



Mooney Transition Training Syllabus

FITS-Based Scenario Training for Mooney M20-Series Airplanes

Mooney Pros, Inc. | Revised October 2026

This syllabus guides transition training for pilots moving into a Mooney M20-series airplane. It follows the FAA Industry Training Standards (FITS) approach: scenario-based training (SBT), learner-centered grading (LCG), and an emphasis on risk management, aeronautical decision-making (ADM), and single-pilot resource management (SRM). Training is customized to the pilot's experience, the specific airplane, and the local operating environment.

Important: This syllabus does not replace the FAA-approved Pilot's Operating Handbook/Airplane Flight Manual (POH/AFM). All speeds, limitations, procedures, and performance data come from the POH/AFM, including applicable supplements, for the specific model and serial number being flown.

Objective

To train pilots transitioning to a Mooney to operate the airplane safely and effectively in a variety of environments, with a focus on scenario-based training, risk management, and mastery of the airplane's systems and performance characteristics.

Target Audience

- Private, commercial, or instrument-rated pilots transitioning to a Mooney.
- Pilots with limited or no experience in complex or high-performance airplanes, as well as experienced pilots who are new to the Mooney. Training is tailored to each pilot's background.
- **Endorsements:** Most M20-series Mooneys are complex airplanes (retractable landing gear, flaps, and a controllable-pitch propeller), which require a complex endorsement (14 CFR 61.31(e)). Models with engines of more than 200 horsepower also require a high-performance endorsement (14 CFR 61.31(f)). The instructor will confirm which endorsements the pilot holds or needs.

Training Philosophy

- **Scenario-Based Training (SBT):** Real-world scenarios that develop decision-making and practical skills.
- **Learner-Centered Grading (LCG):** Performance is assessed against defined outcomes. Maneuvers and procedures are graded Describe, Explain, Practice, or Perform; risk management and SRM are graded Explain, Practice, or Manage-Decide.
- **Single-Pilot Resource Management (SRM):** ADM, risk management, task management, automation management, and situational awareness.
- **FITS principles:** Realistic operational scenarios, with technically advanced aircraft (TAA) and automation management integrated where the airplane is so equipped.



WINGS Topic Reference

Lessons are mapped to FAA WINGS Pilot Proficiency Program topic areas (FAASafety.gov). In each code, B, A, and M indicate the Basic, Advanced, and Master levels; K indicates a knowledge topic and F a flight topic. Basic-level flight credit is flown to private pilot standards, Advanced to commercial pilot standards, and Master to CFI/ATP standards. The instructor validates WINGS credit through FAASafety.gov.

- **S-BF1-W-1.0-01, S-MF1-W-1.0-01, S-AF1-W-1.0-01, S-AK2-W-1.0-01:** Operating on and around airports (airport operations, taxi, and traffic pattern procedures).
- **S-BF2-W-1.0-01, S-AF2-W-1.0-01:** Flight operations away from airports (cross-country, navigation, and en route procedures).
- **S-BF3-W-1.0-01, S-BK3-W-1.0-01, S-MF2-W-1.0-02, S-MK2-W-1.0-02:** Electives, tailored to the pilot's needs (e.g., emergency procedures, advanced maneuvers).
- **S-BK1-W-1.0-01, S-AK1-W-1.0-01, S-MK1-W-1.0-02:** Risk management (ADM, hazard identification, and mitigation).
- **S-BK2-W-1.0-01:** Aircraft operations (Mooney systems, performance, and handling).

FAA Resources

Use the current edition of each publication.

- **Airplane Flying Handbook (FAA-H-8083-3C):** Core flight maneuvers and procedures.
- **Pilot's Handbook of Aeronautical Knowledge (FAA-H-8083-25C):** Aerodynamics, systems, and risk management.
- **Aviation Instructor's Handbook (FAA-H-8083-9B):** SBT and LCG methods.
- **FAA Industry Training Standards (FITS) guidance:** Guidance on scenario development and FITS standards, including FAA example scenarios.
- **Airman Certification Standards (ACS):** Standards for the pilot certificate and ratings held.
- **POH/AFM and supplements for the specific airplane:** The governing source for all speeds, limitations, procedures, and performance.



