FAA Industry Training Standards (FITS)

Scenario Based Transition Syllabus and Standards
For Cessna Single Engine Propeller Aircraft
Version 1.0

Cessna
A Textron Company

Cessna SEP FITS Training Master Syllabus
Scenario Based Transition Guide

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Acknowledgements:

This Syllabus Prepared by

How to use the Cessna SEP FITS Syllabus

This FITS Transition Syllabus is intended as a guide for pilots, flight and ground instructors to help understand and safely transition to technically advanced Cessna SEP aircraft. The syllabus lays out a series of four flight scenarios that enable a pilot transitioning into a piston or turbine powered Technically Advanced Aircraft (TAA) to master the aircraft, the technology, and most importantly the concepts of Risk Management and Aeronautical Decision Making.

This syllabus was designed to introduce the G1000 equipped Cessna SEP aircraft to anyone interested in the operation of the aircraft. This includes *anyone* who purchases a NAV III Cessna, or anyone wanting the training. The training is not limited to rated pilots.

To Instructors

Each lesson consists of a scenario description followed by a list of specific tasks to be accomplished by the student. Each scenario also includes a "student centered" set of grading criteria. Within the confines of each scenario the Pilot in Training (PT) and instructor (CFI) are free to plan all the training activities in a way that supports the overall scenario flow, and provides the most realistic replication of real world, day-to-day flying.

The instructor is encouraged to become familiar with the NAV III/ Garmin Integrated Flight System prior to teaching in Cessna SEP aircraft with this equipment. Cessna Training, Cessna Pilot Center Regional Managers and certain Cessna Pilot Center locations can help provide assistance in becoming a recognized Cessna Factory Authorized Instructor (CFAI).

The emphasis in each scenario is on PT planning and execution of each scenario with as little help as possible from the instructor. The value of scenario-based training is in the opportunities it provides to plan, execute, and respond to changing situations in a thoughtful way.

The FITS training approach may be significantly different than traditional training methods used in earlier flight training experiences. With this in mind it is imperative the pre-course "Garmin in a Bag" be used to familiarize a pilot with this system prior to attending any formal ground training sessions.

To Pilots, Instructors and Flight Schools

You are encouraged to contact Cessna with any comments, questions or suggestions to this FITS course by contacting:

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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), Embry Riddle Aeronautical University, The University of North Dakota, Cessna Aircraft Company 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 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) and Multi-Function Displays (MFD)
    - Traffic, Weather and Terrain Displays
    - 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

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 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 the 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 real-time information to the cockpit on weather, traffic, terrain and flight planning. This information may be displayed on the PFD, MFD or on other related cockpit displays.

Desired Pilot in Training (PT) Scenario Outcomes

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

- **Describe** - At the completion of the scenario the PT will be able to describe the physical characteristics and cognitive elements of the scenario activities.
- **Explain** - At the completion of the scenario the PT will be able to describe the scenario activity and understand the underlying concepts, principles, and procedures that comprise the activity.
- **Practice** - At the completion of the scenario the student will be able to practice the scenario activity with little input from the CFI. The PT with coaching and / or assistance from the CFI will quickly correct minor deviations and errors identified by the CFI.
- **Perform -** At the completion of the scenario, the PT will be able to perform the activity without assistance from the CFI. Errors and deviations will be identified and corrected by the PT 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 PT is satisfactorily demonstrating proficiency in traditional piloting and systems operation skills.
- **Manage / Decide -** At the completion of the scenario, the PT will be able to 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. **"Manage / Decide"** will be used to signify that the PT is satisfactorily demonstrating acceptable SRM skills.

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 250,000 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 students 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 **NAV III / Garmin 1000** avionics, increasing their comfort level in Cessna SEP. Additionally, aircraft systems training is 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; **C182 Skylane** and **C206 Stationair**, both normally aspirated and turbocharged versions. Beginning the second quarter of 2005 the **C172 Skyhawk** will be available with the NAV III / Garmin 1000**.**

Throughout each training scenario, the pilot will be challenged with "What If?" discussions as a means to provide the student 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 student to ponder. Once again, research has shown these types of discussions help build judgment and offset low experience.

The FAA web site about FITS fully explains the concept and criteria for syllabus approval, please visit the web site at - **www.faa.gov/avr/afs/fits/index.cfm.**

Section 4 - Cessna SEP FITS Transition Syllabus

This is a general outline of the subject material included in the ground sessions and flight training scenarios for pilots transitioning into Cessna SEP airplanes equipped with the NAVIII / G1000.

Goal

The goal of the Cessna transition training is to help pilots become familiar with the G1000 equipped Cessna SEP during both the VFR and IFR operations. Additionally, students will be introduced to aircraft systems and operating characteristics unique to the Cessna SEP they will fly.

SEP Course Prerequisites

Cessna SEP training is provided to the pilots of a Garmin-equipped SEP airplane. Cessna recommends each pilot-in-training meet the appropriate recency of experience requirements outlined by 14 CFR section 61.56 and 61.57. Other pilots who would like to attend this training without the purchase of a new Garmin equipped SEP airplane are encouraged to contact a local Cessna Pilot Center (CPC), Cessna Sales Team Authorized Representative (CSTAR), or the Cessna SEP Training Administrator in Independence, Kansas.

Course Elements

Scenario-based transition flight training (SBT) represents a non-traditional approach to GA pilot training. The most significant shift involves moving from the traditional practice of analyzing a maneuver and breaking it down into manageable sizes, establishing behavioral objectives and measuring performance based on those objectives. Instead, SBT uses the same maneuvers but arranges them into “real world” learning experiences. Practice of the task remains the cornerstone of skill acquisition; however, SBT challenges the pilot to think and be proactive.

Pilots in this course will still be exposed to some task based instruction, primarily in the airport operation phase of flight, but the emphasis will be on SBT. In a sequential method of training the ground sessions will support operations to be conducted in the aircraft. As with the basics of any training endeavor this course will begin from the unknown to the known and from the simple-to-complex building block concept. The emphasis during training is on pilot decision-making and psychomotor skills. After the completion of training, the pilot goes on to fly in an environment that asks them to use skills, apply knowledge and make decisions unassisted.

Standards

In every airplane system there are limitations based on two factors:

1. The absolute capability of the equipment to perform a particular function, and
2. The individual pilots ability to use that equipment.

