



LANCAIR INITIAL TRAINING Student Guide

This document is intended for use by Certified Flight Instructors and Lancair Pilots for use in a course of instruction to train pilots new to the Lancair series aircraft. The documentation for this course material is not complete without:

- LOBO Initial Training Student Guide (this document)
- LOBO Initial Training Instructor Guide
- LOBO Training Manual Lancair (model specific)
- LOBO Master Training Record

For more information, contact:

LANCAIR OWNERS AND BUILDERS ORGANIZATION
18437 EDISON AVE
CHESTERFIELD, MO 63005
www.lancairowners.com
info@lancairowners.com

© Copyright 2021 Lancair Owners and Builders Organization (LOBO)

No portion of this document may be copied or reproduced without the written permission of LOBO.

Contents

Introduction	1
Training Prerequisites	1
Syllabus.....	1
FITS Terminology.....	2
Learner Centered Grading	4
Lesson G1 – Ground (approximately 4.0 hours)	7
Lesson F1 – Flight (approximately 1.5- 2.0 Hours).....	9
Lesson G2 – Ground (approximately 2.0- 2.5 hours)	14
Lesson F2—Flight (approximately 1.5- 2.0 hours)	16
Lesson G3 – Ground approximately 1.5- 2.0 hours.....	20
Lesson F3I – Flight (approximately 1.5- 2.0 hours)	22
Personal Minimums.....	30
Supplemental Information.....	31



INTENTIONALLY BLANK

Introduction

This Lancair initial transition flight training syllabus is based on modern FAA/Industry Training Standards (FITS) that train to proficiency utilizing scenario based training modules as well as classic maneuver based training. Sound aeronautical decision making, single pilot resource management and risk management is emphasized throughout this program. This training syllabus provides initial flight and ground transition training for a pilot who has no prior Lancair experience. This training prepares a proficient certificated pilot to fly the Lancair series aircraft. It does not teach basic flying skills.

This course is designed to be completed in four to five days. Completion is dependent on pilot proficiency and prior experience in flying complex, high-performance aircraft, the application of sound ADM and completion of prerequisite training material. The course is comprised of approximately 12 hours of ground training over three lessons, and 12 hours of flight training over six lessons. All training times are estimated as the factors determining the total required training time (pilot knowledge, skill and preparation) cannot be determined prior to the start of training.

This training program teaches normal as well as emergency procedures with an emphasis on sound aeronautical decision making.

NOTE: *This syllabus does not teach VFR-only pilots the instrument flying skills necessary to safely fly in Instrument Meteorological Conditions (IMC). VFR-only pilots are encouraged to seek appropriate instruction to earn an instrument rating.*

Training Prerequisites

The PT must hold at least a private pilot airplane single engine land certificate and have a current valid airman's medical certificate. The PT must complete all prerequisite course material before beginning the flight and ground training syllabus below. The PT will be the Pilot in Command per 14 CFR 91.3 for all flights, if qualified.

Syllabus

Lesson G1: this ground lesson covers scenario-based training, normal and emergency procedures in Lancair aircraft and aircraft systems.

Lesson F1: this flight lesson is an introduction to the aircraft and comprises pre- and post-flight procedures as well as classic maneuver-based training in the local practice area exploring the Lancair flight characteristics. The lesson also concentrates on the Lancair in the takeoff and landing pattern.

Lesson F2: this flight lesson will comprise a short three leg cross-country utilizing EFIS/GPS with an approach at the two destinations for instrument rated pilots or a VFR arrival for non instrument rated pilots.

Lesson F3(I): this flight lesson will comprise of scenario(s) for instrument rated students and will focus on normal instrument flying with all systems working.



FITS Terminology

In an effort to develop a common training vocabulary, below you will find several terms describing known, but perhaps not previously defined, training concepts.

Aircraft Automation Management – The demonstrated ability to control and navigate an aircraft by means of on-board automated systems.

