FAA Industry Training Standards (FITS)

Scenario Based Instructor Syllabus and Standards for Cessna Single Engine Piston Aircraft (Version 2.0)

FITS Instructor Syllabus
Scenario-Based Instructor Guide

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Acknowledgements:

This Syllabus Prepared by

Cessna
A Textron Company

Section 1 - Cessna SEP FITS Introduction

FAA Industry Training Standards (FITS)

The FITS Program is a joint project of the FAA sponsored Center for General Aviation Research (CGAR), and the General Aviation Industry.

FITS Mission Statement

Ensure pilots learn to safely, competently, and efficiently operate a technically advanced airplane or light jet aircraft in the modern National Airspace System (NAS).

FITS Imperatives

The FAA Administrators 2004-2008 Flight Plan outlines the FAA and industry's commitment to significantly reduce general aviation accidents; the majority (75%) of which are attributed to pilot error. Compounding the challenge of this initiative is the emergence of a new class of technically advanced general aviation aircraft offering significant improvements in performance and capability. These innovative aircraft are equipped with automated cockpits and attain cruising speeds that require flight management and decision-making skills normally expected from ATP-level pilots. It is imperative that a new training philosophy be implemented that reduces human errors and accelerates the acquisition of higher-level judgment and decision-making skills.

FITS training recognizes the wide variety of technically advanced systems and their differences when compared to the relatively similar layout found in the conventional cockpits they replace.

- Within a type of system (ex. different operations of GPS navigators)
- Within categories of advanced technology systems
    - Primary Flight Displays (PFD)
    - Multi-Function Displays
    - Traffic Information
    - Weather Information
    - Terrain Information
    - Autopilots

FITS Training Goals (In Priority of Importance)

- Higher Order Thinking
    - Aeronautical Decision Making and Situational Awareness
    - Pattern Recognition (Emergency Procedures) and Decision Making
- Automation Competence
- Planning and Execution
- Procedural Knowledge
- Psychomotor skill

Section 2 - Terminology / Definitions

Key Terms

Cessna FITS Accepted Instructor (CFAI) - An individual recognized by Cessna Aircraft Company to use Cessna's FITS accepted transition program to train purchasers and rental pilots of NAV III equipped Cessna aircraft.

Technically Advanced Aircraft (TAA*)* - A General Aviation aircraft that combines some or all of the following design features; advanced cockpit automation system (Moving Map GPS / Glass Cockpit) for IFR / VFR flight operations, automated engine and systems management, and integrated autopilot systems.

Scenario Based Training (SBT) - A training system that uses a highly structured script of real-world experiences to address flight training objectives in an operational environment. Such training can include initial training, transition training, upgrade training, recurrent training, and special training. The appropriate term should appear with the term "Scenario Based," (ex. "Scenario Based Transition Training") to reflect the specific application.

Single Engine Propeller (SEP) - Cessna single engine models, which meet the FITS description for a Technically Advanced Aircraft.

Single Pilot Resource Management (SRM) -The art and science of managing all the resources (both on-board the aircraft and from outside sources) available to a single-pilot (prior to and during flight) to ensure the successful outcome of the flight is never in doubt.

Related Terms and Abbreviations

Aircraft Automation Management - The ability to control and navigate an aircraft by means of the automated systems installed in the aircraft.

Automated Navigation Leg - A flight of 30 minutes or more conducted between two separate airports in which the aircraft is controlled primarily by the autopilot and the on board navigation systems.

A **VFR Automated Navigation Leg** is flown on autopilot from 800 ft AGL on the departure until entry to the 45-degree leg in the VFR pattern.

An **IFR Automated Navigation Leg** is flown on autopilot from 800 ft AGL on departure until reaching the decision altitude (coupled ILS approach) or missed approach point (autopilot aided non-precision approach) on an instrument approach. If a missed approach is flown it will be flown using the autopilot and on-board navigation systems.

Automation Competence - The demonstrated ability to understand and operate the automated systems installed in the aircraft.

Automation Surprise - The characteristic of an automated system to provide different types and varieties of cues to pilots than the analog systems they replace, especially in time-critical situations.

Automation Bias - The relative willingness of the pilot to trust and utilize automated systems.

Critical Safety Tasks / Event - Those mission related tasks / events that, if not accomplished quickly and accurately, may result in injury or substantial aircraft damage.

Data-link Situational Awareness Systems - Systems that feed near real-time information such as weather, traffic, terrain and flight planning to the cockpit. This information may be displayed on the PFD, MFD or on other related cockpit displays.

Desired Instructor in Training (IT) Scenario Outcomes

The objective of scenario-based training is to change the thought processes, habits, and behaviors of the students during the planning and execution of the scenario. Since the training is learner centered the success of the training is measured in the following desired student outcomes:

- **Maneuver Grades (Tasks)**
  - **Explain** - at the completion of the scenario the IT will be able to describe the scenario activity and understand the underlying concepts, principles, and procedures that comprise the activity. Significant instructor effort will be required to successfully execute the maneuver.
  - **Practice** - at the completion of the scenario the IT will be able to plan and execute the scenario activity. Coaching and / or assistance from the CFI will correct minor deviations and errors identified by the CFI.
  - **Perform -** at the completion of the scenario, the IT will be able to perform the activity without assistance from the CFI. Errors and deviations will be identified and corrected by the IT in an expeditious manner. At no time will the successful completion of the activity be in doubt. **"Perform"** will be used to signify that the IT is satisfactorily demonstrating proficiency in traditional piloting and systems operation skills.
- **Single Pilot Resource Management (SRM) Grades**
  - **Explain –** the IT can verbally identify, describe, and understand the risks inherent in the flight scenario. The student will need to be prompted to identify risks and make more decisions.
  - **Practice –** the IT is able to identify, understand, and apply SRM principles to the actual flight situation. Coaching, instruction, and / or assistance from the CFI will quickly correct minor deviations and errors identified by the CFI. The student will be an active decision maker.
  - **Manage / Decide –** the IT can correctly gather the most important data available both within and outside the cockpit, identify possible courses of action, evaluate the risk inherent in each course of action, and make the appropriate decision. Instructor intervention is not required for the safe completion of the flight.

Emergency Escape Maneuver - A maneuver (or series of maneuvers) performed manually or with the aid of the aircraft's automated systems that will allow a pilot to successfully escape from an inadvertent encounter with Instrument Meteorological Conditions (IMC) or other life-threatening situations.

Mission Related Tasks - Those tasks required for the safe and effective accomplishment of the mission(s) that the aircraft is capable of and required to conduct**.**

Multi-Function Display MFD - Any display that combines navigation, aircraft systems, and situational awareness information onto a single electronic display.

Primary Flight Display (PFD) - Any display that combines the primary six flight instruments, plus other related navigation and situational awareness information, into a single electronic display.

Proficiency - The ability to accurately perform a task within a reasonable amount of time. The outcome of the task is never seriously in doubt.

Proficiency Based Qualification - Aviation task qualification based on demonstrated performance rather than other flight time or experience qualifiers.

Simulation - Any use of animation and / or actual representations of aircraft systems to simulate the flight environment. PT interaction with the simulation and task fidelity for the task to be performed are considered the requirements for effective simulation.

Training Only Tasks - Training maneuvers that, while valuable to the student's ability to understand and perform a mission related task, are not required for the student to demonstrate proficiency. However, instructor pilots will be required to demonstrate proficiency in Training Only Tasks.

Section 3 - Cessna SEP FITS Training Philosophy

Cessna Aircraft has built more than 170,000 airplanes ranging from single engine pistons to twin-engine turbofan jets. Through the years, Cessna has also developed a unique sense of need as it relates to pilot training. For example, the **Cessna Pilot Center** flight school concept has taught thousands of pilots to fly and earn advanced certificates and ratings. Cessna has primarily used **Flight Safety International** as its' training partner for the turbine and jet products. With this training experience, Cessna has recognized the need for a new approach to training pilots who fly TAA. Primarily, the Cessna SEP / FITS training is scenario based rather than task based. Emphasis is given to the development of critical thinking and flight management skill.