Effective training and experience can enable safe operation of an airplane within these limitations. Some airplane systems are more complex and require a higher level of skill and interpretation. Pilot skills and knowledge vary with a pilot's total flight time, time-in-type, and recent flight training or experience. Therefore, pilots must be trained to recognize their personal limitations as well as those of the airplane.

Throughout the ground school and flight curriculum, emphasis will be placed on operating within airplane and pilot limitations. Risk management and decision-making skills should be consistently integrated into each scenario. A discussion of limitations, as they apply to the pilot's experience level, and with reference to potential problem areas, will enhance the decision process.

Ground Training

The ground-based segments of the syllabus are an integral part of the SBT course and should be mastered prior to the in-flight training experience. The pilot-in-training (PT) should demonstrate, through oral review, the knowledge to safely operate the specific airplane, using the POH or approved Airplane Flight Manual and airplane checklists. All **immediate-action** emergency procedures should be committed to memory. The CFI will discuss each incorrect response with the pilot to ensure complete understanding. The instructor shall integrate SRM concepts and techniques in each of these discussions.

Flight Training

Each flight-training lesson consists of a highly scripted scenario. These scenarios increase in complexity as the student progresses through the course. The instructor and PT should use the scenario as a "lesson plan." The intent is for the PT to study the lesson script, prepare a scenario plan, and brief it as part of the preflight preparation.

It is especially important that the pilot learn to "manage" the aircraft in the automated mode, as well as fly the aircraft by hand. Good SRM demands that the PT be able to rely on the autopilot and automated navigation systems during times of high cockpit task loads. Instructors shall ensure that emphasis is given to both automated and manual flight modes as described in each scenario.

The PT should demonstrate the necessary skill and experience required for the specific airplane. Operations shall be accomplished within the tolerances specified in the Practical Test Standards appropriate to the PT's airmen certificate.

Risk Assessment

The following table represents a simple risk assessment matrix that was developed and is used by the Cessna 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 make 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

Grading and Evaluation

It is important for the PT and instructor to understand the objective of scenario-based training in the transition course is to change the thought processes, habits and behavior of the PT.

The Cessna SEP transition-training syllabus is learner centered. It is important that the PT understands the success of the syllabus in the desired PT 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 PT.

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

Lesson 1 - VFR Flight with NAV III
Cessna SEP/G1000 Scenario Based Training

Objective: The Pilot in Training (PT) will demonstrate a basic knowledge and proficiency in avionics and aircraft system equipment location and normal operating procedures**.**

Prerequisites: Attended ground school module 1.

VFR PT Preparation: Review the following:
- Normal operating and emergency procedures in the POH and the limitations in the AFM.
- Airport information for departure and destination airports.
- Route of flight information for both trips.
- Aircraft and avionics systems display and procedures.

Briefing Items:

Initial Introduction
PTs 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.

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 all PTs.
- Mid-air collision avoidance procedures.
- Taxi procedures.
- Any abnormal, emergency returns or annunciation to abort the flight.

Preflight:

The PT will plan a short visual cross-country flight of approximately one and a half-hour in duration. The flight will include at least one full stop landing at an airport other than the original departure airport.

The PT will perform all weight and balance, performance calculations and discuss the weather briefing received and make a competent go / no-go decision. Additionally, the PT will conduct a risk assessment to identify any potential safety of flight issue. 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 PT is evaluated on his / her ability to plan a comprehensive flight with attention to all required scenario activities.

The PT 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 enhanced ground proximity warning / alert system and traffic awareness system should be encouraged as well. In addition, an effective pre-takeoff briefing shall be conducted.

Leg 1

The PT will perform a normal takeoff and departure to a safe altitude using the manufacturers 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. Aircraft systems, avionics and autopilot functions will be practiced during cruise, descent and normal landing phase of the flight. The VNAV function (if equipped) will be used as well as any other form of automation that is appropriate. The VFR PT will perform a normal descent and pattern transition followed by a normal approach and landing. Continued use of any automation and MFD resources is encouraged.

The flight plan for Independence training operations will be from Independence to Bartlesville. KBVO has excellent facilities, weather reports, and forecasts available. Runway length is 6200' with lights. The distance is about 27 N.M. and should take about 15 to 18 minutes at 4500'. There is only one obstruction on a direct line between KIDP and KBVO, which is over 500 AGL, (509 AGL). The emphasis for this flight will be placed on cockpit displays, use of automation and to acquire a general feeling of the airplane.

Leg 2

A different route will be programmed into the GPS flight plan for the return trip. A simulated short, soft or high-density altitude takeoff will be briefed and performed. If any actual crosswinds exist reference to the crosswind component chart will be made and the proper procedures shall be used. After the flight is established in cruise flight, leaning procedures will be reviewed and used according to the manufacturer's recommendation. At this point, a diversion to another airport due to simulated adverse weather conditions will be made using the "direct-to" GPS function. A landing will be made at the alternate airport using either short or soft field landing technique. If any crosswind exists, reference to the crosswind components chart shall be made and both the approach speed and flap setting adjusted accordingly. A takeoff will be made using any takeoff procedure not previously used for a return trip to the original departure airport. Navigation may be done using the GPS "direct" function, pilotage with assistance from the G1000, or any other appropriate means of navigation. A climb to a safe altitude will allow for the demonstration of flight at critically slow airspeeds. The PT will be encouraged to evaluate personal skill levels in steep turns, unusual attitude recoveries and other appropriate aeronautical challenges deemed appropriate by the instructor. Upon completion of the maneuvers, a return to the departure airport will be made with simulated systems malfunction, as in a no flap landing will be made.

The departure from Bartlesville should include a turn towards Tulsa to ensure the airplane will be in the TIS service area. This will allow the PT to see how the system works. Shortly after the departure from KBVO the instructor will have the PT to divert to a new destination due to weather concerns in Tulsa. The instructor may ask the PT for what weather factors may cause the PT to divert. Using the G1000, the PT will select a new destination airport within 50 miles east of KBVO. Use of the G1000 system and all of its capabilities is the point of emphasis for this flight.

Post-flight: The PT will perform all aircraft shutdown and securing procedures. The instructor will provide feedback and critique the performance of the PT.

Legend

Describe: at the completion of the scenario, the PT will be able to describe the physical characteristics and cognitive elements of the scenario activities.

Explain: at the completion of the scenario, the PT will be able to describe the scenario activity and understand the underlying concepts, principles, and procedures that comprise the activity.

Practice: at the completion of the scenario, the PT will be able to practice the scenario activity with little input from the CFI. The PT, with coaching and/or assistance from the CFI, will quickly correct minor deviations and errors identified by the CFI.