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

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

Automation Surprise – An automated system’s ability to provide different cues to pilots when compared to the analog systems they replace, especially in time-critical situations.

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

Candidate Assessment – A system of critical thinking and skill evaluations designed to assess a PT’s readiness to begin training at the appropriate level.

Critical Safety Tasks/Events – Those mission-related tasks/events that if not accomplished quickly and accurately, may result in aircraft damage, injury, or loss of life.

Datalink Situational Awareness (SA) Systems – Systems that provide real-time weather, traffic, terrain, and/or flight planning information to the cockpit. This information may be displayed on the Primary Flight Display (PFD), Multi-Function Display (MFD), or other related cockpit displays.

Emergency Escape Maneuver – A maneuver (or series of maneuvers) performed manually or with the aid of the aircraft’s automated systems that allows a pilot to successfully escape from an unanticipated flight into Instrument Meteorological Conditions (IMC) or other life-threatening situation.

FAA/Industry Training Standards (FITS) – A non-regulatory system of training jointly developed by the FAA and training experts in the general aviation industry. Instead of training pilots to pass a practical test, FITS trains pilots to manage real-world challenges with scenario-based training. The primary goals of FITS-based training scenarios is to enhance GA pilots’ aeronautical decision making, risk management, and single pilot resource management skills without compromising basic stick and rudder skills.

Generic FITS – These standards cover broad categories of training functions, such as flight reviews, complex/high-performance training, tail wheel training, and instructional exercises. Individual training entities (e.g. flight instructors, pilot schools) may adapt them for a particular aircraft or other scenarios.

Mission Related Tasks – Those tasks required for the safe and effective accomplishment of the flight.

Multi-Function Display (MFD) – A device that combines primarily navigation, systems, and situational awareness (SA) information onto a single electronic display.

Primary Flight Display (PFD) – A device that combines the primary six flight instruments plus other related navigation and situational awareness (SA) information into a single electronic display.

Proficiency Based Qualification – A qualification based on demonstrated performance rather than other flight time or experience.

Pilot in Training (PT) – The qualified pilot receiving training in a specified training program. Also referred to as “learner”.

Scenario-based Training (SBT) – Training programs built around highly structured scripts 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,” e.g., “Scenario-based Transition Training,” to reflect the specific application.

Simulation – The use of animation and/or actual representations of aircraft systems to faithfully replicate the flight environment.

Single-Pilot Resource Management (SRM) – The “art and science” of managing all available resources to ensure the successful outcome of the flight.



Specific FITS – A FITS program tailored for a specific aircraft or technology.

Technically Advanced Aircraft (TAA) – A general aviation aircraft that contains a GPS navigator with a moving map display, plus any additional systems. Traditional systems, such as autopilots, are included when combined with GPS navigators. Aircraft used in both VFR and IFR operations, with systems certified for either VFR or IFR flight, are also included.

Training-Only Tasks – Training maneuvers that while valuable to the pilot’s ability to understand and perform a mission related task, are not required when demonstrating proficiency. Flight instructors are required to be proficient in Training-Only Tasks.

Learner Centered Grading

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 PT during the planning and execution of each scenario. Since the training is learner centered, success is measured in the following desired PT outcomes:

Maneuver, Skill or Task Grades

- **Describe (D)** – At the completion of the scenario, the PT will be able to describe the physical characteristics and cognitive elements of the scenario activities. *Instructor assistance is required to successfully execute the maneuver.*
- **Explain (E)** – 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. *Instructor assistance is required to successfully execute the maneuver.*
- **Practice (Pr)** – At the completion of the scenario the PT will be able to plan and execute the scenario. *Some coaching, instruction, and/or assistance from the instructor are required to correct deviations and errors.*
- **Perform (Pe)** – At the completion of the scenario, the PT will be able to perform the activity without assistance from the instructor. *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 piloting and systems operation skills.
- **Not Observed (No)** – Any event not accomplished or required.