Mooney Engine Reference

Engines installed at certification, per FAA Type Certificate Data Sheet (TCDS) 2A3. Engines may have been changed or modified by Supplemental Type Certificate (STC); confirm the installed engine from the engine data plate, logbooks, and POH/AFM supplements. For models not listed, see TCDS 2A3.

Model	Common name(s)	Engine (manufacturer and model)
M20C, M20G	Ranger; Statesman	Lycoming O-360 (carbureted)
M20E, M20F	Chaparral/Super 21; Executive	Lycoming IO-360 (fuel-injected)
M20J	201 and later variants	Lycoming IO-360 (fuel-injected)
M20K	231, 252, Encore	Continental TSIO-360 (turbocharged)
M20L	PFM	Porsche PFM 3200
M20M	TLS, Bravo	Lycoming TIO-540 (turbocharged)
M20R	Ovation	Continental IO-550-G
M20S	Eagle	Continental IO-550-G
M20TN	Acclaim	Continental TSIO-550-G (turbocharged)
M20U	Ovation Ultra	Continental IO-550-G
M20V	Acclaim Ultra	Continental TSIO-550-G (turbocharged)

Syllabus Structure

The syllabus is divided into ground training and flight training modules, each built around specific scenarios. Training is progressive, starting with basic operations and advancing to complex scenarios. Estimated completion time is 10 to 15 hours of flight training and 8 to 10 hours of ground training, depending on pilot experience. The lesson plan below schedules 11.5 hours of flight training and 8.0 hours of ground training; the instructor adjusts lesson time to the pilot's progress.

Lesson	Planned time
Ground Module 1: Mooney Aircraft Systems and Operations	2.0 hours
Ground Module 2: Risk Management and SRM	2.0 hours
Ground Module 3: Airport Operations	2.0 hours
Ground Module 4: Flight Operations and Navigation	2.0 hours
Total ground training	8.0 hours
Flight 1: Basic Aircraft Handling and Airport Operations	1.5 hours
Flight 2: Advanced Maneuvers and Emergency Procedures	2.0 hours
Flight 3: Cross-Country Operations	3.0 hours
Flight 4: Night Operations and Elective Scenario	2.5 hours
Flight 5: Final Evaluation	2.5 hours
Total flight training	11.5 hours



Ground Training Modules

Module 1: Mooney Aircraft Systems and Operations (S-BK2-W-1.0-01)

- **Objective:** Understand Mooney systems and performance characteristics.
- **Topics:**
 - Airframe, engine, and propeller for the specific model (see the Mooney Engine Reference), including the induction and turbocharger systems on turbocharged models.
 - Retractable landing gear: normal operation, gear warning system, and emergency extension.
 - Fuel, electrical, and avionics systems (e.g., Garmin G1000 or G1000 NXi, if equipped).
 - Weight and balance, performance charts, and limitations, including V-speeds, taken from the POH/AFM for the specific airplane and recorded in Appendix A.
- **Activities:**
 - Review the POH/AFM, including supplements for installed equipment.
 - Complete the Aircraft-Specific Data sheet (Appendix A) with the pilot.
 - Calculate weight and balance and takeoff, climb, cruise, and landing performance for a sample cross-country flight.
- **Duration:** 2.0 hours
- **LCG outcome:** Explain aircraft systems, limitations, and performance.

Module 2: Risk Management and SRM (S-BK1-W-1.0-01, S-AK1-W-1.0-01, S-MK1-W-1.0-02)

- **Objective:** Develop skills in ADM, risk assessment, and SRM.
- **Topics:**
 - PAVE checklist (Pilot, Aircraft, enVironment, External pressures).
 - 3P model (Perceive, Process, Perform) for decision-making.
 - Mooney-specific risks (e.g., airspeed control on approach and landing, gear-up landings, fuel management).
 - Automation management (if TAA-equipped).
- **Activities:**
 - Case study: Review an NTSB report on a Mooney accident (e.g., fuel exhaustion or a stall on approach).
 - Develop a personal minimums checklist.
- **Duration:** 2.0 hours
- **LCG outcome:** Explain risk management principles.

Module 3: Airport Operations (S-BF1-W-1.0-01, S-MF1-W-1.0-01, S-AF1-W-1.0-01, S-AK2-W-1.0-01)

- **Objective:** Master procedures for operating at airports.
- **Topics:**
 - Airport signage, taxi procedures, and runway incursion prevention.