Perform: at the completion of the scenario, the PT will be able to perform the activity without assistance from the CFI. Errors and deviations will be identified and corrected by the PT in an expeditious manner. At no time will the successful completion of the activity be seriously in doubt. Perform will be used to signify that the PT is satisfactorily demonstrating proficiency in traditional piloting and systems operation skills.

Manage / Decide: at the completion of the scenario, the PT will be able to 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. Manage / Decide will be used to signify that the PT is satisfactorily demonstrating acceptable SRM skills.

Using This Syllabus

Both an **X** and a check mark (☐) will be entered under the appropriate desired outcome. The definitions of the desired outcomes are listed above. The X signifies where the PT believes himself to be with respect to the scenario activity. The check mark will represent the instructor's opinion of where the PT ranks among the desired outcomes.

PT Name_____

Ratings Held

Private ☐

Instrument ☐

Commercial ☐

Flight Instructor ☐

***Pilots not appropriately rated will not be expected to achieve the Perform, Manage / Decide level in order to receive a Certificate of Attendance.**

Note: These activities will be completed as part of the training scenario and are not intended to be a list of training tasks to be completed in numerical order. Since each scenario contains three distinct legs, the PT and the instructor should plan to accomplish items during different portions of the flight.

Scenario Activities	Describe	Explain	Practice	Perform	Manage/Decide
• Flight Planning o Scenario Planning o Wt. & Balance / Aircraft Performance o Aircraft Speeds / Configuration o Conduct Flight / SRM Briefing	_____	_____	_____	_____	_____
• Normal Preflight & Cockpit Proc. o Normal Pre-Takeoff Checklist o G1000 Setup	_____	_____	_____	_____	
• Engine Start & Taxi Procedures o Engine Start o G1000 Setup o Taxi	_____	_____	_____	_____	
• Before Takeoff Checks o Normal & Abnormal Indications o G1000 Setup o Map Inset (Terrain)	_____	_____	_____	_____	
• Takeoff o Normal/Crosswind o Short field/Soft field	_____	_____	_____	_____	
• Climb Procedures o Manual Climb o Autopilot Climb o Power Management o Use of G1000 Features o Division of Attention	_____	_____	_____	_____	_____
• Cruise Procedures o Lean Assist o Manual Cruise o Autopilot Cruise o Division of Attention	_____	_____	_____	_____	_____
• PFD / Visual Crosscheck o Straight & Level Flight o Normal Turns o Climbs & Descents	_____	_____	_____	_____	
• Slow Flight, Stalls, Steep Turns o Configurations Changes o Slow Flight Recovery o Power-Off Stall Recovery o Stall Prevention o Steep Turns	_____	_____	_____	_____	
• G1000 Programming o General Programming o Communications o Ground Based Navigation o Terminal Area Procedures	_____	_____	_____	_____	

- Autopilot Operation _____ _____ _____ _____
  - VS & Altitude Hold
  - Navigation Modes
  - PFD Interface
- Data Link Situational Awareness _____ _____ _____ _____
  - TIS
  - Strike Finder
  - Terrain Awareness
- Emergency Escape Procedures _____ _____ _____ _____ _____
  - Recovery from Unusual Attitudes
  - Weather Deviations
- Descent Planning & Execution _____ _____ _____ _____ _____
  - Automation Management
  - VNAV Planning
  - Navigation Programming
  - Manual Descent
  - Autopilot Descent / Arrival
  - CFIT Avoidance
- Landing _____ _____ _____ _____
  - Before Landing Proc.
  - Normal/Crosswind
  - Short field/Soft field
- Aircraft Shutdown & Securing Proc. _____ _____ _____ _____
  - Checklist Usage
  - Aircraft Tie-down

Notes

_____
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_____
_____
_____

Lesson Date_____
Flight Time/Briefing Time_____/_____
CFI_____
PT _____

Lesson 2 - IFR Flight using the NAV III
Cessna SEP/G1000 Scenario Based Training

Objective: The IFR PT will demonstrate a basic knowledge and proficiency in avionics and aircraft system equipment location and normal operating procedures while flying in the IFR environment.

Prerequisites: Completion of the automation, flight planning and validating the GPS database training modules.

IFR PT Preparation: Review the following:
- Normal operating and emergency procedures in the POH and the limitations in the AFM.
- A workbook on the systems and procedures.
- Airport and appropriate IFR information for departure, destination and alternate airports.
- Route of flight information for both trip legs.
- Aircraft and avionics systems display and procedures.
- Complete risk assessment sheet.

Briefing Items:

Initial Introduction
IFR PTs should have a clear understanding of the required equipment for an IFR flight in the NAS.

Single Pilot Resource Management (SRM)
- Checklist procedures.
- Avionics systems to be used during this flight including all required preflight checks.
- Operating procedures and considerations while in a single pilot, IFR environment.

Safety: The following safety items should be briefed to IFR PTs,
- Operation in the vicinity of large aircraft.
- Airport diagrams and taxi procedures.
- Any abnormal, emergency returns or annunciation to abort the flight.

Preflight:

The IFR PT will plan a short IFR cross-country flight of approximately two hours in duration, to include at least one autopilot-assisted precision approach to a missed approach followed by a non-precision approach to a full stop landing at an airport other than the original departure airport.

The PT will perform all weight and balance, performance calculations and discuss the weather briefing received and makes a competent go / no-go decision. Additionally, a risk assessment will be conducted to recognize specific management of any risks identified. The instructor will provide the necessary guidance to ensure that the overall plan provides for the entire scenario activities and sub-activities listed for this lesson. The PT is evaluated on his / her ability to plan a comprehensive flight with attention to all required scenario activities.

The PT 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, autopilot functionality, and proper PFD and MFD setup. The use of any safety sensing devices

such as enhanced ground proximity warning / alert system, and traffic awareness system should be encouraged as well. In addition, an effective pre-takeoff briefing shall be conducted.

Leg 1

The IFR PT will perform a normal takeoff and departure to a safe altitude using the manufacturers 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 IFR conditions and while in cruise with the assistance of the equipment installed. Aircraft systems, avionics and autopilot functions will be practiced during cruise, descent and approach phase of the flight. The VNAV function (if equipped) will be used as well as any other appropriate form of automation. The IFR PT will request or select an appropriate IFR approach procedure. The continued use of any automation and G1000 resources is encouraged.