Single-pilot Resource Management (SRM) Grades

- **Explain (E)** – The PT can verbally identify, describe, and understand the risks inherent in the flight scenario. *The PT will need to be prompted to identify risks and make decisions.*
- **Practice (Pr)** – The PT is able to identify, understand, and apply SRM principles to the actual flight situation. *Coaching, instruction, and/or assistance from the instructor will quickly correct minor deviations and errors identified by the instructor.* The PT will be an active decision maker.
- **Manage/Decide (MD)** – The PT 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.* “Manage/Decide” will be used to signify the PT is satisfactorily demonstrating acceptable SRM skills
- **Not Observed (No)** – Any event not accomplished or required.

NOTE: *Both the Pilot in Training (PT) and the instructor must grade independently and compare during the post flight critique.*

Learner-centered grading is a vital part of the FITS concept. Traditional syllabi and curriculum have depended on a grading scale designed to maximize PT management and ease of instructor use. Thus the traditional “**excellent, good, fair, poor**” or “**exceeds standards, meets standards, needs more training**” grading scale often meets the instructor’s needs, but not the PT’s. The learner-centered grading described above is a way for the instructor and PT to determine the PT’s level of knowledge and understanding. “**Perform (Pe)**” is used to describe proficiency in a skill item such as an approach or landing. “**Manage/Decide (MD)**” is used to describe proficiency in the SRM area such as Aeronautical Decision Making (ADM). Grading should be progressive. During each flight, the PT should achieve a new level of learning.



INTENTIONALLY BLANK

Lesson G1 – Ground (approximately 4.0 hours)

Text Reference

- Lancair Training Manual
- Airplane Flight Manual
- FAR/AIM
- Airplane Flying Handbook (FAA-H-8083-3, as amended)
- The Aviation Instructor's Handbook (FAA-H-8083-9, as amended)
- Certification and Operation of Amateur-Built Aircraft AC 20-27, as amended
- Aerodynamics For Naval Aviators (NAVIAR 00-80T-80)

Lesson Objectives

This is an opportunity to discuss, examine, and learn about the systems in your Lancair. You will complete the lesson with a detailed understanding of all systems and also the checklist you intend to use for flight.

Training Elements

<i>Training Program</i>	<i>Normal Procedures</i>	<i>Emergency Procedures/ Flight Safety</i>	<i>High-Perf. Systems(if installed)</i>
<ul style="list-style-type: none"><input type="checkbox"/> FITS & SBT<input type="checkbox"/> ADM, Risk Mgmt, SRM<input type="checkbox"/> Systems<input type="checkbox"/> Airframe Description<input type="checkbox"/> Fuel<input type="checkbox"/> Electrical<input type="checkbox"/> Flight Controls<input type="checkbox"/> Landing Gear<input type="checkbox"/> Flaps<input type="checkbox"/> Speed Brakes<input type="checkbox"/> Hydraulic<input type="checkbox"/> Wheel & Brakes<input type="checkbox"/> Avionics<input type="checkbox"/> Pitot Static<input type="checkbox"/> Propeller<input type="checkbox"/> Engine<input type="checkbox"/> Pressurization & Air Conditioning (if installed)	<ul style="list-style-type: none"><input type="checkbox"/> Checklist Usage<input type="checkbox"/> Preflight<input type="checkbox"/> Taxi<input type="checkbox"/> Before Takeoff<input type="checkbox"/> Takeoff<input type="checkbox"/> Climb<input type="checkbox"/> Cruise<input type="checkbox"/> Descent<input type="checkbox"/> Before Landing<input type="checkbox"/> After Landing<input type="checkbox"/> Chocks	<ul style="list-style-type: none"><input type="checkbox"/> Engine Failure/Forced Landings<input type="checkbox"/> Fires<input type="checkbox"/> Icing<input type="checkbox"/> T/O & Landing EP's<input type="checkbox"/> Brake Failure<input type="checkbox"/> Electrical<input type="checkbox"/> Single-pilot Resource Management<input type="checkbox"/> Aeronautical Decision Making<input type="checkbox"/> Risk Management	<ul style="list-style-type: none"><input type="checkbox"/> Turbo Engine Operation<input type="checkbox"/> Turbine Engine Operation<input type="checkbox"/> Autopilot Operation<input type="checkbox"/> Pressurization & Air Conditioning



Completion Standards

Demonstrate fundamental understanding of the training program, aircraft systems and operation, normal and emergency procedures, high performance systems, and SRM concepts including ADM and RM.