Scenario based training has been used by the military and commercial airline communities for many years while enjoying great success. Research has proven that learning is **enhanced** when training is both realistic and authentic. Additionally, the underlying skills needed to make good judgment and decisions can be taught. Through the use of Line Oriented Flight Training (**LOFT**) and Cockpit Resource Management (**CRM**) these organizations created lessons to mimic real-life scenarios as a means of exposing pilots to realistic operations and critical-decision making opportunities. Cessna has used this approach in training its' own pilots who are on a company approved pilots list. Since the majority of company flights are for transportation, ferry and demonstration purposes, the pilots flying these missions require a higher level of training. Combined with annual recurrent training, new model transition training and a dedicated single-engine operations manual, Cessna has enjoyed a remarkable safety record.

The SEP aircraft is an excellent opportunity for Cessna to introduce the FITS training concept to its' customers. The proven, Cessna airframe has enjoyed over fifty years of service. These airplanes are exceptionally stable and forgiving, and more importantly, comprise the majority of the past and current training fleet. What makes the SEP TAA aircraft unique is superior avionics, which offer enhanced capabilities. Advanced cockpits and avionics, while generally considered enhancements, **require** increased technical knowledge and finely-tuned automation competence. The training Cessna is providing uses the scenario based method to introduce pilots to the **Garmin G1000** avionics, increasing their comfort level in Cessna SEP. Additionally, aircraft systems training are included to help the pilot recognize the limitations and capabilities of these airplanes. Currently SEP / FITS training is available for the following models equipped with the NAVIII / G1000; **C172 Skyhawk**, the **C182 Skylane** and **C206 Stationair**, both normally aspirated and turbocharged versions.

Throughout each training scenario, the pilot will be challenged with "What If?" discussions as a means to provide the PT with increased exposure to proper decision-making. Because the "What If?" discussions are in reference to a scenario, there is a vivid connection between decisions made and the final outcome. The "What If?" discussions are designed to accelerate development of decision-making skills by posing situations for the PT to ponder. Once again, research has shown these types of discussions help build judgment and offset low experience.

Section 4 - Cessna SEP Scenario Development Guide

Learning how to properly teach the Cessna SEP Transition Syllabus will enable an instructor to use the same principles and techniques to teach other approved courses in the Cessna family of aircraft.

The FITS Instructor Training Syllabus assumes that the Instructor in Training (IT) is already a proficient CFII who has prior aeronautical experience in operation of the Cessna SEP's. Training time will vary depending on the instructor's prior experience in these areas.

Scenario development is the key to the FITS Instructor Training Syllabus. Ideally, the IT conducts scenario planning with little assistance from the teaching instructor. The teaching instructor, with guidance from the syllabus, will as act a mentor and assist in establishing boundaries for the scenario. The teaching instructor will guide the planning process to ensure that learning outcomes are achieved in an orderly and efficient manner.

The IT and the teaching instructor will discuss the lesson syllabus and decide (in advance) the most likely destination for the departure and return legs of each scenario. The IT must be proficient in the G1000 equipped Cessna so that they are able to concentrate on providing training specific to functions of the system with use of proper teaching techniques.

The CFAI candidate must become completely versed in all the automated features of the aircraft. The instructor must also be able to teach students how to use such features. Failure to completely master and trust cockpit automation will severely reduce the effectiveness of the training.

Although not required, the teaching instructor and IT may combine several lessons by performing a long, multi-leg trip into areas unfamiliar to the IT. To be consistent with the FITS Transition Training Syllabus, the scenarios should involve flight within increasingly complex airspace. By the completion of the Instructor Training Syllabus, the IT will demonstrate effective teaching ability while maintaining mastery of the aircraft at all times.

Instructor in Training (IT) / Teaching Instructor Responsibilities

Pre-Scenario Planning

For Scenario Based Instruction to be effective, it is vital that the IT and the teaching instructor communicate the following information well in advance of the flight:

- Scenario destination(s)
- Desired learning outcomes
- Desired level of IT performance
- Desired level of automation assistance
- Possible in-flight scenario changes (during later stages of the program, no pre-flight notification is required)

When an IT is conducting the Instructor Training Syllabus, the teaching instructor should make the situation as realistic as possible. This means the IT will have knowledge of the course to be flown and what will occur during the flight. While the actual flight may deviate from the original plan, it allows the IT to be placed in a realistic situation.

Scenario Planning

Prior to the flight, the IT will brief the scenario to be planned. The teaching instructor will review the plan and offer guidance on how to make the lesson more effective. Discussion, in part, will reflect ways in which the IT can most effectively ascertain a student's knowledge and decision processes. This enables the IT to analyze and evaluate the PT's level of understanding. After discussion with the teaching instructor, the IT will plan the flight to include:

- Route
- Destination(s)
- Weather
- NOTAMs
- Risk Assessment
- Desired learning outcomes
- Possible alternate scenarios and emergency procedures

Pre-flight Briefing

The IT will brief the teaching instructor on the flight scenario that he or she expects, which will include:

- Route, weather, and NOTAMs
- Accomplishment of desired training outcomes
- Emergency procedures and alternate scenarios
- SRM considerations
- Safety considerations
- Risk Assessment

Risk Assessment

The following table represents a simple risk assessment matrix that was developed and is used by the Cessna Pilot Training department. The purpose of this risk assessment is to provoke thought in the minds of both the PT and the instructor. The goal when developing this matrix was to have a risk assessment that could be easily used without taking an excessive amount of time to complete, yet it provokes enough thought about the flight to assist in making a competent "Go / No Go" decision. After their training, the pilots are encouraged to use this risk assessment for their own day-to-day operations to help them optimize flight safety.

Flight Type	VFR 1	IFR 2				
Flight Conditions	DAY 1		NIGHT 3			
Pilot Rating	CFI 1	Comm 2	INST 3	PVT 4	STUDENT 5	
Rest / Sleep in 24 hr period	>8 HRS 1	6-7 HRS 2		3-5 HRS 4	<3 HRS 5	
Visibility	10-15 Miles 1	6-9 Miles 2		3-5 Miles 4	<3 Miles 5	
Ceiling in feet	>10,000 1	5,000-9,000 2	3,000-4,000 3	1,000-2,000 4	<1,000 5	
Crosswind Component		0-10 KTS 2	11-15 KTS 3	16-19 KTS 4	≥20 KTS 5	
Destination Weather	VFR 1		Marginal VFR 3		IFR 5	
Airport Familiarity	YES 1		NO 2			
Hours in type aircraft	>200 HRS 1	151-199 HRS 2	100-150 HRS 3	50-99 HRS 4	<50 HRS 5	
Flight Time in Previous 12 Hrs	<3 HRS 1		4-5 HRS 3	5-6 HRS 4	>7 HRS 5	

Total ____

VFR pilot on VFR flight

≤26 GO
27-33 Consider alternate actions
34-38 Consult experienced CFI
≥39 NO GO

IFR current pilot on IFR flight

≤31 GO
32-35 Consider alternate action
36-40 Consult experienced CFI
≥41 NO GO

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In Flight

The IT will execute the scenario plan with as little intervention from the teaching instructor as possible. Clearly, the first scenario(s) may require considerable teaching instructor input. The teaching instructor should create situations that expose the IT to the different features of the G1000 equipped Cessna while exercising critical thinking skills.

For example, the teaching instructor may create a situation that requires the pilot to divert. In doing so, the IT will have to use the G1000 features to determine what diversion destinations are appropriate considering the current situation (for example: fuel, weather, services, etc). While identifying these differences, the IT will use critical thinking skills to determine the best course of action for the diversion. As the IT gains the experience required to demonstrate good SRM, a role reversal should occur allowing the IT to act as the instructor. The teaching instructor will then act as the PT transitioning to the G1000 equipped Cessna aircraft.