The flight plan for Independence training operations will be from Independence to Tulsa International. The distance is about 63 N.M. and should take about 30 minutes at 5000'. The emphasis for this flight will be placed on the PFD display, use of automation and various page group and page displays on the MFD. Flight into Tulsa's airspace will provide radar service for the TIS.

Leg 2

A different route will be programmed into the GPS flight plan for the return trip. A simulated high-density altitude takeoff will be briefed and performed. If any actual crosswinds exist reference to the crosswind component chart will be made and the proper procedures shall be used. After the flight is established in cruise flight, leaning procedures will be reviewed and used according to the manufacturer's recommendation. The flight will continue to a different airport as previously planned. Upon arrival in the terminal environment the IFR PT will select an initial approach fix requiring the use of a course reversal. An entry will be conducted prior to proceeding with the approach. A missed approach will be executed at the missed approach point with a return to the original departure airport. An approach will be selected which will require the IFR PT to circle to land to a full stop landing. If any crosswind exists, reference to the crosswind component chart shall be made and both the approach speed and flap setting adjusted accordingly.

The flight plan will be to depart from Tulsa using any ATC DP for a flight to Bartlesville. The arrival into KBVO will require the pilot to program the G1000 for an approach that has a holding pattern for course reversal. The pilot will fly the full approach but at the MAP he will fly direct to KIDP. Total distance is 62 N.M. and should take about 30 minutes at 4000'. During this flight scenario he will have conducted 4 approaches, have held and landed from a straight in approach, circling approach and missed approach.

Post-flight: The PT will perform all aircraft shutdown and securing procedures. The instructor will provide feedback and critique the performance of the IFR PT.

Legend

Describe: at the completion of the scenario, the PT will be able to describe the physical characteristics and cognitive elements of the scenario activities.

Explain: at the completion of the scenario, the PT will be able to describe the scenario activity and understand the underlying concepts, principles, and procedures that comprise the activity.

Practice: at the completion of the scenario, the PT will be able to practice the scenario activity with little input from the CFI. The PT, with coaching and/or assistance from the CFI, will quickly correct minor deviations and errors identified by the CFI.

Perform: at the completion of the scenario, the PT will be able to perform the activity without assistance from the CFI. Errors and deviations will be identified and corrected by the PT in an expeditious manner. At no time will the successful completion of the activity be seriously in doubt. Perform will be used to signify that the PT is satisfactorily demonstrating proficiency in traditional piloting and systems operation skills.

Manage / Decide: at the completion of the scenario, the PT will be able to 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. Manage / Decide will be used to signify that the PT is satisfactorily demonstrating acceptable SRM skills.

Using This Syllabus

Both an **X** and a check mark (☐) will be entered under the appropriate desired outcome. The definitions of the desired outcomes are listed above. The X signifies where the PT believes himself to be with respect to the scenario activity. The check mark will represent the instructor's opinion of where the PT ranks among the desired outcomes.

PT Name_____

Ratings Held

Private ☐

Instrument ☐

Commercial ☐

Flight Instructor ☐

***Pilots not appropriately rated will not be expected to achieve the Perform, Manage / Decide level in order to receive a Certificate of Attendance.**

Note: These activities will be completed as part of the training scenario and are not intended to be a list of training tasks to be completed in numerical order. Since each scenario contains three distinct legs, the PT and the instructor should plan to accomplish items during different portions of the flight.

Scenario Activities	Describe	Explain	Practice	Perform	Manage/Decide
• Flight Planning o Scenario Planning o Wt. & Balance / Aircraft Performance o Aircraft Speeds / Configuration o Conduct Flight / SRM Briefing	_____	_____	_____	_____	_____
• Normal Preflight & Cockpit Proc. o Normal Pre-Takeoff Checklist o G1000 Setup	_____	_____	_____	_____	
• Engine Start & Taxi Procedures o Engine Start o G1000 Setup o Taxi	_____	_____	_____	_____	
• Before Takeoff Checks o Normal & Abnormal Indications o G1000 Setup o Map Inset (Terrain)	_____	_____	_____	_____	
• Takeoff o Normal/Crosswind o Short field/Soft field	_____	_____	_____	_____	
• Climb Procedures o Autopilot Climb o Power Management o Use of G1000 Features o Division of Attention	_____	_____	_____	_____	_____
• Cruise Procedures o Lean Assist o Autopilot Cruise o Division of Attention	_____	_____	_____	_____	_____
• PFD / Instrument Crosscheck o Straight & Level o Normal Turns o Climbs & Descents	*_____	_____	_____	_____	
• G1000 Programming o General Programming o Communications o Ground Based Navigation o IFR Functions & Procedures o Terminal Area Procedures	*_____	_____	_____	_____	
• Autopilot Operation o VS & Altitude Hold o Navigation Modes o PFD Interface	_____	_____	_____	_____	
• Data Link Situational Awareness o TIS o Strike Finder o Terrain Awareness	_____	_____	_____	_____	

- Emergency Escape Procedures _____ _____ _____ _____ _____
  - Recovery from Unusual Attitudes
  - Weather Deviations
- Descent Planning & Execution _____ _____ _____ _____ _____
  - Automation Management
  - VNAV Planning
  - Navigation Programming
  - Autopilot Descent / Arrival
  - CFIT Avoidance
- Instrument Approach Procedures *_____ _____ _____ _____
  - Manual ILS
  - Coupled ILS
  - VOR Approach
  - GPS Approach
  - Missed Approach
  - Holding
- Landing _____ _____ _____ _____
  - Before Landing Proc.
  - Normal/Crosswind
  - Short field/Soft field
- Aircraft Shutdown & Securing Proc._____ _____ _____ _____
  - Checklist Usage
  - Aircraft Tie-down

Notes

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Lesson Date_____
Flight Time/Briefing Time_____/_____
CFI_____
PT _____

Lesson 3 - NAV III Abnormal/Emergency Considerations
Cessna SEP/G1000 Scenario Based Training

Objective: The PT will demonstrate proficiency in the ability to recognize any failures of avionics and aircraft systems and to apply corrective action in both the VFR and IFR environment. Additionally, the PT will demonstrate the ability to make sound decisions (higher order thinking), control the aircraft, and use all available resources while dealing with these failures (SRM).

Prerequisites: Completion of the training modules concerning failures of critical systems components.

VFR / IFR PT Preparation: Review the following
- Abnormal / emergency procedures in the POH and the limitations in the AFM.
- The manuals referencing the systems and procedures.
- Complete risk assessment sheet.