NOTE: The asterisk () indicates the desired pilot performance level.*

ELEMENTS	Grade							
	Pilot				Instructor			
	E*	Pr	MD	NO	E*	Pr	MD	NO
Training Program								
Aircraft Systems								
Normal Procedures								
Emergency Procedures								

Single Pilot Resource Management

ELEMENTS	Grade							
	Pilot				Instructor			
	E*	PR	MD	NO	E*	Pr	MD	NO
Automation/Avionics Management								
Radio Communication								
Hazard & Risk Analysis								
Situational Awareness								
Task Management								
ADM								
Checklist Use								
Performance & Limitations								

Lesson F1 – Flight (approximately 1.5- 2.0 Hours)

Reference

- Lancair Flight Training Manual
- Airplane Flight Manual
- FAR/AIM
- Airplane Flying Handbook (FAA-H-8083-3, as amended)

Lesson Objectives

The student pilot will observe and practice normal procedures in the Lancair. The instructor will start, taxi, takeoff, and fly to the airspace as a demonstration before transferring aircraft control to the student once in the practice area. The student will run the checklist to keep them engaged in the flow of normal procedures. This is the instructor's opportunity to describe Lancair specific control inputs (starting with maximum right rudder deflection on takeoff) and systems to manage (like cylinder head temperatures on departure), then demonstrate the maneuvers (like noticing the extreme pitch sensitivity at cruise speeds) before transferring control.

Training Elements

<ul style="list-style-type: none">□ Single-pilot Resource Management□ Aeronautical Decision Making□ Risk Management□ □ Checklist Use□ Operation of Airplane Systems□ Determining Performance & Limitations□ Emergency Procedures□ Ground Operations□ Engine Starting and warm-up□ Taxiing: Normal & Crosswind□ Normal Takeoff	<ul style="list-style-type: none">□ Climb□ Engine Operations/Monitoring/Cooling□ Steep Turns□ □ Slow Flight□ Straight and Level Turns□ Descents Straight and Turning□ Straight & Turning Stall Recognition/Recovery□ Traffic Pattern Procedures□ Normal Landing□ After Landing Procedures□ Stall Recognition
---	--

Scenario

After a long break in flying you need to go re-gain proficiency in your Lancair. You choose a forgiving day and focus on basic aircraft handling.

Completion Standards

At the completion of this lesson the PT can perform the listed ground & flight operations with a minimum of instructor assistance. The PT will demonstrate knowledge of the power, attitude, and



configuration (PAC) necessary to perform the listed maneuvers and procedures while maintaining altitude within the 200 feet, heading within 15 degrees and airspeed within 10 knots. The PT will learn how to manage the aircraft using sound ADM skills.

NOTE: The asterisk () denotes the desired PT performance level.*

Single-pilot Resource Management

ELEMENTS	Grade							
	Pilot				Instructor			
	E	Pr*	M/D	NO	E	Pr*	M/D	NO
Automation/Avionics Management								
Radio Communication								
Hazard & Risk Analysis								
Situational Awareness								
Task Management								
ADM								
Checklist Usage								
Performance & Limitations								

Pre-Takeoff

ELEMENTS	Desired Outcome							
	Pilot				Instructor			
	D	E	Pr	Pe*	D	E	Pr	Pe*
Preflight								
Start								
Before Taxi								
Taxi								
Before Takeoff								
Checklist								

