

## MISSION PILOT CHECKOUT

This syllabus offers a detailed outline of the expected course progression. Each flight or ground lesson should follow the preceding so as to maximize training potential. It should be expected that a lesson may take several flights to reach proficiency.

### Lesson 1 – Aerodynamics (Ground)

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#### DISCUSS

- Pitch for airspeed, power for altitude
- Total drag vs. thrust available
- Contrasting  $V_x$  and  $V_y$  with density altitude
- Best glide performance with wind
- Calculating maneuvering airspeed

#### ASSIGNMENT

- Flight Discipline* Chapter 1: Discipline: The Foundation of Airmanship
- SDA Church Flight Operations Manual* Section III E: Transporting Sick or Injured Passengers
- SDA Church Flight Operations Manual* Section III F: Takeoff Limitations
- SDA Church Flight Operations Manual* Section V: Landing Procedures, Survey Flights, Air Drops, First Landings

### Lesson 2 – Takeoff/Landing Considerations and Performance (Ground)

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#### DISCUSS

- Transporting sick or injured passengers
- Weight and balance adjustments for performance
- Takeoff guidelines (limitations)
- Recommendations for performance charts, factoring in gradient
- Choosing and planning a suitable landing area
- Choosing and planning the approach path

#### ASSIGNMENT

- Flight Discipline* Chapter 4: The problem with shortcuts: Procedural Discipline

### Lesson 3 – Short Field Operations and Maneuvers (Flight - Angwin)

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#### DISCUSS

- Maximum performance takeoff
- Turns around a point / calculating wind speed and direction
- Turns on a point / calculating height above ground (pivotal altitude)
- Calculating length of runway / aerial runway inspection
- Maximum performance landing

#### ASSIGNMENT

- Flight Discipline* Chapter 5: Organizational Issues for Flight Discipline
- SDA Church Flight Operations Manual* Appendix D: Surface Tester
- SDA Church Flight Operations Manual* Appendix E: Visual Approach Slope Indicator

## **Lesson 4 – Short Field Operations and Maneuvers (Flight – Bush Strip)**

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### PRE-FLIGHT DISCUSSION

- Surface tester
- Visual approach slope indicator

### DISCUSS

- Maximum performance takeoff
- Turns around a point / calculating wind speed and direction
- Turns on a point / calculating height above ground (pivotal altitude)
- Calculating length of runway / aerial runway inspection
- Maximum performance landing

### ASSIGNMENT

- Flight Discipline* Chapter 6: Personality Factors and Flight Discipline
- SDA Church Flight Operations Manual* Section VI: Emergencies
- SDA Church Flight Operations Manual* Appendix I: Survival Kits

## **Lesson 5 – Emergencies (Flight)**

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### PRE-FLIGHT DISCUSSION

- Survival kits

### DISCUSS

- Emergency procedures
- Navigation/disorientation
- Lost procedures
- ELT search
- Searching

### ASSIGNMENT

- Aviation Weather* Chapter 2: Atmospheric Energy and Temperature
- Aviation Weather* Chapter 3: Pressure, Altitude, and Density
- Aviation Weather* Chapter 5: Vertical Motion and Stability

## **Lesson 6 – Temperature, Pressure and Stability (Ground)**

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### DISCUSS

- Surface temperature charts
- Constant pressure charts
- Atmospheric stability
- Lapse rates
- Lifted index and K index

### ASSIGNMENT

- Aviation Weather* Chapter 4: Wind
- Aviation Weather* Chapter 10: Local Winds
- Aviation Weather* Chapter 9: Thunderstorms

## Lesson 7 – Wind and Thunderstorms (Ground)

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### DISCUSS

- Factors affecting Coriolis force
- Geostrophic balance
- Estimating winds from isobars and contours
- Local winds
- Thunderstorms
- VIP levels and storm characteristics

### ASSIGNMENT

- Aviation Weather* Chapter 8: Air Masses, Fronts, and Cyclones
- Aviation Weather* Chapter 12: Turbulence
- Aviation Weather Chapter 17: Weather Evaluation for Flight*

## Lesson 8 – Weather Hazards and Decision-Making (Ground)

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### DISCUSS

- Frontal activity
- Hurricanes vs. extratropical cyclones
- Reading air currents (downdrafts and mechanical turbulence)
- Go/No-go decision-making

### ASSIGNMENT

- Flight Discipline* Chapter 13: Killing Conditions: Common Scenarios for Breakdowns of Flight Discipline

## Lesson 9 – Human Factors (Ground)

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### DISCUSS

- Judgment issues for mission pilots
- Workload vs. stress
- Mission weighting
- Discipline: The foundation of airmanship (Kern Ch. 1)
- Organizational Issues for Flight Discipline (Kern Ch. 4)
- Personality Factors (Kern Ch. 5)
- Killing Conditions: Common scenarios for breakdown of flight discipline (Kern Ch. 13)

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### Resources:

*Seventh-day Adventist Church Flight Operations Manual*. Berrien Springs, MI: Adventist Aviation Center.  
Kern, Tony. *Flight Discipline*. New York: McGraw-Hill, 1998.  
Lester, Peter F. *Aviation Weather*. Englewood, CO: Jeppesen Sanderson, Inc., 2001.