Multi Engine Lesson Outline

1. AIRCRAFT SYSTEMS

- a. Engines, Ignition, Carb/Injected ☐☐ ❑
- b. Propeller System (Feathering) ☐☐ ❑
- c. Landing Gear System ☐☐ ❑
- d. Brake System ☐☐ ❑
- e. Fuel System ☐☐ ❑
- f. Electrical System ☐☐ ❑
- g. Vacuum System ☐☐ ❑
- h. Oil, Hydraulic System ☐☐ ❑
- i. Pitot Static System ☐☐ ❑
- j. Heater System ☐☐ ❑
- k. Flight Controls, Trim, Auto-Pilot ☐☐ ❑

2. PERFORMANCE and LIMITATIONS

- a. Blue Line ☐☐ ❑
- b. Vspeeds (Vyse, Vxse, Vsse) ☐☐ ❑
- c. Accelerate Stop ☐☐ ❑
- d. Accelerate Go ☐☐ ❑
- e. Absolute and Service Ceiling ☐☐ ❑
- f. Weight and Balance ☐☐ ❑
- g. Single Engine Performance ☐☐ ❑

3. PRINCIPLES of FLIGHT (SINGLE ENGINE)

- a. Critical Engine defn (conventional, counter) ☐☐ ❑
- b. Critical Engine Factors (PAST) ☐☐ ❑
- c. Vmc (red line) ☐☐ ❑
- d. Zero Side-slip ☐☐ ❑
- e. Proper control SE (bank, rudder, pitch) ☐☐ ❑
- f. Drag (impacts) ☐☐ ❑

4. Vmc

- a. Definition ☐☐ ❑
- b. Factors affecting Vmc ☐☐ ❑
- c. Conditions for certification (14CFR 23.149) ☐☐ ❑
- d. Recognizing Vmc ☐☐ ❑
- e. Vmc versus Stall Speed ☐☐ ❑

5. NORMAL MANUEVERS

- a. Takeoff Engine Loss Briefing ☐☐ ❑
- b. Normal and Short Field Takeoff ☐☐ ❑
- c. Steep Turns ☐☐ ❑
- d. Slow Flight ☐☐ ❑
- e. Power-Off Stalls ☐☐ ❑
- f. Power-On Stalls ☐☐ ❑
- g. Accelerated Stalls ☐☐ ❑
- h. Emergency Descent ☐☐ ❑
- i. Go-Around ☐☐ ❑
- j. Normal and Short Field Landing ☐☐ ❑

6. SINGLE ENGINE MANUEVERS

- a. Single Engine Maneuvering ☐☐ ❑
- b. Vmc Demo ☐☐ ❑
- c. Drag Demo ☐☐ ❑
- d. SE Instrument Approaches ☐☐ ❑

7. EMERGENCY OPERATIONS (SINGLE ENGINE)

- a. Engine Loss on Take-Off Roll ☐☐ ❑
- b. Engine Loss on Departure (500ft) ☐☐ ❑
- c. Engine Loss at Altitude ☐☐ ❑
- d. Engine Loss flows to Fix ☐☐ ❑
- e. Engine Loss flows to Feather ☐☐ ❑
- f. Engine Loss: Gear Down/Flaps Down configs ☐☐ ❑
- g. Securing and Shutdown SE ☐☐ ❑
- h. Air Restart (unfeather) ☐☐ ❑

8. Addition Areas and Maneuvers

- a. tbd ☐☐ ❑

9. Stage Preps/Checks

- a. CheckRide Prep: Practical Test Standards (PTS) ☐☐ ❑
- b. CheckRide Prep: Oral Prep Areas Checklist ☐☐ ❑

Multi Commercial Add-on (ASEL Commercial->AMEL Commercial)

I. F. Performance and Limitations
I. G. Operations of Systems
I. H. Principles of Flight – Engine inoperative

- Critical Engine
- Density Altitude and Vmc and Vmc demo effects
- Effects on weight and CG on control
- Effects of bank angle and Vmc
- Relationship of Vmc to Stall Speed
- Reasons for Loss of Directional Control
- Indications of Loss of Directional Control
- Importance of proper Pitch, Bank, Coordination of Controls
- Loss of Directional Control recovery
- Engine Failure during take-off, planning, decisions, SE ops

II. Preflight Procedures
IV. A-D. Takeoff/Landing/Go-Around (normal/Short/Soft)
V. Steep Turns 50°
VII. A. Maneuvering during Slow Flight
VII. B. Power-Off Stalls
VII. C. Power-On Stalls
VII. D. Accelerated Stalls
VII. E. Spin Awareness
VIII. A. Emergency Descent
VIII. B. Engine Failure during Takeoff, before Vmc
VIII. C. Engine Failure after Lift-Off
VIII. D. Approach and Landing with Inoperative Engine
VIII. E. Systems and Equipment Malfunctions
VIII. F. Emergency Equipment and Survival Gear
X. A. Maneuvering with 1 Engine Inoperative
X. B. Vmc Demonstration
X. C. Engine Failure during flight (by ref to instruments)
X. D. Instrument Approach, Single Engine (by ref to instruments)

(Matt Beyer 2014)