Briefing Items:

Initial Introduction
PTs should have a clear understanding of the capabilities, redundancy and limitations to the NAV III avionics package. The PT should also have knowledge of what area in the checklist will be used to address any avionics issues.

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 PTs,
- Airport diagrams and taxi procedures. Land and hold short operations.
- Memory items on the pilot's checklist.
- NOTAMs appropriate to the flight.
- Prioritizing all abnormal / emergency operations.

Preflight:

The VFR and IFR PT will plan a two-leg flight plan with a destination approximately 50 miles from the home airport. In the event additional training is required, both legs of the scenario will be flown as planned and the emergency procedures described below will be performed on the second leg. If the PT is proficient in all of the scenario one and two maneuvers, the instructor will introduce unplanned emergency procedures to the PT in order to teach the emergency procedures as well as decision making and SRM. The PT will be expected to initiate a return to the departure airport and apply the proper emergency procedures in an orderly and efficient fashion. The PT will perform all weight and balance, performance calculations and discuss the weather briefing received and makes a competent go / no-go decision. Additionally, a risk assessment will be conducted to recognize specific management of any risks identified. The instructor will provide the necessary guidance to ensure that the overall plan provides for the entire scenario activities and

sub-activities listed for this lesson. The PT is evaluated on his / her ability to plan a comprehensive flight with attention to all required scenario activities. The PT 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 as enhanced ground proximity warning / alert system and traffic awareness system should be encouraged as well. An effective pre-takeoff briefing shall be conducted as well.

Leg 1 (and 2 if appropriate)

The VFR and IFR PT will perform a normal takeoff and departure to a safe altitude using the manufacturers approved checklist and appropriate climb speeds.

Once airborne and stabilized in cruise flight the instructor will introduce (simulate) one of the following.

- Complete alternator failure and resultant battery only flight, followed by a battery failure and backup instrument only flight.
- Failure of the PFD and MFD (by use of dimming) with continued flight on the backup instruments.
- Failure of the PFD and MFD with continued flight on the autopilot and backup instruments.
- Simulated accidental encounter with IMC and subsequent recovery by use of the autopilot and flight instruments (VFR PT only).

The PT will use the standby instruments to fly a visual approach to a landing. The IFR PT will perform a normal takeoff with a simulated failure of the PFD display occurring shortly after takeoff. The IFR PT will then be required to fly a cross panel precision approach to a missed approach. The cross panel approach will be simulated by the instructor selecting the reversionary display and then dimming the PFD to full dark. The IFR PT will continue with a simulated missed approach. The IFR PT can anticipate flying an AHRS/ADC simulated failure, non-precision approach to a landing using the standby flight instruments and the moving map display on the MFD.

The VFR PT will take off with the system fully operational. Then a simulated PFD failure will be conducted by the instructor selecting the reversionary display then dimming the PFD. The PT will then use the autopilot for a controlled descent through IMC into VFR conditions. A no flap full stop landing will then be accomplished.

Post-flight: The PT will perform all aircraft shutdown and securing procedures. The instructor will provide feedback and critique the performance of the VFR and IFR PT.

Legend

Describe: at the completion of the scenario, the PT will be able to describe the physical characteristics and cognitive elements of the scenario activities.

Explain: at the completion of the scenario, the PT will be able to describe the scenario activity and understand the underlying concepts, principles, and procedures that comprise the activity.

Practice: at the completion of the scenario, the PT will be able to practice the scenario activity with little input from the CFI. The PT, with coaching and/or assistance from the CFI, will quickly correct minor deviations and errors identified by the CFI.

Perform: at the completion of the scenario, the PT will be able to perform the activity without assistance from the CFI. Errors and deviations will be identified and corrected by the PT in an expeditious manner. At no time will the successful completion of the activity be seriously in doubt. Perform will be used to signify that the PT is satisfactorily demonstrating proficiency in traditional piloting and systems operation skills.

Manage / Decide: at the completion of the scenario, the PT will be able to 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. Manage / Decide will be used to signify that the PT is satisfactorily demonstrating acceptable SRM skills.

Using This Syllabus

Both an **X** and a check mark (☐) will be entered under the appropriate desired outcome. The definitions of the desired outcomes are listed above. The X signifies where the PT believes himself to be with respect to the scenario activity. The check mark will represent the instructor's opinion of where the PT ranks among the desired outcomes.

PT Name_____

Ratings Held

Private ☐

Instrument ☐

Commercial ☐

Flight Instructor ☐

***Pilots not appropriately rated will not be expected to achieve the Perform, Manage / Decide level in order to receive a Certificate of Attendance.**

Scenario Activities	Describe	Explain	Practice	Perform	Manage/Decide
• Flight Planning o Scenario Planning o Wt. & Balance / Aircraft Performance o Aircraft Speeds / Configuration o Conduct Flight / SRM Briefing	_____	_____	_____	_____	_____
• Normal Preflight & Cockpit Proc. o Normal Pre-Takeoff Checklist o G1000 Setup	_____	_____	_____	_____	
• Engine Start & Taxi Procedures o Engine Start o G1000 Setup o Taxi	_____	_____	_____	_____	
• Before Takeoff Checks o Normal & Abnormal Indications o G1000 Setup o Map Inset (Terrain)	_____	_____	_____	_____	
• Takeoff o Normal/Crosswind o Short field/Soft field o No flap	_____	_____	_____	_____	
• Climb Procedures o Autopilot Climb o Power Management o Use of G1000 Features o Division of Attention	_____	_____	_____	_____	_____
• Cruise Procedures o Lean Assist o Manual Cruise o Autopilot Cruise o Division of Attention	_____	_____	_____	_____	_____
• PFD / Visual, Instr. Crosscheck o Straight & Level Flight o Normal Turns o Climbs & Descents	_____	_____	_____	_____	
• G1000 Programming o General Programming o Communications o Ground Based Navigation o IFR Functions & Procedures o Terminal Area Procedures	*_____	_____	_____	_____	
• Autopilot Operation o VS & Altitude Hold o Navigation Modes o PFD Interface	_____	_____	_____	_____	

