

CADET ORIENTATION FLIGHT SYLLABUS

Themes: Ground handling, preflight, takeoff & landing

Estimated Time: 1 sortie

Cadet Textbook Reference: *Aerospace Dimensions*, Module 1

GLIDER

1

SYLLABUS 1

1. Ground Handling

- Show how to ground handle the glider.
- Emphasize surface areas not to be touched.

2. Preflight Inspection

- Show how to preflight launch equipment & glider.
- Show & explain the towrope's or cable's function.
- Mention documents required to be aboard (AROW).
- Show main parts of glider & explain their function.

3. Launch Procedures

Aero Tow:

- Explain the duties & purpose of ground launch personnel.
- Discuss aero tow launch signals.

Ground Launch:

- Explain the duties & purpose of the ground launch personnel.
- Discuss ground launch signals.

4. Before Takeoff

- Show & tell about the routine cockpit checks.
- Explain the sequence of events prior to takeoff.
(Example: Tow hook connection & checks, taking up tow line slack, etc.)

5. Takeoff

- Show & tell about the glider's position behind the tow plane at takeoff & when airborne.
- Describe the glider's position during takeoff roll & initial climb.
- Describe emergency actions to be taken at different altitudes.

6. Climb Out

Discuss glider's position in relation to tow plane or launch vehicle:

- Describe the high tow position during aero tow.
- Discuss glider pitch attitude and position during ground launch.

7. Release

- Show & tell about the release to include clearing, release confirmation, & release procedures.

8. In Flight

- Show & tell about the use of flight controls in gliding flight, to include drag devices.
- Point out the glider's attitude in relation to the horizon & at different airspeeds.
- Show & tell about performance airspeeds: lift-over drag & minimum sink airspeeds.
- Identify familiar landmarks, ground features, and the position of the airport with respect to glider altitude and position.

9. Approach to Landing

- Show & tell about the traffic pattern. Discuss the reasons for a standardized entry procedure.
- Show & tell about the pre-landing checklist.
- Explain the use of a crab to maintain position (if needed).
- Identify the base turn and leg of the pattern.
- Show & tell about the final approach; discuss aim point, touch, down point, & stop point, and discuss use of drag devices.

10. Landing & Rollout

- Show & tell about the landing attitude.
- Point out the correct procedure for landing rollout.

11. Post Flight: Questions & Answers

GLIDER

1

SYLLABUS 1

CADET ORIENTATION FLIGHT SYLLABUS

GLIDER

2

SYLLABUS 2

Theme: Normal glider flight maneuvers

Estimated Time: 1 sortie

Cadet Textbook Reference: *Aerospace Dimensions*, Module 1

1. Preflight

- a. Discuss previously completed flights, as appropriate.
- b. Discuss principles for staying safe during this flight.

2. In Flight (minimum altitude of 1500' AGL)

- a. Trim for level flight; show & tell how the glider remains stable in hands-off flight.
- b. Emphasize attitude flying.
- c. Emphasize the importance of clearing.
- d. Discuss the effects of lift, drag, and gravity, and how gravity propels the glider.
- e. Discuss the relationship of lift, angle of attack, and relative wind.
- f. Show & tell straight and turning glides at various speeds (minimum sink, best lift over drag, and pattern speed).
- g. Show & tell shallow banked turn; discuss the horizontal component of lift, adverse yaw, turn coordination, slipping and skidding.
- h. Explain load factor during turns.

3. Post Flight: Questions & Answers

CADET ORIENTATION FLIGHT SYLLABUS

GLIDER

3

SYLLABUS 3

Theme: Advanced glider flight maneuvers

Estimated Time: 1 sortie

Cadet Textbook Reference: *Aerospace Dimensions*, Module 1

1. Preflight

- a. Discuss previously completed flights, as appropriate.
- b. Discuss principles for staying safe during this flight.

2. In Flight (minimum altitude of 1500' AGL)

- a. Perform clearing turns emphasizing collision avoidance.
- b. Demonstrate slow flight during straight & turning descents.
- c. Demonstrate straight ahead and turning stalls as appropriate, emphasizing stall recognition and recovery.
- d. Demonstrate medium and steep bank turns as appropriate.
 - (1) Discuss over-banking tendency.
 - (2) Discuss proper rudder coordination.
 - (3) Discuss aft control stick requirements to keep the nose up.
- e. Explain load factor during turns.
- f. Discuss steep spirals and spins; emphasize the difference and the dangers of excessive load factors in steep spirals.
- g. Demonstrate forward and side slips and discuss their purpose.