- Traffic pattern operations, including pattern and approach speeds and configurations from the POH/AFM (Appendix A).
- Radio communications and ATC coordination.
- Wake turbulence avoidance.
- **Activities:**
 - Simulator session, if available: taxi and departure at a towered airport.
 - Review the FAA's Runway Safety resources.
- **Duration:** 2.0 hours
- **LCG outcome:** Explain airport operations procedures.

Module 4: Flight Operations and Navigation (S-BF2-W-1.0-01, S-AF2-W-1.0-01)

- **Objective:** Plan and execute cross-country flights.
- **Topics:**
 - Flight planning (e.g., fuel requirements, alternate airports).
 - Navigation (VFR and IFR, including GPS).
 - Weather analysis and go/no-go decisions.
 - Cruise performance, fuel flow, and range for the specific airplane, calculated from the POH/AFM (Appendix A).
- **Activities:**
 - Plan a 200 NM cross-country flight using ForeFlight or a similar electronic flight bag.
 - Discuss en route emergency scenarios (e.g., engine failure).
- **Duration:** 2.0 hours
- **LCG outcome:** Explain flight planning and navigation.

Flight Training Modules

Each flight is built around a scenario that simulates real-world conditions, followed by a debrief that includes the pilot's self-assessment and the instructor's LCG assessment. Scenarios are drawn from the WINGS topic areas above and customized for Mooney operations. All speeds and configurations come from the POH/AFM for the specific airplane (Appendix A).

Flight 1: Basic Aircraft Handling and Airport Operations (S-BF1-W-1.0-01, S-AF1-W-1.0-01, S-AK2-W-1.0-01)

- **Objective:** Familiarize the pilot with Mooney handling and airport procedures.
- **Scenario:** Depart a towered airport for local VFR training, practicing traffic pattern entries and landings.
- **Tasks:**
 - Preflight inspection and weight and balance verification.
 - Normal and short-field takeoffs and landings.
 - Taxi procedures and radio communications.
 - Slow flight and stalls (power-on and power-off, in clean and landing configurations).



- **Risk management focus:** Runway incursions and gear-up landing prevention.
- **Duration:** 1.5 hours
- **LCG outcome:** Practice basic maneuvers and airport operations.

Flight 2: Advanced Maneuvers and Emergency Procedures (S-BF3-W-1.0-01, S-MF2-W-1.0-02)

- **Objective:** Build proficiency in advanced handling and emergency response.
- **Scenario:** VFR flight with simulated system failures (e.g., gear malfunction, partial power loss).
- **Tasks:**
 - Steep turns, slow flight, and accelerated stalls (at a safe altitude and within POH/AFM limitations).
 - Emergency gear extension and go-around procedures.
 - Simulated engine failure: best-glide speed, landing site selection, and checklist, with recovery at a safe altitude.
- **Risk management focus:** Situational awareness and checklist discipline.
- **Duration:** 2.0 hours
- **LCG outcome:** Practice advanced maneuvers and emergency procedures.

Flight 3: Cross-Country Operations (S-BF2-W-1.0-01, S-AF2-W-1.0-01)

- **Objective:** Conduct a cross-country flight with navigation and weather challenges.
- **Scenario:** A 150 to 200 NM VFR or IFR cross-country flight to a non-towered airport, with an unexpected weather diversion.
- **Tasks:**
 - Flight planning and navigation (pilotage, GPS, and VOR).
 - Normal and crosswind landings at the destination.
 - Diversion to an alternate airport due to weather.
- **Risk management focus:** Weather decision-making and fuel management.
- **Duration:** 3.0 hours
- **LCG outcome:** Perform cross-country operations.

Flight 4: Night Operations and Elective Scenario (S-BK3-W-1.0-01, S-MK2-W-1.0-02)

- **Objective:** Develop proficiency in night operations and address the pilot's specific needs.
- **Scenario:** Night VFR flight to a towered airport, with a simulated electrical failure.
- **Tasks:**
 - Night takeoffs, landings, and traffic pattern work.
 - Emergency procedures (e.g., loss of lighting, alternator failure).
 - Elective task (e.g., an instrument approach, if instrument rated).
- **Risk management focus:** Night illusions and SRM under stress.
- **Duration:** 2.5 hours
- **LCG outcome:** Perform night operations.