- Data Link Situational Awareness _____ _____ _____ _____
  - TIS
  - Strike Finder
  - Terrain Awareness
- Emergency Escape Procedures _____ _____ _____ _____ _____
  - Autopilot Only Flight
  - Pilot Decision Making
- System Malfunctions _____ _____ _____ _____ _____
  - PFD/MFD Failure
  - AHRS/ADC Failure
  - Alternator Failure
- Descent Planning & Execution _____ _____ _____ _____ _____
  - Automation Management
  - VNAV Planning
  - Navigation Programming
  - Manual Descent
  - Autopilot Descent / Arrival
  - CFIT Avoidance
- Instrument Approach Procedures *_____ _____ _____ _____
  - Manual ILS
  - Coupled ILS
  - VOR Approach
  - GPS Approach
  - Missed Approach
  - Holding
- Landing _____ _____ _____ _____
  - Before Landing Proc.
  - Cross Panel PFD Landing
  - Cross Panel MFD Landing
- Aircraft Shutdown & Securing Proc._____ _____ _____ _____
  - Checklist Usage
  - Aircraft Tie-down

Notes

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Lesson Date_____
Flight Time/Briefing Time_____/_____
CFI_____
PT _____

Lesson 4 – High Altitude Flight with NAV III Turbo
Cessna SEP/G1000 Scenario Based Training

Objective: The PT will demonstrate a basic knowledge and proficiency in operations of the aircraft above a cabin pressure altitude of 14,000 feet MSL.

Prerequisites: Completion of the training modules concerning aircraft systems, which include turbo charging and oxygen systems.

VFR / IFR PT Preparation: Review the following
- Review POH and the limitations in the AFM.
- Higher altitude flight considerations (operations, physiological, regulations, etc.)
- Complete risk assessment sheet.

Briefing Items:

Initial Introduction
PT should have a clear understanding of all aspects of the flight, with an emphasis on the higher altitude flight considerations.

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.
- Engine management during all phases of flight and above all, climb and descent.
- Decision-making and risk management during higher altitude flight.

Safety: The following safety items should be briefed to PTs,
- Airport diagrams and taxi procedures. Land and hold short operations.
- Memory items on the pilot's checklist.
- NOTAMs appropriate to the flight.
- Any abnormal, emergency returns or annunciation to abort the flight.

Preflight:

The PT will plan a short cross-country high altitude flight of approximately one hour in duration. The flight can be conducted under either VFR or IFR. The plan should include a climb to a cabin pressure altitude of at least 14,000 feet MSL, since this is where supplemental oxygen is required for the crew of an aircraft. The PT will perform all weight and balance, performance calculations and discuss the weather briefing received and make a competent go / no-go decision. Additionally, a risk assessment will be conducted to recognize specific management of any risks identified. The instructor will provide the necessary guidance to ensure that the overall plan provides for the entire scenario activities and sub-activities listed for this lesson. The PT is evaluated on his / her ability to plan a comprehensive flight with attention to all required scenario activities.

Prior to the start of the flight, an emphasis will be placed on regulations and considerations that need to be made when operating at above a cabin pressure altitude of 12,500 feet MSL. In

addition, power settings for both cruise climb and maximum performance climbs will be discussed during the preflight briefing.

The aircraft preflight shall be conducted by referring to the manufacturer's checklist. Checking the oxygen system will be stressed during the preflight.

Leg 1

The PT 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 with an emphasis placed on the use of any vertical command capabilities. All phases of flight shall include an emphasis on engine management. Collision avoidance procedures will be used during the climb and while in cruise with the assistance of the equipment installed.

Upon reaching a cabin pressure altitude of 14,000 feet MSL, the oxygen system will be utilized to demonstrate the proper use of the system, as well as considerations to make when using the oxygen system. When reaching cruise altitude, the cruise checklist will be performed.

The VNAV function will be used to determine the appropriate time to begin the descent. Upon reaching the top of descent, the autopilot will be used to establish the descent. Keeping the engine temperatures modulated will be the emphasis of this phase of flight. Continued use of any automation and G1000 resources is encouraged.

The flight plan will be to depart to an airport which will allow for a climb to high altitude as well as adequate time in cruise flight. After reaching cruise and learning how to appropriately manage the SEP aircraft, the PT will be instructed to turn around and begin the descent back to KIDP. The emphasis for the flight will be engine management, use of the oxygen system, regulations pertaining to high altitude flight, high altitude considerations, and the use of the VNAV function.

Post-flight: The PT will perform all aircraft shutdown and securing procedures. The instructor will provide feedback and critique the performance of the VFR and IFR PT.

Legend

Describe: at the completion of the scenario, the PT will be able to describe the physical characteristics and cognitive elements of the scenario activities.

Explain: at the completion of the scenario, the PT will be able to describe the scenario activity and understand the underlying concepts, principles, and procedures that comprise the activity.

Practice: at the completion of the scenario, the PT will be able to practice the scenario activity with little input from the CFI. The PT, with coaching and/or assistance from the CFI, will quickly correct minor deviations and errors identified by the CFI.

Perform: at the completion of the scenario, the PT will be able to perform the activity without assistance from the CFI. Errors and deviations will be identified and corrected by the PT in an expeditious manner. At no time will the successful completion of the activity be seriously in doubt. Perform will be used to signify that the PT is satisfactorily demonstrating proficiency in traditional piloting and systems operation skills.

Manage / Decide: at the completion of the scenario, the PT will be able to 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. Manage / Decide will be used to signify that the PT is satisfactorily demonstrating acceptable SRM skills.

Using This Syllabus

Both an **X** and a check mark (☐) will be entered under the appropriate desired outcome. The definitions of the desired outcomes are listed above. The X signifies where the PT believes himself to be with respect to the scenario activity. The check mark will represent the instructor's opinion of where the PT ranks among the desired outcomes.