Takeoff & Climb

<i>ELEMENTS</i>	<i>Desired Outcome</i>							
	<i>Pilot</i>				<i>Instructor</i>			
	<i>D</i>	<i>E</i>	<i>Pr*</i>	<i>Pe</i>	<i>D</i>	<i>E</i>	<i>Pr*</i>	<i>Pe</i>
Normal/Crosswind Takeoff								
Climb								
Checklist								

Cruise

<i>ELEMENTS</i>	<i>Desired Outcome</i>							
	<i>Pilot</i>				<i>Instructor</i>			
	<i>D</i>	<i>E</i>	<i>Pr*</i>	<i>Pe</i>	<i>D</i>	<i>E</i>	<i>Pr*</i>	<i>Pe</i>
Initial Cruise								
En route Cruise								
Checklist								
Slow-flight Maneuvers								
Stall Recognition & Recovery								
Steep Turns								
Autopilot Stall Recognition & Recovery								

Descent & Landing

<i>ELEMENTS</i>	<i>Desired Outcome</i>							
	<i>Pilot</i>				<i>Instructor</i>			
	<i>D</i>	<i>E</i>	<i>Pr*</i>	<i>Pe</i>	<i>D</i>	<i>E</i>	<i>Pr*</i>	<i>Pe</i>
Descent & Arrival Procedures								
Traffic Pattern								
Normal/Crosswind Landing								
Zero-flap Landing								
Power-off Landing								
Go Around								
After Landing								
Shutdown								
Checklist								

Post Flight

<i>ELEMENTS</i>	<i>Desired Outcome</i>			
	<i>Pilot</i>		<i>Instructor</i>	
Post-flight Critique & Discussion				



NOTE: *Due to the experimental, amateur-built nature of the Lancair, stall characteristics – and more importantly stall recovery techniques – have not been determined for each and every Lancair.*

INTENTIONALLY BLANK

Lesson G2 – Ground (approximately 2.0- 2.5 hours)

Reference Text

- Airplane Flight Manual
- Lancair Training Syllabus
- Instrument Flying Handbook (FAA-H-8083-15, as amended)

Lesson Objective

The PT will gain a fundamental understanding of the flight and engine instruments with emphasis on their use and limitations. The instructor will enhance the PT's understanding of the practical use of advanced avionics, the practical application of aircraft performance, weight and balance computation and aircraft limitations. Additionally, the instructor will familiarize the PT with experimental/amateur-built aircraft issues with emphasis on the value and necessity of proper aircraft inspections.

Training Elements

Experimental/Amateur-built Aircraft	Aircraft Performance	Advanced Avionics
<input type="checkbox"/> Condition Inspection <input type="checkbox"/> Repairman <input type="checkbox"/> Maintenance Issues <input type="checkbox"/> Flight Tests <input type="checkbox"/> Aircraft inspections	<input type="checkbox"/> Weight and Balance <input type="checkbox"/> Performance Factors <input type="checkbox"/> Performance Charts <input type="checkbox"/> Aircraft Limitations <input type="checkbox"/> V _n Diagram	<input type="checkbox"/> GPS Understanding & Use <input type="checkbox"/> EFIS, AHARS & ADHARS <input type="checkbox"/> Autopilot Use

Completion Standards

The PT demonstrates a working knowledge of aircraft avionics, instruments, systems and their limitations. The PT demonstrates an understanding of weight and balance calculations, aircraft limitations and performance. Additionally, the PT will demonstrate understanding of experimental/amateur-built aircraft issues.

ELEMENTS	Grade							
	Pilot				Instructor			
	E*	Pr	Md	NO	E*	Pr	MD	NO
Advanced Avionics								
Systems								
Instruments								
Performance & Limitations								
Weight & Balance								
Experimental/Amateur-built Aircraft Issues								

INTENTIONALLY BLANK

Lesson F2—Flight (approximately 1.5- 2.0 hours)

Text Reference

- Lancair Training Manual
- Airplane Flight Manual
- Airplane Flying Handbook (FAA-H-8083-3, as amended)

Lesson Objectives

During this lesson the student will build on normal procedures and practice emergency procedures. Some students will be ready to move on to instrument flying after this lesson, but most of us will require additional practice. The Airman Certification Standards for private pilots will be used to determine competency.