Just as with the Cessna SEP Transition Training Syllabus, the Instructor Training Syllabus is learner-centered, with the IT being considered the "student." However, at no time should the teaching instructor feel as though he or she cannot intervene in the name of safety or to ensure completion of the scenario. It may be useful to let the IT resolve lesser problems encountered before intervening or instructing. This example of self-directed, or guided learning, will assist the IT in learning how to build a PT's confidence and poise. It also assists them in developing their own mental model. Teaching instructors should demonstrate how to provide scenario-based instruction while not providing solutions. As discussed in Section 3, the IT must be taught to ask appropriate questions to clarify and / or challenge the PT's thinking process.

Instructors in Training must teach PT's to offer opinions and exercise sound judgment based on relevant criterion and available facts.

Post Flight

The post flight review should include a discussion between the IT and the teaching instructor encompassing the flight scenario. Generally, the teaching instructor should lead the discussion with questions that generate reflective thinking on how the overall flight was conducted. The teaching instructor should use this time to assist the IT in evaluating his or her own performance, judgment, and decision-making skills. Typically, the PT who is receiving training will lead the discussion with a self-critique, thus allowing themselves to draw their own conclusions based on their performance. Based on this analysis, the IT and teaching instructor should discuss methods for improvement, even on those items that were considered successful. In the beginning, the teaching instructor may take a leading role in the post flight review demonstrating to the IT the proper method to conduct the post flight. However, it is vital that the IT learns to identify performance deficiencies, problem solving, and how to administer corrective actions.

Grading and Evaluation

It is important for the IT to understand that the objective of scenario-based training used throughout the instructor course is to change the thought processes, habits, and behavior of the IT.

The Cessna SEP Instructor Training Syllabus is learner centered. It is important that the IT understands the success of the syllabus in the desired outcomes described in Section 2. These desired outcomes are not based on the traditional standards, but instead are based on the knowledge and skill level of the IT.

The performance parameters in each task of the appropriate PTS will be used as a reference and the IT will be graded as: PROFICIENT or NORMAL PROGRESS.

In order to successfully complete the Cessna FITS Instructor Syllabus, the IT must attain the desired outcomes listed as bulleted items below. Any maneuver or procedure completed with less than this level must be repeated until the desired outcome is attained. The minimum desired outcome(s) for each scenario activity for each scenario will be as follows:

- Scenario 1: Perform for Maneuver Grades, and Manage / Decide for SRM Grades
- Scenario 2: Practice for Maneuver Grades, and Practice for SRM Grades
- Scenario 3: Perform for Maneuver Grades, and Manage / Decide for SRM Grades

About the Flight Scenarios

The destinations listed for each of the following flight scenarios are preferred. There are specific activities that can be accomplished and evaluated at each destination. In addition, due to most IT's unfamiliarity with the area, Cessna provides these airports as guidance for them to plan their flights to cover all scenario activities. However, due to weather and other factors beyond control, different destinations may be selected in order to accomplish the activities listed in this syllabus.

During the instructor ground school, IT's will develop one of the scenarios from the Cessna Transition syllabus for their home airport. These scenarios will be assigned to each IT by the teaching instructor. They will then present this scenario in front of the class and will be critiqued by the ground school instructor as well as their classmates. In doing this presentation, the teaching instructor can evaluate the IT's understanding and ability to plan a scripted scenario which covers all activities listed for that particular flight.

Upon completion of the instructor course, the IT's will develop the remaining scenarios for their home airport. After completing this task, they will then submit their scenarios to the Cessna Training Department for acceptance to use the Cessna FITS Accepted Transition Syllabus.

Section 5 – Cessna FITS Instructor Syllabus

Scenario 1 – Standardization & Review Flight
Cessna SEP Scenario Based Instructor Training

Objective: The Instructor in Training (IT) will demonstrate proficiency in avionics and aircraft system equipment location and normal operating procedures for both VFR and IFR flight. This flight will be used as a benchmark to evaluate the IT's level of proficiency before practicing instruction to the teaching instructor.

Prerequisites: Completion of ground school module 1.

IT Preparation: Review the following:
- Normal operating procedures in the POH and the limitations in the AFM
- Airport and appropriate VFR & IFR information for departure, destination, and alternate airports
- Route of flight information for trip legs
- Aircraft and avionics systems display and procedures
- Complete risk assessment matrix

Briefing Items:

Initial Introduction
IT should have a clear understanding of the Pilot in Command concept and how command is transferred. This should include a detailed pre-takeoff briefing procedure and format. Additional items include:
- Weather and personal minimums
- Flight Profile
- Pre-Takeoff Briefing

Single Pilot Resource Management (SRM)
- Checklist procedures
- Avionics systems to be used during this flight
- Communication procedures
- Operating procedures in a single pilot environment

Safety: The following safety items should be briefed to the teaching instructor by the IT:
- Mid-air collision avoidance procedures
- Taxi procedures
- Personal minimums
- Risk factors for the flight

Preflight:

The IT will plan a combination VFR and IFR cross-country flight of approximately two hours in duration. The flight will include at least one full stop landing at an airport other than the original departure airport.

The IT will perform all weight and balance, performance calculations and discuss the weather briefing received and make a competent go / no-go decision. Additionally, the IT will conduct a risk assessment to identify any potential safety of flight issues. The instructor will provide the necessary guidance to ensure the overall plan provides for the entire scenario activities and sub-activities listed for this lesson. The IT is evaluated on his / her ability to plan a comprehensive flight with attention to all required scenario activities.

The IT will perform all preflight procedures, engine start-up, avionics set-up, taxi, and before-takeoff procedures for each leg of the scenario. This will include GPS flight plan programming for the flight, autopilot functionality, and proper PFD and MFD setup. The use of any safety sensing devices such as terrain awareness and traffic information should be encouraged as well. In addition, an effective pre-takeoff briefing shall be conducted.

Leg 1

The IT will perform a normal takeoff and departure to a safe altitude using the manufacturer's approved checklist and appropriate climb speeds. When a stabilized climb has been established, the autopilot will be engaged at 800 feet AGL. Collision avoidance procedures will continue to be used during the climb to a VFR cruise transition with the assistance of any equipment installed. VFR maneuvers will be performed on this leg of the flight to ensure proficiency in basic stick and rudder skills. Aircraft systems, avionics, and autopilot functions will be performed during cruise, descent, and normal landing phase of the flight. The VNAV function will be used in addition to any other form of automation as appropriate. The IT will perform a normal descent and pattern transition followed by a normal approach and landing. Continued use of any automation and MFD resources are encouraged.

Sample flight plan route: Independence, Kansas (KIDP) to Pittsburg, Kansas (KPTS). Distance is 51 nautical miles. VFR maneuvers such as steep turns, slow flight, and stalls will be performed by the IT enroute. An emphasis will be placed on using a standardized teaching format for transitioning pilots from a conventional cockpit to a glass cockpit.

Leg 2

A different route will be programmed into the GPS for the return trip. This leg will be either a simulated or actual IFR flight. The IT will perform a takeoff and departure to a safe altitude using the manufacturer's approved checklist and appropriate climb speeds. When a stabilized climb has been established, the autopilot will be engaged with an emphasis placed on the use of any vertical command capabilities. Collision avoidance procedures will be used during the climb in simulated or actual IFR conditions and while in cruise with the assistance of installed equipment. Aircraft systems, avionics and autopilot functions will be performed during cruise, descent, and approach

phase of the flight. The VNAV function will be used as well as any other appropriate form of automation. The IT will request or select an appropriate IFR approach procedure. The continued use of any other automation is encouraged.