PT Name_____

Ratings Held

Private ☐

Instrument ☐

Commercial ☐

Flight Instructor ☐

***Pilots not appropriately rated will not be expected to achieve the Perform, Manage / Decide level in order to receive a Certificate of Attendance.**

Scenario Activities	Describe	Explain	Practice	Perform	Manage/Decide
• Flight Planning o Scenario Planning o Wt. & Balance / Aircraft Performance o Aircraft Speeds / Configuration o Conduct Flight / SRM Briefing	_____	_____	_____	_____	_____
• Normal Preflight & Cockpit Proc. o Normal Pre-Takeoff Checklist o O2 System Checks ▪ Differences in Mask Types o G1000 Setup	_____	_____	_____	_____	
• Engine Start & Taxi Procedures o Engine Start o G1000 Setup o Taxi	_____	_____	_____	_____	
• Before Takeoff Checks o Normal & Abnormal Indications o G1000 Setup o Map Inset (Terrain)	_____	_____	_____	_____	
• Takeoff o Normal/Crosswind o Short field/Soft field	_____	_____	_____	_____	
• Climb Procedures o Autopilot Climb o Engine Management o Maximum Climb Settings o Cruise Climb Settings o Use of O2 Considerations	_____	_____	_____	_____	_____
• Cruise Procedures o Lean Assist o Autopilot Cruise o Division of Attention o Use of O2 Considerations	_____	_____	_____	_____	_____
• G1000 Programming o General Programming o Communications o Ground Based Navigation o Terminal Area Procedures	_____	_____	_____	_____	
• Autopilot Operation o VS & Altitude Hold o Navigation Modes o PFD Interface	_____	_____	_____	_____	
• Data Link Situational Awareness o TIS o Strike Finder o Terrain Awareness	_____	_____	_____	_____	

- Descent Planning & Execution _____ _____ _____ _____ _____
  - Automation Management
  - VNAV Planning
  - Navigation Programming
  - Autopilot Descent / Arrival
  - CFIT Avoidance
- Landing _____ _____ _____ _____
  - Before Landing Proc.
  - Normal/Crosswind
  - Short field/Soft field
- Aircraft Shutdown & Securing Proc._____ _____ _____ _____
  - Checklist Usage
  - Turbocharger Cooling Procedure
  - Aircraft Tie-down

Notes

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Lesson Date_____
Flight Time/Briefing Time_____/_____
CFI_____
PT _____

Section 5 - 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) Awareness		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	Flight 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 Training Scenario 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 Aircraft Performance Computation	a. Classroom Training b. Preflight Planning	Perform weight and balance and performance computations for the specific training scenario to be flown without error.
3. Preflight 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.
4. Decision Making and Risk Management	a. Pre-Arrival e-Learning b. Classroom Training c. All phases of flight planning and flight.	a. Make sound decisions based on a logical analysis of factual information, aircraft capability, pilot experience, and skill. b. Continuously critique the success of the flight scenario. c. Adjust the training scenario to maintain flight safety at all times.

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. Normal Pre-takeoff Checklist procedures	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 normal interior preflight inspection, engine start, taxi, before takeoff checklists by reference to the MFD. c. Perform all checklists in the proper sequence and without error.
2. PFD / MFD / GPS Autopilot Programming	a. Pre-Arrival e-Learning b. Pre-flight Briefing c. Actual Aircraft Pre-flight	a. Perform PFD initialization. b. Perform autopilot pre-flight checks. c. Program all the GPS and MFD according to the Cessna POH for the specific training scenario to be flown.

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. Taxi	a. Pre-Arrival e-Learning b. Actual Aircraft Pre-flight	a. Understand the proper technique to control the aircraft using appropriate technique. b. Successfully taxi aircraft.
3. SRM / Situational Awareness	a. Pre-Arrival e-Learning b. Pre-flight Briefing c. 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.

SEP 5	Before Takeoff Checks	
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. Aircraft Automation Management	a. Pre-Arrival e-Learning b. Actual Aircraft Pre-flight	Correctly configure and program the PFD / MFD / GPS / Autopilot for the departure.
3. Aeronautical Decision Making / Risk Management		Make the correct go / no-go decision based on the status of the aircraft, pilot, and weather.

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 reduction.	Perform a normal takeoff within the PTS standards.
2. Crosswind takeoff		Perform a crosswind takeoff within the PTS standards.
3. Aborted takeoff		Perform the aborted takeoff procedure within the PTS standards.
4. Soft Field / Short field Takeoff		Perform a Soft Field / Short Field Takeoff within the PTS standards.
5. Situational Awareness		a. Identify traffic, systems failures, and other developing situations that might prompt the execution of an aborted takeoff. b. Verbalize and prioritize those situations present during any given takeoff.
6. Aeronautical Decision Making / Risk management		Decide to continue or abort any given takeoff based on the actual situation or a simulated scenario created by the instructor.

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. Manual Climb	a. Pre-flight Briefing b. In-flight from flap retraction until after initial level off at cruise altitude.	a. Perform a hand-flown climb and level off within the PTS standards. b. Establishes pitch within the PTS standards.
2. Autopilot Climb		a. Perform an autopilot-flown climb and level off within the PTS standards. b. Establishes pitch attitude within the PTS standards.
3. Navigation Programming		Program the GPS / MFD to comply with the flight planned course and all ATC clearances.
4. Power management		Set appropriate power / engine leaning settings by reference to the MFD.
5. Situational Awareness, Task Management, and Decision Making		a. Identify all traffic, hazardous terrain, and potentially hazardous situations as they occur by reference to visual clearing and the MFD. b. Perform all required in-cockpit tasks in such a manner that visual clearing is not impacted negatively. c. Make timely decisions based on information obtained, visually, by radio, or by aircraft automation equipment.

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. Lean Assist MFD 2. Best Power vs. Best Economy	a. Pre-Arrival e-Learning b. In Cruise Flight	Lean the engine using the Lean Assist procedures on the MFD.
3. Manual Cruise	In Cruise Flight	a. Perform hand flown manual cruise within the PTS standards. b. Maintain altitude within the PTS standards.
4. Autopilot Cruise		a. Perform an autopilot assisted cruise within the PTS standards (for manual cruise). b. Maintain altitude within the PTS standards. c. Demonstrate the aircraft reaction to course changes programmed into the GPS.
5. Navigation Programming		Program flight plan changes within the GPS.
6. Automated Navigation Leg		a. In VFR conditions conduct a navigation leg of 30 minutes or more to a different airfield by use of the autopilot beginning at 800 ft AGL on departure and terminating autopilot use just prior to entry to the VFR pattern. b. In IFR conditions (or simulated IFR) conduct a navigation leg of 30 minutes or more to a different airfield by use of the autopilot beginning at 800 ft AGL on departure and terminating autopilot use at the decision altitude or missed approach point as applicable. If a missed approach is flown it will be flown by use of the autopilot.
7. Task Management, Situational Awareness, and Decision making		a. Identify all traffic, hazardous terrain, and potentially hazardous situations as they occur by reference to visual clearing and the MFD. b. Perform all required in-cockpit tasks in such a manner that visual clearing is not impacted negatively. c. Make timely decisions based on information obtained, visually, by radio, or by aircraft automation equipment.