Additionally, the PT will learn the power, attitude, and configurations required for the performance of the listed maneuvers and procedures. The PT will demonstrate how to conduct the necessary preflight activities. The flight will originate at a local field and proceed via day VMC, cross-country flight to a nearby non-towered airport (approximately 50-80 nm / 30-45 minutes leg length). The PT will complete all start, taxi, takeoff and departure, cruise, arrival and landing checklists as well as utilize advanced GPS navigation skills. The instructor will review practical use of EFIS (if installed) and/or autopilot (if installed). The instrument- rated PT will complete an instrument approach and full-stop landing at destination #1. The non- instrument-rated PT will complete a VFR arrival to a full-stop landing. The PT will depart destination #1 and proceed to destination #2 using the above procedures. Repeat to point of origin.

Training Elements

<ul style="list-style-type: none">□ Single-pilot Resource Management□ Risk Management□ Systems Operation□ Determining Performance & Limitations□ Performance Maneuvers□ Ground Operations□ Engine Start & Warm-up□ Taxiing: Normal and Crosswind□ Takeoff□ Climb, V_x, V_y□ Engine Operation/Monitoring/Cooling□ Oil Pressure/Temp Out of Limits□ Cruise Climb□ EFIS/Autopilot Operation (if installed)	<ul style="list-style-type: none">□ Cruise□ Alternator Failure□ Total Electrical Failure□ Landing Gear Malfunctions/Emergency Gear Extension□ Descent & Descent Planning□ Approach (instrument-rated pilots)□ Turbulent air penetration (V_a)□ After Landing Procedures□ Normal Landings□ No-flap Takeoff□ Go Around/Rejected Landing□ Rejected Takeoff□ Emergency 180° Turn
--	---

Scenario

As the proud owner and operator of a high performing aircraft you will maintain higher levels of proficiency than your peers in more forgiving aircraft. With higher proficiency you will maintain a higher safety margin. This is your opportunity to practice in a controlled environment.

Completion Standard

At the completion of this lesson, the PT can perform the listed ground operations with a minimum of instructor assistance. The PT will demonstrate a knowledge of the PAC necessary to perform the listed maneuvers and procedures while maintaining altitude within the 200 feet, heading within 15 degrees, and airspeed within 10 knots.

Single Pilot Resource Management

ELEMENTS	Grade							
	Pilot				Instructor			
	E	Pr	MD*	NO	E	Pr	MD*	NO
Automation/Avionics Management								
Radio Communication								
Hazard & Risk Analysis								
Situational Awareness								
Task Management								
ADM								
Checklist Use								
Performance & Limitations								

Pre-Takeoff

ELEMENTS	Grade							
	Pilot				Instructor			
	D	E	Pr	Pe*	D	E	Pr	Pe*
Preflight								
Start								
Before Taxi								
Taxi								
Before Takeoff								
Checklist Use								

Takeoff & Climb

ELEMENTS	Grade							
	Pilot				Instructor			
	D	E	Pr*	Pe	D	E	Pr*	Pe
No-flap Takeoff								
Rejected Takeoff								
Climb								
Checklist Use								

Cruise

ELEMENTS	Grade							
	Pilot				Instructor			



	<i>D</i>	<i>EPr*</i>	<i>PeD</i>		<i>EPr*</i>	<i>Pe</i>
Initial Cruise						
En route Cruise						
Checklist Use						
Engine Operations/Limitations						
Emergency Procedures (oil press.)						
Emergency Landing						
EFIS/Autopilot Operation (if equipped)						