Sample flight plan route: Either simulated or actual IFR flight from KPTS to Coffeyville, Kansas (KCFV). Distance is 41 nautical miles. GPS-A approach via DME arc transition, followed by the missed approach procedure. After holding, return to KIDP for the ILS 35 approach with a procedure turn. The goal for this flight will be for the IT to demonstrate proficiency in IFR flight and to instill a standardized format for training transitioning pilots to fly the G1000 equipped Cessna aircraft in the IFR environment.

Post-Flight: The IT will perform all aircraft shutdown and securing procedures. The teaching instructor will lead a guided discussion on learner-centered grading criteria as well as areas of proficiency and normal progress for the IT.

Completion Standards: Since this is a review flight, each scenario activity must be at the **Perform** level desired outcome for maneuver grades, and the **Manage / Decide** level for SRM grades.

Desired Instructor in Training (IT) Scenario Outcomes

- **Maneuver Grades (Tasks)**
  - **Explain** - at the completion of the scenario the IT will be able to describe the scenario activity and understand the underlying concepts, principles, and procedures that comprise the activity. Significant instructor effort will be required to successfully execute the maneuver.
  - **Practice** - at the completion of the scenario the IT will be able to plan and execute the scenario activity. Coaching and / or assistance from the teaching instructor will correct minor deviations and errors identified by the teaching instructor.
  - **Perform -** at the completion of the scenario, the IT will be able to perform the activity without assistance from the teaching instructor. Errors and deviations will be identified and corrected by the IT in an expeditious manner. At no time will the successful completion of the activity be in doubt. **"Perform"** will be used to signify that the IT is satisfactorily demonstrating proficiency in traditional piloting and systems operation skills.
- **Single Pilot Resource Management (SRM) Grades**
  - **Explain** – the IT can verbally identify, describe, and understand the risks inherent in the flight scenario. The student will need to be prompted to identify risks and make more decisions.
  - **Practice** – the IT is able to identify, understand, and apply SRM principles to the actual flight situation. Coaching, instruction, and / or assistance from the teaching instructor will quickly correct minor deviations and errors identified by the teaching instructor. The IT will be an active decision maker.
  - **Manage / Decide** – the IT can correctly gather the most important data available both within and outside the cockpit, identify possible course of action, evaluate the risk inherent in each course of action, and make the appropriate decision. Teaching instructor intervention is not required for the safe completion of the flight.

IT Name_____

Maneuver Grades	IT			Instructor		
	Explain	Practice	Perform	Explain	Practice	Perform
Normal Preflight & Cockpit Procedures						
• Checklist Usage	☐	☐	☐	☐	☐	☐
Engine Start & Taxi Procedures						
• Engine Start	☐	☐	☐	☐	☐	☐
• G1000 Setup	☐	☐	☐	☐	☐	☐
• Taxi	☐	☐	☐	☐	☐	☐
Before Takeoff Checklist						
• Normal & Abnormal Indications	☐	☐	☐	☐	☐	☐
• G1000 Setup	☐	☐	☐	☐	☐	☐
• Autopilot Checks	☐	☐	☐	☐	☐	☐
Takeoff						
• Normal/Crosswind	☐	☐	☐	☐	☐	☐
PFD Crosscheck						
• Straight & Level Flight	☐	☐	☐	☐	☐	☐
• Normal Turns	☐	☐	☐	☐	☐	☐
• Climb & Decent	☐	☐	☐	☐	☐	☐
G1000 Programming						
• COM/NAV Frequency Loading	☐	☐	☐	☐	☐	☐
• Flight Plans	☐	☐	☐	☐	☐	☐
• Instrument Procedure Loading	☐	☐	☐	☐	☐	☐
Autopilot Operation						
• Vertical Modes						
○ VS	☐	☐	☐	☐	☐	☐
○ Altitude Pre-select	☐	☐	☐	☐	☐	☐
○ Altitude Hold	☐	☐	☐	☐	☐	☐
○ GS Coupling	☐	☐	☐	☐	☐	☐
• Lateral Modes						
○ ROL	☐	☐	☐	☐	☐	☐
○ HDG	☐	☐	☐	☐	☐	☐
○ NAV	☐	☐	☐	☐	☐	☐
○ APR	☐	☐	☐	☐	☐	☐
○ REV	☐	☐	☐	☐	☐	☐
Instrument Approach Procedures						
• ILS	☐	☐	☐	☐	☐	☐
• VOR	☐	☐	☐	☐	☐	☐
• GPS	☐	☐	☐	☐	☐	☐
• DME Arcs	☐	☐	☐	☐	☐	☐
• Holding/Procedure Turns	☐	☐	☐	☐	☐	☐
• Missed Approach	☐	☐	☐	☐	☐	☐

Maneuver Grades (continued)	**IT**			**Instructor**		
	Explain	Practice	Perform	Explain	Practice	Perform
Situational Awareness Aids						
• TIS/TAS	☐	☐	☐	☐	☐	☐
• Stormscope	☐	☐	☐	☐	☐	☐
• Weather Datalink	☐	☐	☐	☐	☐	☐
• Terrain Awareness/TAWS	☐	☐	☐	☐	☐	☐
Landing						
• Before Landing Checklist	☐	☐	☐	☐	☐	☐
• Normal/Crosswind	☐	☐	☐	☐	☐	☐
Aircraft Shutdown & Securing						
• Shutdown Checklist	☐	☐	☐	☐	☐	☐

Single Pilot Resource Management Grades	**IT**			**Instructor**		
	Explain	Practice	Manage /Decide	Explain	Practice	Manage /Decide
Scenario Planning						
• Flight Planning	☐	☐	☐	☐	☐	☐
• Weight & Balance	☐	☐	☐	☐	☐	☐
• Determining Performance	☐	☐	☐	☐	☐	☐
Climb Procedures						
• Autopilot Climb	☐	☐	☐	☐	☐	☐
• Checklist Usage	☐	☐	☐	☐	☐	☐
• Division of Attention	☐	☐	☐	☐	☐	☐
Cruise Procedures						
• Autopilot Cruise	☐	☐	☐	☐	☐	☐
• Checklist Usage	☐	☐	☐	☐	☐	☐
• Lean Assist	☐	☐	☐	☐	☐	☐
• Division of Attention	☐	☐	☐	☐	☐	☐
Descent Planning & Execution						
• VNAV Programming	☐	☐	☐	☐	☐	☐
• Autopilot Descent	☐	☐	☐	☐	☐	☐
• CFIT Avoidance	☐	☐	☐	☐	☐	☐
• Checklist Usage	☐	☐	☐	☐	☐	☐

Notes:_____
_____
_____
_____

Date_____
Flight Time/Briefing Time_____/_____
Teaching Instructor _____
IT_____

2/27/2006

Scenario 2 – IFR Flight
Cessna SEP Scenario Based Instructor Training

Objective: The IT will use the information acquired from Scenario 1 and will demonstrate instructional knowledge relating to IFR flight in the G1000 equipped Cessna aircraft.

Prerequisites: Completion of ground school module 2. Demonstrate proficiency in Scenario 1.

IT Preparation: Review the following:
- Previous lesson
- Areas of weakness
- Airport and appropriate IFR information for departure, destination, and alternate airports
- Route of flight information for trip legs
- Complete risk assessment matrix

Briefing Items:

Initial Introduction
- Weather and personal minimums
- Flight Profile
- Pre-Takeoff Briefing

Single Pilot Resource Management (SRM)
- Checklist procedures.
- Avionics systems to be used during this flight
- Communication procedures
- Operating procedures in a single pilot environment

Safety: The following safety items should be briefed to the teaching instructor by the IT:
- Mid-air collision avoidance procedures
- Taxi procedures
- Personal minimums
- Risk factors for the flight

Preflight:

The IT should be able to demonstrate instructional knowledge in the special emphasis areas of the Practical Test Standards and corrective actions related to the unique functions of the G1000 equipped Cessna. The teaching instructor will begin to be more of a facilitator of learning than the end authority of all subject matter.