3. Post Flight: Questions & Answers

CADET ORIENTATION FLIGHT SYLLABUS

GLIDER

4

SYLLABUS 4

Theme: Use of instruments in soaring flight

Estimated Time: 1 sortie

Cadet Textbook Reference: *Aerospace Dimensions*, Module 2

1. Preflight

- a. Discuss previously completed flights, as appropriate.
- b. Discuss principles for staying safe during this flight.
- c. Explain the pitot/static system and its relationship to the airspeed indicator, altimeter, and variometer.
- d. Explain the magnetic compass and its inherent errors.

2. In Flight

- a. Explain the difference between absolute altitude (AGL), true altitude (MSL), and pressure altitude (PA).
- b. Demonstrate how to read the altimeter.
- c. Demonstrate how to read the airspeed indicator and discuss the difference between indicated airspeed, true airspeed, and ground speed.
- d. Identify how altitude and airspeed are related.
- e. Demonstrate how to read the variometer and discuss the indications of rising and/or falling thermal activity (air currents).
- f. Demonstrate turns using the magnetic compass; discuss compass turning errors (variation, deviation, magnetic dip, and oscillation error).

3. Post Flight: Questions & Answers

CADET ORIENTATION FLIGHT SYLLABUS

GLIDER

5

SYLLABUS 5

Themes: Weather

Estimated Time: 1 sortie

Cadet Textbook Reference: *Aerospace Dimensions*, Module 3

1. Preflight

- a. Discuss previously completed flights, as appropriate.
- b. Discuss principles for staying safe during this flight.
- c. Discuss thermal soaring: the effect of heating, thermal structure, locating thermals (cumulus clouds, dust devils, surface dust & smoke, soaring birds, other sailplanes, etc.).
- d. Discuss methods of soaring, as appropriate:
 - (1) Ridge and slope soaring
 - (2) Wind effects and requirements, soaring in upslope lift, leeside turbulence, slope and ridge requirements
 - (3) Sea breeze soaring
 - (4) Mountain wave soaring; formation, visual indications, associated turbulence

2. In Flight (cover those topics appropriate to local conditions)

- a. Demonstrate thermal soaring; discuss thermal entry and when & how to turn into the thermal; discuss thermalling with other sailplanes, best airspeed, and flying between thermals.
- b. Demonstrate sea breeze or shear line soaring.
- c. Demonstrate ridge or slope soaring; emphasize best speed to fly, general rules for turning on the ridge, approaching other sailplanes, and other "rules of the road."
- d. Demonstrate wave soaring; explain wave structure, wave crests, and rotor; identify lenticular clouds, if present.

3. Post Flight: Questions & Answers

CADET ORIENTATION FLIGHT SYLLABUS

POWERED

1

SYLLABUS 6

Themes: Ground handling, preflight, take-off & landing

Estimated Time: 0.7 hours

Cadet Textbook Reference: *Aerospace Dimensions*, Module 1

1. Ground Handling

- a. Demonstrate proper ground handling; identify those surface areas that are not to be touched.

2. Preflight Inspection

- a. Show and tell while performing a routine pre-flight inspection.
- b. Identify the required documents that must be kept on board.
- c. Show and tell about the airplane's basic anatomy.
- d. Discuss principles for staying safe during this flight.

3. Before Take-Off:

- a. Using the checklist, show and tell about routine cockpit checks.
- b. Explain the sequence of events prior to take-off.

4. Take-Off

- a. Discuss airplane position during takeoff roll and initial climb; demonstrate rudder controls.
- b. Describe emergency actions to be taken at different altitudes, as discussed during the "before take-off" checklist.

5. In-Flight (minimum altitude of 2500' AGL)

- a. Show and tell about the use of flight controls.
- b. Point out the airplane's attitude in relation to the horizon and different airspeeds.
- c. Identify familiar landmarks, ground features, and the position of the airport with respect to the airplane's altitude and position.

6. Approach to Landing

- a. Explain the approach to the traffic pattern; explain the reasons for a standardized entry procedure and perform the before landing check.
- b. Discuss the elements of the traffic pattern.
- c. Discuss the final approach and the importance of maintaining the correct airspeed.

7. Landing & Roll-Out

- a. Explain the landing attitude.
- b. Point out the correct procedure for landing roll-out.