SEP 9	Control Performance Instrument/Visual 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. Climbing and Descending Turns 4. Steep Turns (45 degree)	a. Pre-flight Briefing b. In-flight	a. Perform the maneuver by sole reference to the PFD within the PTS standards. b. Perform the maneuver by sole reference to the PFD within the PTS standards. c. Establishes airspeed and altitude within the PTS standards.

SEP 10	Low Speed Envelope	
Unit Objective – recognize the onset of low speed flight regimes and demonstrate the proper use of flight controls and Visual or PFD derived cues to perform basic low speed flight maneuvers in the SEP.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. Configuration changes 2. Slow Flight	a. Pre-flight Briefing b. In-flight	Demonstrate slow flight within the PTS standard with the flaps in all possible flap positions and detents.
3. Recovery from Power-Off Stall		Demonstrate a recovery from a planned Power-Off Stall with minimum altitude loss.
4. Stall Prevention, Situational Awareness, Task Management, and Decision Making		a. Describe possible situations that might lead to an inadvertent stall and cockpit indications that would warn of an impending stall. b. Demonstrate pilot actions to avert the stall prior to its occurrence.

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. Navigation Programming		Program the entire descent (VFR) and program and activate the desired approach and go-around (IFR).
4. Manual Descent		Perform a manual descent within PTS standards.
5. Autopilot Descent		Perform an autopilot descent within PTS standards (for a manual descent).
6. Task Management, Situational Awareness, 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 full flap landing within the PTS standards.
4.Soft and Short Field landing		Perform Soft and Short field landings within the PTS standards.
5.Partial Flap landing		Perform a partial flap landing within the PTS standards.
6.Zero Flap landing		Perform a zero flap landing within the PTS standards.
7.Crosswind landing		Perform a crosswind landing within the PTS standards.
8.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 standards.
9.Decision Making and Situational Awareness		a. Demonstrate awareness of all potential weather, traffic, and airfield factors that might impact the approach and landing. b. Make timely decisions to mitigate risks and ensure a successful approach and landing.

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 and Securing Checklist	Post-flight	Demonstrate proficiency properly concluding a flight including engine shutdown and securing.
2. Aircraft Towing, Ground Handling, and Tie down		Demonstrate proficiency properly concluding a flight including aircraft storage.

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 a. ADC failure b. AHRS failure c. Alternator / battery failure	a. Pre-Arrival e-learning b. Classroom c. Pre-flight d. 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 PFD failure Modes and corrective actions a. Invalid Sensor Data b. Invalid Heading c. Crosscheck Monitor d. Recoverable Attitude e. Invalid Attitude and Heading f. Complete / Partial Electrical Power 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	GPS Operation and 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: -Direct-To Function -Nearest Function -Airport Information Function -Flight Plan Function	In-flight	Demonstrate proficiency using the GPS including the Direct-To, Nearest, and Airport Information functions.
2. IFR: -Direct-To Function -Nearest Function -DP / STAR / Approach Function -Flight Plan Function	a. Pre-flight b. In-flight	a. Demonstrate proficiency using the GPS including the Direct-To, 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 Speed and Altitude Hold	In-flight	Demonstrate proper use of the vertical speed and altitude hold.
2.Navigation Modes	In-flight	Demonstrate proper use of the navigation modes of the autopilot.
3.Coupled Approach Modes	In-flight	Demonstrate proper use of the coupled approach modes of the autopilot.

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 -Setup Pages -Navigation Modes -Traffic Mode -Weather Modes	a. Pre-flight b. In-flight c. Post-flight	Demonstrate proper use of the avionics interface during normal operations including setup, navigation, traffic, and weather.
3. Abnormal and Emergency Indications and Operations -Navigation Modes -Traffic Mode -Weather Modes	a. Pre-flight b. In-flight c. Post-flight	Demonstrate proper use of the avionics interface during abnormal and emergency operations including setup, navigation, traffic, and weather.
4.EHSI Operation	a. Pre-flight b. In-flight	Demonstrate proper setup, use, and operation.

SEP 18 Datalink Situational Awareness Systems and Additional Avionics Setup		
Unit Objective – demonstrate proper use of the datalink system 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. Weather Setup and Operation	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 Escape Maneuvers/ Recovery from Unusual Attitudes and Upsets		
Unit Objective – demonstrate unusual attitude / upset recovery in the SEP.		
Performance	Conditions	Standards
The training task is:	The training is conducted during:	The pilot in training will:
1. PFD	In-flight	Demonstrate unusual attitude recovery using the PFD to PTS standards.
2. Backup Instruments	In-flight	Demonstrate unusual attitude recovery using backup instruments to PTS standards.
3. Autopilot Limitations for Recovery Use	a. Pre-flight b. In-flight	Demonstrate unusual attitude recovery using the autopilot to PTS standards.
4. Engine Failure / Emergency Descent	a. Pre-flight b. In-flight	Demonstrate procedures to be used during engine failure or situations requiring an emergency descent.
5. Emergency Escape Maneuvers, Risk Management, and Decision Making	a. Pre-flight b. In-flight	a. Understand the capabilities of the PFD, and Autopilot. b. Develop a problem-solving matrix for use of all these systems when faced with IFR / VFR emergency procedures. c. Demonstrate the ability to make correct decisions when faced with IFR / VFR emergency conditions.

SEP 20 Instrument Approach Procedures (IFR Rated Pilots Only)		
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. Manual ILS	a. Pre-Arrival e-Learning b. Pre-flight Briefing c. In-Flight	Perform the approach within the PTS standards.
2. Coupled ILS		Perform the approach within the PTS standards (for a manual approach).
3. Manual VOR		Perform the approach within the PTS standards.
4. Manual GPS		a. Program and activate the GPS approach in a timely manner. b. Perform the approach within the PTS standards.
5. Coupled VOR / GPS Approach		a. Program and activate the VOR / GPS approach in a timely manner. b. Perform the GPS/VNAV approach within the PTS standards (for a manual approach).
6. Manual Missed Approach		Perform the missed approach within the PTS standards.
7. Autopilot Flown missed Approach		Perform the missed approach within the PTS standards (for a manual missed approach).
8. Procedure Turn		Demonstrate procedure to PTS standards.
9. Holding		Demonstrate holding to PTS standards.
10. Task Management and Decision making	In-flight	Demonstrate proper planning and prioritization of time between avionics programming and execution of IFR procedures.
11. Situational Awareness	In-flight	Demonstrate proper use of the PFD and MFD to maintain situational awareness during IFR procedures.