The IT should be able to select and teach the proper start-up procedure using appropriate techniques. Emphasis should be placed on teaching how to identify the proper start, taxi, and run-up procedures and the differences compared to traditional aircraft. The IT will teach the proper set up of the avionics while continuously identifying differences. The teaching instructor shall also

evaluate the IT's fundamental knowledge of the avionics and practical use given the flight scenarios. The IT will use instructional techniques to lead the discussion on avionics setup to include PFD navigation setup, MFD setup relating to the appropriate display for the VFR or IFR leg being conducted, and use of the GPS.

The teaching instructor shall determine if the IT has acquired the knowledge and skill level that meets or exceeds the CFI and CFII PTS in a TAA. Emphasis shall be placed on the IT's ability to safely act as the instructor while using critical thinking skills. The lesson shall be conducted as a multiple leg IFR cross country in which either the IT controls the aircraft and teaches, or the teaching instructor controls the aircraft while the IT instructs (this will be determined by the IT). The IT shall act as though he or she is demonstrating the maneuver to the teaching instructor for the first time, where the teaching instructor has already been briefed on the maneuver, but has never conducted that particular maneuver.

The IT shall plan the cross-country flight from the position of a flight instructor developing a scenario-based lesson to conduct with a PT in a TAA. Prior to the lesson, the IT shall brief the teaching instructor on all aspects of the scenario. The cross-country based scenario should be at least 3 legs, including instrument approaches at each airport, and conducted in a manner that emphasizes judgment and decision-making.

Sample flight plan route: Independence, Kansas (KIDP) to Claremore, Oklahoma (KGCM). Distance is 51 nautical miles. VOR/DME-A approach via the DME Arc transition followed by a missed approach. RNAV (GPS) 35 approach with the procedure turn to a full stop landing.

Claremore, Oklahoma (KGCM) to Tulsa, Oklahoma (KTUL). Distance is 17 nautical miles. ILS approach via radar vectors to a full stop landing.

Tulsa, Oklahoma (KTUL) to Independence, Kansas (KIDP). Distance of 55 nautical miles. GPS approach with a procedure turn to a full stop landing.

Post-Flight: The IT will teach all aircraft shutdown and securing procedures. The IT will act as the instructor while debriefing about the entire flight. A review of the IT's instructional decisions will lead to a discussion of what could have been instructed differently.

Completion Standards: Minimum desired outcomes are the **Practice** level for maneuver grades, and **Practice** for SRM grades (since this is their first flight acting as an instructor).

Desired Instructor in Training (IT) Scenario Outcomes

- **Maneuver Grades (Tasks)**
  - **Explain** - at the completion of the scenario the IT will be able to describe the scenario activity and understand the underlying concepts, principles, and procedures that comprise the activity. Significant instructor effort will be required to successfully execute the maneuver.
  - **Practice** - at the completion of the scenario the IT will be able to plan and execute the scenario activity. Coaching and / or assistance from the teaching instructor will correct minor deviations and errors identified by the teaching instructor.
  - **Perform** - at the completion of the scenario, the IT will be able to perform the activity without assistance from the teaching instructor. Errors and deviations will be identified and corrected by the IT in an expeditious manner. At no time will the successful completion of the activity be in doubt. **"Perform"** will be used to signify that the IT is satisfactorily demonstrating proficiency in traditional piloting and systems operation skills.
- **Single Pilot Resource Management (SRM) Grades**
  - **Explain** – the IT can verbally identify, describe, and understand the risks inherent in the flight scenario. The student will need to be prompted to identify risks and make more decisions.
  - **Practice** – the IT is able to identify, understand, and apply SRM principles to the actual flight situation. Coaching, instruction, and / or assistance from the teaching instructor will quickly correct minor deviations and errors identified by the teaching instructor. The IT will be an active decision maker.
  - **Manage / Decide** – the IT can correctly gather the most important data available both within and outside the cockpit, identify possible course of action, evaluate the risk inherent in each course of action, and make the appropriate decision. Teaching instructor intervention is not required for the safe completion of the flight.

IT Name_____

Note: All activities listed in the learner centered grading form for scenarios 2 and 3 will be accomplished by the IT attempting to demonstrate **instructional knowledge**. Therefore, this form must be used to grade the IT's **instructional knowledge** for each scenario activity.

Maneuver Grades	IT			Instructor		
	Explain	Practice	Perform	Explain	Practice	Perform
Normal Preflight & Cockpit Procedures						
• Checklist Usage	☐	☐	☐	☐	☐	☐
Engine Start & Taxi Procedures						
• Engine Start	☐	☐	☐	☐	☐	☐
• G1000 Setup	☐	☐	☐	☐	☐	☐
• Taxi	☐	☐	☐	☐	☐	☐
Before Takeoff Checklist						
• Normal & Abnormal Indications	☐	☐	☐	☐	☐	☐
• G1000 Setup	☐	☐	☐	☐	☐	☐
• Autopilot Checks	☐	☐	☐	☐	☐	☐
Takeoff						
• Normal/Crosswind	☐	☐	☐	☐	☐	☐
PFD Crosscheck						
• Straight & Level Flight	☐	☐	☐	☐	☐	☐
• Normal Turns	☐	☐	☐	☐	☐	☐
• Climb & Decent	☐	☐	☐	☐	☐	☐
G1000 Programming						
• COM/NAV Frequency Loading	☐	☐	☐	☐	☐	☐
• Flight Plans	☐	☐	☐	☐	☐	☐
• Instrument Procedure Loading	☐	☐	☐	☐	☐	☐
Autopilot Operation						
• Vertical Modes						
○ VS	☐	☐	☐	☐	☐	☐
○ Altitude Pre-select	☐	☐	☐	☐	☐	☐
○ Altitude Hold	☐	☐	☐	☐	☐	☐
○ GS Coupling	☐	☐	☐	☐	☐	☐
• Lateral Modes						
○ ROL	☐	☐	☐	☐	☐	☐
○ HDG	☐	☐	☐	☐	☐	☐
○ NAV	☐	☐	☐	☐	☐	☐
○ APR	☐	☐	☐	☐	☐	☐
○ REV	☐	☐	☐	☐	☐	☐
Instrument Approach Procedures						
• ILS	☐	☐	☐	☐	☐	☐
• VOR	☐	☐	☐	☐	☐	☐
• GPS	☐	☐	☐	☐	☐	☐
• DME Arcs	☐	☐	☐	☐	☐	☐
• Holding/Procedure Turns	☐	☐	☐	☐	☐	☐
• Missed Approach	☐	☐	☐	☐	☐	☐

Maneuver Grades (continued)	**IT**			**Instructor**		
	Explain	Practice	Perform	Explain	Practice	Perform
Situational Awareness Aids						
• TIS/TAS	☐	☐	☐	☐	☐	☐
• Stormscope	☐	☐	☐	☐	☐	☐
• Weather Datalink	☐	☐	☐	☐	☐	☐
• Terrain Awareness/TAWS	☐	☐	☐	☐	☐	☐
Landing						
• Before Landing Checklist	☐	☐	☐	☐	☐	☐
• Normal/Crosswind	☐	☐	☐	☐	☐	☐
Aircraft Shutdown & Securing						
• Shutdown Checklist	☐	☐	☐	☐	☐	☐

Single Pilot Resource Management Grades	**IT**			**Instructor**		
	Explain	Practice	Manage /Decide	Explain	Practice	Manage /Decide
Scenario Planning						
• Flight Planning	☐	☐	☐	☐	☐	☐
• Weight & Balance	☐	☐	☐	☐	☐	☐
• Determining Performance	☐	☐	☐	☐	☐	☐
Climb Procedures						
• Autopilot Climb	☐	☐	☐	☐	☐	☐
• Checklist Usage	☐	☐	☐	☐	☐	☐
• Division of Attention	☐	☐	☐	☐	☐	☐
Cruise Procedures						
• Autopilot Cruise	☐	☐	☐	☐	☐	☐
• Checklist Usage	☐	☐	☐	☐	☐	☐
• Lean Assist	☐	☐	☐	☐	☐	☐
• Division of Attention	☐	☐	☐	☐	☐	☐
Descent Planning & Execution						
• VNAV Programming	☐	☐	☐	☐	☐	☐
• Autopilot Descent	☐	☐	☐	☐	☐	☐
• CFIT Avoidance	☐	☐	☐	☐	☐	☐
• Checklist Usage	☐	☐	☐	☐	☐	☐

Notes:_____
_____
_____
_____

Date_____
Flight Time/Briefing Time_____/_____
Teaching Instructor _____
IT _____

Scenario 3 – Abnormal and Emergency Flight
Cessna SEP Scenario Based Instructor Training

Objective: The IT will correlate information from Scenarios 1 and 2 and will be introduced to teaching abnormal and emergency procedures in flight.

