
 - b. Speeds
 - c. Wind direction
 - d. Obstructions
 - e. Downwind landings
 - f. Hazards
 - i. Power lines
 - ii. Fences
 - iii. Trees/tree lines
 - iv. Stationary objects
 - v. Wind shadows
 - vi. Object fixation
- 6) Equipment
 - a. Inspection
 - b. Preflight
 - c. Maintenance
 - d. Suitability
 - e. Certification
 - f. Structural failure
- 7) Simulator or flight simulation
- 8) Right of Way
 - a. Ridge (how you fly the pattern)
 - b. Thermal
 - c. Flying with hang gliders and other aircraft
 - i. Understanding the differences
 - 1. Speeds and Glide Ratios
 - 2. Launching and landings
 - 3. Thermalling
 - 4. Visibility
 - 5. When overtaking
 - ii. Launch etiquette
 - d. Crowding and wakes
- 9) Ridge Flight
 - a. Wind directions & Mechanics
 - b. Lift band
 - c. Obstacles
 - i. Wing tip awareness
 - d. Upwind vs downwind considerations.
 - e. Wake turbulence
 - f. Landing considerations
 - i. Primary, secondary L.Z.s



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- ii. Top landings
- g. Penetration
 - i. Flying in Crowds
 - ii. Observation of patterns/ situational awareness
 - iii. Timing and clearing takeoff
 - iv. Signaling turns
 - v. Be predictable-don't do the unexpected
 - vi. Wake turbulence
 - vii. Follow right of way rules (on ridge, in thermals, during landing, etc.)
- 10) FAR 103
 - a. Introduction, (This is the LAW)
 - b. Details (sectionals, airspace rules, etc)
- 11) USHPA regulations
- 12) Aerodynamics
 - a. Pitch control and AOA, polar
 - i. Stall speed
 - ii. Min-sink,
 - iii. Max glide
 - b. Spiral stability
 - c. Affect of turns
 - d. Headwind
 - e. Tailwind
 - f. Lift
 - g. Sink
- 13) Reserve care and deployment
- 14) Judgment/Situational Awareness (threaded throughout GS and all training)
- 15) Site preservation (landowners, insurance, ambassadorship, ratings)
- 16) Flight plans
- 17) Descent techniques
- 18) Malfunctions (stalls/spins/ equipment issues)
 - a. Launch
 - b. During flight
- 19) Risk management
 - a. Prior to flight
 - i. Weather
 - ii. Site evaluation
 - iii. Personal and emotional condition
 - b. During Flight
 - i. Terrain clearance
 - ii. Possible landing places
 - iii. Changing weather
 - iv. Air traffic
 - v. Potential turbulence
 - vi. Deciding when to land
- 20) Takeoffs
 - a. Launch techniques



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- i. Cliff launch
- ii. Slope launch
- iii. Tow launch
- iv. Site and condition specific techniques
- b. Terrain considerations
- c. Crosswind