8. Post Flight: Questions & Answers

POWERED

1

SYLLABUS 6

CADET ORIENTATION FLIGHT SYLLABUS

POWERED

2

SYLLABUS 7

Themes: Normal flight maneuvers

Estimated Time: 1.0 hours

Cadet Textbook Reference: *Aerospace Dimensions*, Module 1

1. Preflight

- a. Discuss previously completed flights, as appropriate.
- b. Discuss principles for staying safe during this flight.

2. In-Flight (minimum altitude of 2500' AGL)

- a. Trim for level flight; point out the stability of the aircraft in hands-off flight.
- b. Emphasize attitude flying.
- c. Show and tell about the trim controls and straight flying to a checkpoint using visual references.
- d. Discuss the effects of lift, drag, and gravity on the airplane.
- e. Discuss the relationship of lift, angle of attack, and relative wind.
- f. Demonstrate a shallow banked turn and point out how the airplane will maintain the turn with controls neutral.
- g. Explain load factor during turns.

3. Post Flight: Questions & Answers

CADET ORIENTATION FLIGHT SYLLABUS

POWERED

3

SYLLABUS 8

Themes: Advanced flight maneuvers

Estimated Time: 1.0 hours

Cadet Textbook Reference: *Aerospace Dimensions*, Module 1

1. Preflight

- a. Discuss previously completed flights, as appropriate.
- b. Discuss principles for staying safe during this flight.

2. In-Flight (minimum altitude of 2500' AGL)

- a. Perform climbing turns, emphasizing collision avoidance.
- b. Demonstrate slow flight (minimum controllable airspeed - MCA).
- c. Demonstrate straight ahead and turning stalls, as appropriate.
All stalls are to be imminent stalls (first aerodynamic indication of an oncoming stall, which is usually the stall warning alarm); back seat passengers are not allowed when demonstrating stalls.
- d. Demonstrate medium and steep bank turns; discuss proper rudder coordination and control stick requirements to keep the nose up.
- e. Explain load factor during turns.
- f. Discuss steep spirals and spins; emphasize the difference and dangers of excessive load factors in steep spirals.
- g. Demonstrate ground reference maneuvers used in search activities (parallel track, S-turns, expanding square).

3. Post Flight: Questions & Answers

CADET ORIENTATION FLIGHT SYLLABUS

POWERED

4

SYLLABUS 9

Themes: Use of instruments in flight

Estimated Time: 0.7 hours

Cadet Textbook Reference: *Aerospace Dimensions*, Module 2

1. Preflight

- a. Discuss previously completed flights, as appropriate.
- b. Discuss principles for staying safe during this flight.
- c. Explain the use of basic navigation instruments (clock, altimeter, airspeed indicator, and magnetic compass).
- d. Explain the pitot/static system and its relationship to the airspeed indicator, altimeter, and vertical velocity indicator.

2. In-Flight (minimum altitude of 2500' AGL)

- a. Explain the difference between absolute altitude (AGL), true altitude (MSL) and pressure altitude (PA).
- b. Demonstrate how to read the altimeter.
- c. Demonstrate how to read the airspeed indicator; discuss indicated airspeed, true airspeed, and ground speed.
- d. Point out how attitude and airspeed are related.
- e. Demonstrate how shallow climbs and descents affect the vertical velocity and airspeed indicators.
- f. Demonstrate turns using the magnetic compass; discuss compass turning errors - variation, deviation, magnetic dip, and oscillation error.

3. Post Flight: Questions & Answers

CADET ORIENTATION FLIGHT SYLLABUS

POWERED

5

SYLLABUS 10

Themes: Weather

Estimated Time: 0.7 hours

Cadet Textbook Reference: *Aerospace Dimensions*, Module 3

1. Preflight

- a. Discuss previously completed flights, as appropriate.
- b. Discuss principles for staying safe during this flight.
- c. Discuss cloud types and their effect upon flight.
- d. Discuss how terrain affects air stability.
- e. Demonstrate preflight weather briefing and discuss its importance.

2. In-Flight

- a. Demonstrate effects that weather has upon flying.
- b. Demonstrate the crab method (forward slip) to compensate for wind.
- c. Discuss wake turbulence avoidance.
- d. Demonstrate temperature differences at a few altitudes and discuss how altitude affects rate of climb.

3. Post Flight: Questions & Answers