Prerequisites: Completion of ground school module 3. Demonstrate practice in Scenario 2.

IT Preparation: Review the following:
- Previous lesson
- Areas of weakness
- Normal and emergency procedures in the Cessna POH
- Effects of equipment failure on autopilot operation
- Airport and information for departure and destination airports
- Complete risk assessment matrix

Briefing Items:

Initial Introduction
ITs should have a clear understanding of the capabilities, redundancy, and limitations to the G1000 avionics package. The IT should know what information is lost if a certain LRU fails, as well as the effects of component failures on autopilot operation. In addition, they should also have knowledge of what section in the checklist can be used to address any avionics issues. Additional items include:
- Weather and personal minimums
- Flight Profile
- Pre-Takeoff Briefing

Single Pilot Resource Management (SRM)
- Checklist procedures
- Avionics systems to be used during this flight including all required preflight checks
- Appropriate use of the autopilot where task management is high
- Decision-making and risk management during abnormal / emergency flight situations

Safety: The following safety items should be briefed to the teaching instructor by the IT:
- Airport diagrams, taxi procedures, and LAHSO operations
- Memory items on the pilot's checklist
- NOTAMs appropriate to the flight
- Prioritizing all abnormal / emergency operations

Preflight:

This scenario will emphasize the IT's instructional knowledge relating to avionics interface and the use of the automation while the teaching instructor introduces abnormal and emergency procedures. The IT will use the autopilot for most of this flight to gain proficiency in operating the

various avionics in the aircraft, and enable him or her to teach while flying the aircraft. The teaching instructor shall continue to ask questions that evaluate the IT's judgment and decision making skills while instructing.

In Flight:

While in cruise, the IT will be required to demonstrate understanding of isolated system failures. The teaching instructor shall not unrealistically overload the IT, but instead will develop a realistic scenario. One leg will involve the loss of the PFD, and the other leg will involve the loss of the ARHS and ADC. During each leg, the IT shall conduct a minimum of one instrument approach. The teaching instructor must continue to facilitate the discussion of the differences when transitioning a pilot from conventional cockpits to glass cockpits, and how teaching in a G1000 equipped Cessna differs. The teaching instructor shall make every effort to provide the IT with the most variations in airspace, especially complex airspace in which the IT may have little experience.

Each leg will emphasize the IT's use of critical thinking skills. Throughout the flight, the teaching instructor will introduce different emergencies and situations that will reinforce the IT's correlation of systems interface and related corrective actions.

Sample flight plan route: Independence, Kansas (KIDP) to Chanute, Kansas (KCNU). Distance is 31 nautical miles. Enroute, simulate an AHRS and ADC failure using the procedures recommended for the Cessna NAV III in Garmin's Guidance for Examiners and CFI's . The IT will continue the flight to KCNU and perform the GPS-A approach with the simulated failure by using the backup instruments as well as the MFD and the autopilot. Full stop landing.

Next leg is a return to KIDP. Enroute, simulate a PFD failure using Garmin's recommendations. The IT will continue the flight to KIDP and perform the ILS 35 approach to a full stop.

Post-Flight: The IT will teach all aircraft shutdown and securing procedures. The IT should also lead a discussion of the flight, analyzing possible alternative decisions that could have been made to increase proficiency and safety. The teaching instructor should be cautioned not to give the IT answers, but instead guide them in discovering the alternatives, options, and factors they did not consider.

Completion Standards: With this being the final scenario to complete the training, the minimum desired outcome the IT must attain is the **Perform** level for maneuver grades, and **Manage / Decide** for SRM grades.

Desired Instructor in Training (IT) Scenario Outcomes

- **Maneuver Grades (Tasks)**
  - **Explain** - at the completion of the scenario the IT will be able to describe the scenario activity and understand the underlying concepts, principles, and procedures that comprise the activity. Significant instructor effort will be required to successfully execute the maneuver.
  - **Practice** - at the completion of the scenario the IT will be able to plan and execute the scenario activity. Coaching and / or assistance from the teaching instructor will correct minor deviations and errors identified by the teaching instructor.
  - **Perform -** at the completion of the scenario, the IT will be able to perform the activity without assistance from the teaching instructor. Errors and deviations will be identified and corrected by the IT in an expeditious manner. At no time will the successful completion of the activity be in doubt. **"Perform"** will be used to signify that the IT is satisfactorily demonstrating proficiency in traditional piloting and systems operation skills.
- **Single Pilot Resource Management (SRM) Grades**
  - **Explain** – the IT can verbally identify, describe, and understand the risks inherent in the flight scenario. The student will need to be prompted to identify risks and make more decisions.
  - **Practice** – the IT is able to identify, understand, and apply SRM principles to the actual flight situation. Coaching, instruction, and / or assistance from the teaching instructor will quickly correct minor deviations and errors identified by the teaching instructor. The IT will be an active decision maker.
  - **Manage / Decide** – the IT can correctly gather the most important data available both within and outside the cockpit, identify possible course of action, evaluate the risk inherent in each course of action, and make the appropriate decision. Teaching instructor intervention is not required for the safe completion of the flight.

IT Name_____

Note: All activities listed in the learner centered grading form for scenarios 2 and 3 will be accomplished by the IT attempting to demonstrate **instructional knowledge**. Therefore, this form must be used to grade the IT's **instructional knowledge** for each scenario activity.

Maneuver Grades	PT			Instructor		
	Explain	Practice	Perform	Explain	Practice	Perform
Normal Preflight & Cockpit Procedures						
• Checklist Usage	☐	☐	☐	☐	☐	☐
Engine Start & Taxi Procedures						
• Engine Start	☐	☐	☐	☐	☐	☐
• G1000 Setup	☐	☐	☐	☐	☐	☐
• Taxi	☐	☐	☐	☐	☐	☐
Before Takeoff Checklist						
• Normal & Abnormal Indications	☐	☐	☐	☐	☐	☐
• G1000 Setup	☐	☐	☐	☐	☐	☐
• Autopilot Checks	☐	☐	☐	☐	☐	☐
Takeoff						
• Normal/Crosswind	☐	☐	☐	☐	☐	☐
PFD Crosscheck						
• Straight & Level Flight	☐	☐	☐	☐	☐	☐
• Normal Turns	☐	☐	☐	☐	☐	☐
• Climb & Decent	☐	☐	☐	☐	☐	☐
G1000 Programming						
• COM/NAV Frequency Loading	☐	☐	☐	☐	☐	☐
• Flight Plans	☐	☐	☐	☐	☐	☐
• Instrument Procedure Loading	☐	☐	☐	☐	☐	☐
Autopilot Operation						
• Vertical Modes						
○ VS	☐	☐	☐	☐	☐	☐
○ Altitude Pre-select	☐	☐	☐	☐	☐	☐
○ Altitude Hold	☐	☐	☐	☐	☐	☐
○ GS Coupling	☐	☐	☐	☐	☐	☐
• Lateral Modes						
○ ROL	☐	☐	☐	☐	☐	☐
○ HDG	☐	☐	☐	☐	☐	☐
○ NAV	☐	☐	☐	☐	☐	☐
○ APR	☐	☐	☐	☐	☐	☐
○ REV	☐	☐	☐	☐	☐	☐
Instrument Approach Procedures with Failures						
• ILS	☐	☐	☐	☐	☐	☐
• VOR	☐	☐	☐	☐	☐	☐
• GPS	☐	☐	☐	☐	☐	☐
• DME Arcs	☐	☐	☐	☐	☐	☐
• Holding/Procedure Turns	☐	☐	☐	☐	☐	☐
• Missed Approach	☐	☐	☐	☐	☐	☐