Flight 5: Final Evaluation (All WINGS Topics)

- **Objective:** Assess the pilot's readiness to operate the Mooney safely as pilot in command without instructor assistance.
- **Scenario:** Comprehensive VFR or IFR flight combining airport operations, cross-country navigation, and emergency procedures.
- **Tasks:**
 - Complete preflight, flight planning, and execution.
 - Unannounced simulated emergencies (e.g., engine failure, gear malfunction).
 - Normal, short-field, and crosswind landings.
- **Risk management focus:** SRM, ADM, and checklist discipline.
- **Duration:** 2.5 hours
- **LCG outcome:** Perform for all maneuvers and procedures; Manage-Decide for risk management and SRM.

Completion Standards

- **Ground training:** Explain level for all topics, with the ability to apply risk management principles.
- **Flight training:** Perform level for all maneuvers and procedures and Manage-Decide level for risk management and SRM, demonstrating safe and competent operation of the Mooney.
- **Final evaluation:** Satisfactorily complete the Flight 5 evaluation with a Mooney Pros instructor, meeting or exceeding the applicable FAA Airman Certification Standards (ACS) for the pilot certificate and ratings held (e.g., Private Pilot or Commercial Pilot ACS, and the Instrument Rating ACS for IFR tasks).

Assessment

- Use the LCG scales: Describe, Explain, Practice, Perform for maneuvers and procedures; Explain, Practice, Manage-Decide for risk management and SRM.
- Postflight debriefs, beginning with the pilot's self-assessment, to review performance, SRM, and risk management.
- Written or oral quizzes on Mooney systems and procedures.

Customization

- Adjust elective scenarios (S-BF3, S-BK3, S-MF2, S-MK2) to the pilot's experience (e.g., IFR training, mountain flying, or TAA automation).
- Incorporate local conditions (e.g., high-density-altitude airports, busy airspace).

Notes for Instructors

- **Mooney-specific considerations:** Emphasize precise airspeed control on approach and landing. The Mooney's low-drag airframe is slow to decelerate, and excess airspeed leads to floating and long



landings. Use the POH/AFM speeds in Appendix A for the specific airplane. On airplanes with manually operated (Johnson bar) landing gear, cover its operation in detail.

- **TAA integration:** If the Mooney has a glass cockpit (e.g., Garmin G1000 or G1000 NXi), include automation management scenarios consistent with FITS guidance.
- **Safety focus:** Gear-up landings are a common Mooney risk. Build checklist discipline and gear-down confirmation into every flight.
- **Resources:** The FAA's FITS guidance offers additional scenario ideas.

Contact

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Mooney Pros is a FAASTeam Industry Member. FAASTeam membership does not constitute FAA endorsement of Mooney Pros or its training.



Appendix A: Aircraft-Specific Data

Completed by the instructor and pilot in Ground Module 1, using the POH/AFM and supplements for the specific airplane. Do not use values from another airplane, another model, or a generic source.

Item	Entry
Registration (N-number)	
Model and serial number	
Engine (make/model) and propeller	
POH/AFM revision/date and applicable supplements	
Pilot / Instructor / Date	

Speed, limitation, or performance item	Value (units)	POH/AFM section/page
VSO: stall speed, landing configuration		
VS1: stall speed, clean		
VX: best angle of climb		
VY: best rate of climb		
Cruise climb speed		
VA: maneuvering speed (at max weight and at today's weight)		
VFE: max flap-extended speed (takeoff/approach flaps; full flaps)		
VLO: max landing gear operating speed (extension; retraction)		
VLE: max landing gear extended speed		
VNO: max structural cruising speed		
VNE: never-exceed speed		
Best glide speed		
Normal approach speed (full flaps)		
Short-field approach speed		
Maximum demonstrated crosswind component		
Maximum takeoff and landing weight		
Usable fuel		
Planning cruise: power setting, TAS, and fuel flow		
Maximum operating altitude (and oxygen requirements)		
Turbocharger/manifold pressure limits (if turbocharged)		
Speed brake limitations (if equipped)		
Gear warning activation (conditions)		
Emergency gear extension procedure (reference)		