Maneuver Grades (continued)	**PT**			**Instructor**		
	Explain	Practice	Perform	Explain	Practice	Perform
Situational Awareness Aids						
• TIS/TAS	☐	☐	☐	☐	☐	☐
• Stormscope	☐	☐	☐	☐	☐	☐
• Weather Datalink	☐	☐	☐	☐	☐	☐
• Terrain Awareness/TAWS	☐	☐	☐	☐	☐	☐
Landing						
• Before Landing Checklist	☐	☐	☐	☐	☐	☐
• Landing with Failures	☐	☐	☐	☐	☐	☐
Aircraft Shutdown & Securing						
• Shutdown Checklist	☐	☐	☐	☐	☐	☐

Single Pilot Resource Management Grades	**PT**			**Instructor**		
	Explain	Practice	Manage /Decide	Explain	Practice	Manage /Decide
Scenario Planning						
• Flight Planning	☐	☐	☐	☐	☐	☐
• Weight & Balance	☐	☐	☐	☐	☐	☐
• Determining Performance	☐	☐	☐	☐	☐	☐
• Diversion	☐	☐	☐	☐	☐	☐
Climb Procedures						
• Autopilot Climb	☐	☐	☐	☐	☐	☐
• Checklist Usage	☐	☐	☐	☐	☐	☐
• Division of Attention	☐	☐	☐	☐	☐	☐
Cruise Procedures						
• Autopilot Cruise	☐	☐	☐	☐	☐	☐
• Checklist Usage	☐	☐	☐	☐	☐	☐
• Lean Assist	☐	☐	☐	☐	☐	☐
• Division of Attention	☐	☐	☐	☐	☐	☐
Emergency Procedures						
• Display Failure	☐	☐	☐	☐	☐	☐
• AHRS/ADC Failure	☐	☐	☐	☐	☐	☐
• Flying on Standby Instruments	☐	☐	☐	☐	☐	☐
• Checklist Usage	☐	☐	☐	☐	☐	☐
Descent Planning & Execution						
• VNAV Programming	☐	☐	☐	☐	☐	☐
• Autopilot Descent	☐	☐	☐	☐	☐	☐
• CFIT Avoidance	☐	☐	☐	☐	☐	☐
• Checklist Usage	☐	☐	☐	☐	☐	☐

Date_____

Flight Time/Briefing Time_____/_____

Teaching Instructor _____

IT_____

Notes: _____

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2/27/2006

Section 6 - FITS Master Learning Outcomes List

SEP 1	Single Pilot Resource Management (SRM)	
Unit Objective – Demonstrate safe and efficient operations by adequately managing all available resources.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Task Management (TM)	Note: All tasks under SRM will be embedded into the curriculum and the training will occur selectively during all phases of training. SRM will be graded as it occurs during the training scenario syllabus.	Prioritize and select the most appropriate tasks (or series of tasks) to ensure successful completion of the training scenario
2. Automation Management (AM)		Program and utilize the most appropriate and useful modes of cockpit automation to ensure successful completion of the training scenario
3. Risk Management (RM) and Aeronautical Decision Making (ADM)		Consistently make informed decisions in a timely manner based on the task at hand and a thorough knowledge and use of all available resources
4. Situational Awareness (SA)		Be aware of all factors such as traffic, weather, fuel state, aircraft mechanical condition, and pilot fatigue level that may have an impact on the successful completion of the training scenario
5. Controlled Flight Into Terrain (CFIT) Avoidance		a. Understand, describe, and apply techniques to avoid CFIT encounters b. During inadvertent encounters with Instrument Meteorological Conditions during VFR flight c. During system and navigation failures and physiological incidents during IFR flight

SEP 2	Scenario Planning	
Unit Objective – Develop thorough and successful preflight habit patterns for flight planning, performance, weight and balance, and normal and emergency single pilot resource management.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Flight Planning	Preflight Planning	a. Review the required elements of the appropriate flight-training scenario b. Decide on the optimum route and sequence of events to accomplish all required tasks c. Obtain all required charts and documents d. Obtain and analyze an FAA approved weather briefing appropriate to the scenario to be flown e. File a flight plan (VFR/IFR) for the scenario to be flown
2. Weight and Balance and Determining Aircraft Performance	a. Classroom Training b. Preflight Planning	Perform weight and balance and performance computations for the specific training scenario to be flown without error
3. SRM Briefing	Preflight Planning	a. Orally review in specific terms all aspects of the flight scenario b. Identify possible emergency and abnormal procedures relevant to the scenario and describe successful SRM strategies to deal with them

SEP 3	Normal Preflight & Cockpit Procedures	
Unit Objective – Aircraft familiarization, checklists, cockpit procedures and PFD / GPS / MFD and autopilot operation.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Checklist Usage	a. Pre-Arrival e-Learning b. Pre-flight Briefing c. Actual Aircraft Pre-flight	a. Perform normal exterior inspection by reference to the written checklist b. Perform all checklists in the proper sequence and without error

SEP 4	Engine Start and Taxi Procedures	
Unit Objective – Demonstrate the proper engine start and taxi procedures for the SEP.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Engine Start	a. Pre-Arrival e-Learning b. Actual Aircraft Pre-flight	a. Demonstrate the correct procedures for engine start under all conditions b. Demonstrate the correct emergency procedures associated with engine start c. Successfully start the engine
2. G1000 Setup	a. Pre-Arrival e-Learning b. Actual Aircraft Pre-flight	a. Understand the capability of the G1000 to aid in low visibility / congested airport taxi situations b. Demonstrate the proper visual clearing techniques during all taxi operations
3. Taxi	a. Pre-Arrival e-Learning b. Pre-flight Briefing c. Actual Aircraft Pre-flight	*a. Understand the proper technique to control the aircraft* b. Successfully taxi aircraft

SEP 5	Before Takeoff Checklist	
Unit Objective – demonstrate the proper pre-takeoff procedures for the SEP.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Normal and Abnormal Indications	a. Pre-Arrival e-Learning b. Actual Aircraft Pre-flight	a. Complete all Pre-takeoff checklist items correctly and in the proper sequence b. Identify normal and abnormal systems indications using the MFD and the POH
2. G1000 Setup	a. Pre-Arrival e-Learning b. Actual Aircraft Pre-flight	Correctly configure and program the PFD / MFD / GPS for departure
3. Autopilot Checks	Actual Aircraft Pre-flight	Correctly configure the autopilot according to the AFM Supplement

SEP 6	Takeoff	
Unit Objective – demonstrate the proper takeoff procedures for the SEP.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Normal takeoff	a. Pre-flight Briefing b. In-flight from lineup on the runway through flap retraction	Perform a normal takeoff within the PTS standard
2. Crosswind takeoff		Perform a crosswind takeoff within the PTS standard
3. Aborted takeoff		Perform the aborted takeoff procedure within the PTS standard

SEP 7	Climb Procedures	
Unit Objective – demonstrate the proper climb procedures for the SEP.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Autopilot Climb		Perform an autopilot-flown climb and level off within the PTS standard
2. Checklist Usage		Use the checklist
3. Division of Attention		Divide attention between in cockpit and outside activities

SEP 8	Cruise procedures	
Unit Objective – demonstrate the proper cruise procedures for the SEP.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Autopilot Cruise	a. Pre-Arrival e-Learning b. In Cruise Flight	a. Perform an autopilot assisted cruise within the PTS standard b. Maintain altitude within the PTS standard c. Demonstrate the aircraft reaction to course changes programmed into the GPS
2. Checklist Usage		Use the checklist
3. Lean Assist		Use the Lean Assist function on the MFD to lean the aircraft as recommended by the POH

SEP 9	PFD Crosscheck	
Unit Objective – demonstrate the proper use of flight controls and Visual or PFD derived cues to perform basic flight maneuvers in the SEP.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Straight and level 2. Normal Turns 3. Climbs and Descends	a. Pre-flight Briefing b. In-flight	a. Perform the maneuver by sole reference to the PFD within the PTS standard b. Perform the maneuver by sole reference to the PFD within the PTS standard c. Establishes airspeed and altitude within the PTS standard

SEP 10	Flight Maneuvers	
Unit Objective – demonstrate proper interpretation from the flight indications found on the PFD during various flight maneuvers.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Steep Turns	a. Pre-flight Briefing b. In-flight	Demonstrate steep turns within the PTS standard
2. Slow Flight		Demonstrate slow flight within the PTS standard
3. Stall		Demonstrate a recovery from a planned Power-Off Stall with minimum altitude loss

SEP 11	Descent Planning and Execution	
Unit Objective – demonstrate the proper descent procedures for the SEP.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1.Automation management	a. Pre-fight Briefing b. Descent planning during the cruise leg and the descent itself from cruise altitude until just prior to flap extension for landing.	a. Decide which automated features will be used during the descent and program prior to beginning the descent b. Monitor and update the automated features during the descent
2. Vertical Navigation (VNAV) Planning		Use the descent features of the GPS and the map features of the MFD to plan a fuel-efficient descent that avoids known obstacles and terrain
3. Autopilot Descent		Perform an autopilot descent within PTS standard
4. CFIT Avoidance		Identify the most important data available from the display

SEP 12	Landings	
Unit Objective – demonstrate landing procedures in the SEP.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Before landing procedures	a. Pre-Arrival e-Learning b. Pre-flight Briefing c. In -flight d. (VFR) flap retraction clearing the runway or return to pattern altitude in the event of a go-around. e. (IFR) from 1,000 feet (stabilized approach until clearing the runway or climb to missed approach altitude.	Perform all pre-landing checklist items correctly and in sequence
2. IFR Landing Transition (Autopilot to manual and manual to Manual)		a. Demonstrate the proper transition from instrument reference to visual reference b. Demonstrate the proper procedures for autopilot disengagement and transition to landing
3. Normal landing		Perform a normal landing within the PTS standard
4. Zero Flap landing		Perform a zero flap landing within the PTS standard
5. Crosswind landing		Perform a crosswind landing within the PTS standard
6. Balked landing and Go-Around		*a. Make a timely decision to go-around either in flight or after initial touchdown if the landing cannot be accomplished safely* b. Perform the balked landing procedure within the PTS standard

SEP 13	Aircraft Shutdown and Securing procedures	
Unit Objective – demonstrate proficiency shutting down and securing the SEP.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Aircraft Shutdown Checklist	Post-flight	Demonstrate proficiency properly concluding a flight including engine shutdown and securing

SEP 14	Automated Avionics Interface	
Unit Objective – demonstrate proficiency interfacing the avionics for flight operations.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Identification of Data / Power Sources and corrective actions a. ADC failure b. AHRS failure	a. Pre-Arrival e-learning b. Classroom c. Pre-flight c. In-flight	a. Understand data / power source failure modes that affect operation of the PFD / MFD b. Identify specific failures and their associated cues
2. Identification of display failure		Perform the appropriate corrective action for each malfunction
3. Aircraft Automation Management		a. Understand and be able to correctly describe the interface between all the installed avionics systems in the aircraft b. Demonstrate proficiency operating the avionics installed on the aircraft as an integrated system

SEP 15	G1000 Programming	
Unit Objective – demonstrate proficiency with the GPS.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. VFR: -Nearest Function -Airport Information/ Frequency Loading -Flight Plan Function	In-flight	Demonstrate proficiency using the GPS including the Nearest, and Airport Information functions
2. IFR: -Nearest Function -Airport Information/ Frequency Loading -Instrument Procedure Loading -Flight Plan Function	a. Pre-flight b. In-flight	a. Demonstrate proficiency using the GPS including the Nearest, Airport Information, DP / STAR / Approach functions b. Demonstrate proficiency flight planning the GPS and flying the flight plan

SEP 16 Autopilot Programming, Modes, and Annunciators		
Unit Objective – demonstrate proper use of the autopilot.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1.Vertical Modes	In-flight	Demonstrate proper use of the following modes: a. Vertical Speed b. Altitude Pre-select c. Altitude Hold d. Glide slope Coupling
2. Lateral Modes	In-flight	Demonstrate proper use of the following modes: a. ROL b. HDG c. NAV d. APR e. REV

SEP 17 Automated Avionics Operation and Systems Interface		
Unit Objective – demonstrate proper use of the Avionics Interface including normal, abnormal, and emergency operations of the SEP and all installed avionics.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Primary Flight Display	In-flight	Demonstrate proper use of the PFD during autopilot operations
2. Multi Function Display Normal Operation	a. Pre-flight b. In-flight c. Post-flight	Demonstrate proper use of the avionics interface during normal operations
3. Abnormal and Emergency Indications and Operations	a. Pre-flight b. In-flight c. Post-flight	Demonstrate proper use of the avionics interface during abnormal and emergency operations
4. HSI Operation	a. Pre-flight b. In-flight	Demonstrate proper setup, use, and operation using different NAV sources and Bearing Pointers

SEP 18	Situational Awareness Aids	
Unit Objective – demonstrate proper use of the datalink systems and it's interface with other installed avionics.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. TIS/TAS 2. Stormscope 3. Weather Datalink 4. Terrain Awareness/TAWS	a. Pre-flight b. In-flight	a. Demonstrate the proper setup of the information and related displays b. Demonstrate the proper decision making skills based on the information presented

SEP 19	Emergency Procedures	
Unit Objective – demonstrate success in recognizing and dealing with component failures.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Display failure	In-flight	Demonstrate recognition of the failures and deal them appropriately
2. AHRS/ADC Failure	a. Pre-flight b. In-flight	Demonstrate recognition of failures and deal them appropriately
3. Flying on Standby Instruments	a. Pre-flight b. In-flight	Demonstrate the ability to fly solely by reference to standby instruments
4. Checklist Usage	a. Pre-flight b. In-flight	Demonstrate use of the checklist during emergencies

SEP 20 Instrument Approach Procedures		
Unit Objective – demonstrate IFR proficiency in the SEP using the installed equipment.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. ILS Approach	a. Pre-flight b. In-flight c. Post-flight	Perform the approach within the PTS standard
2. VOR / GPS Approach (including DME Arcs)		a. Program and activate the VOR / GPS approach in a timely manner b. Perform the GPS / VOR approach within the PTS standard
3. Missed Approach		Perform the missed approach within the PTS standard
4. Holding/Procedure Turns		Demonstrate holding and procedure turns to PTS standard
5. Task Management and Decision making	In-flight	Demonstrate proper planning and prioritization of time between avionics programming and execution of IFR procedures
6. Situational Awareness	In-flight	Demonstrate proper use of the PFD and MFD to maintain situational awareness during IFR procedures