Descent & Landing

<i>ELEMENTS</i>	<i>Grade</i>							
	<i>Pilot</i>				<i>Instructor</i>			
	<i>D</i>	<i>E</i>	<i>Pr*</i>	<i>Pe</i>	<i>D</i>	<i>E</i>	<i>Pr*</i>	<i>Pe</i>
Descent & Arrival Procedures								
Traffic Pattern								
Approach								
Normal/Crosswind Landing								
Power-off Landing								
Go Around								
After Landing								
Shutdown								
Checklist Use								

Post Flight

<i>ELEMENTS</i>	<i>Grade</i>			
	<i>Pilot</i>		<i>Instructor</i>	
Post-flight Critique & Discussion				

INTENTIONALLY BLANK

Lesson F3(I) – Flight (approximately 1.5 -2.0 hours)

Text Reference

- Lancair Training Manual
- Airplane Flight Manual
- Airplane Flying Handbook (FAA-H-8083-3, as amended)
- Instrument Flying Handbook (FAA-H-8083-15, as amended)
- Instrument Procedures Handbook (FAA-H-8261-1, as amended)

Note: *Non-instrument-rated PTs will complete lesson **F4V** (see page 30) instead of **F4I**.*

Lesson Objective

The instrument-rated PT will review and practice the principles of attitude instrument flying and how to correlate the flight instruments to maintain precise aircraft control. The instrument-rated PT will review and practice use of advanced avionics within complicated airspace/ATC environment. The instrument-rated PT will review and practice ILS, GPS (including LPV), VOR instrument approaches, holds and demonstrate radial tracking. The flight will originate at a local field and proceed via day IFR cross-country flight to a nearby non towered airport with an instrument approach (approximately 50-80 nm away). The PT will complete all start, taxi, takeoff and departure, cruise arrival and landing checklists as well as utilize basic IFR GPS navigation skills. IFR EFIS skills will be emphasized (if equipped). Autopilot functions will be reviewed and practiced (if equipped). An instrument approach and full stop landing will be made at destination #1. The PT will depart destination #1 and proceed to destination #2 using the above procedures. Repeat to point of origin.

Training Elements

<ul style="list-style-type: none"><input type="checkbox"/> Single-pilot Resource Management<input type="checkbox"/> Risk Management/Aeronautical Decision Making<input type="checkbox"/> Instrument preflight<input type="checkbox"/> Departure checklist<input type="checkbox"/> Normal takeoff into IMC<input type="checkbox"/> Climbs<input type="checkbox"/> Clearance Adherence<input type="checkbox"/> Straight and Level<input type="checkbox"/> EFIS/Autopilot usage (if installed)<input type="checkbox"/> Turns (Level)<input type="checkbox"/> Electrical Failure	<ul style="list-style-type: none"><input type="checkbox"/> Descents & Descent Planning<input type="checkbox"/> Partial Panel<input type="checkbox"/> Holding<input type="checkbox"/> TAWS Escape Maneuver<input type="checkbox"/> IMC Emergency Landing<input type="checkbox"/> Precision Approach<input type="checkbox"/> Non-precision Approach<input type="checkbox"/> GPS Approaches<input type="checkbox"/> Missed Approach<input type="checkbox"/> Circling Approach<input type="checkbox"/> Advanced Avionics
--	--

Training Scenario

Your planned cross country crosses several areas of marginal VFR and IFR conditions. You develop a robust plan to safely manage the weather to include identifying areas of prevailing VMC, sensible divert options, and studying your intended approaches.

Completion Standards

The instrument-rated PT will demonstrate an understanding of power, attitude and configuration control by reference to the flight and power instruments while maintaining altitude within 100 feet, airspeed within 10 knots, and heading within 5 degrees.

Single-pilot Resource Management

ELEMENTS	Grade							
	Pilot					Instructor		
	E	Pr*	MD	NO	E	Pr*	MD	NO
Automation/Avionics Management								
Radio Communication								
Hazard & Risk Analysis								
Situational Awareness								
Task Management								
ADM								
Checklist Use								
Performance & Limitations								
Terrain/ CFIT Awareness								

Pre-Takeoff

ELEMENTS	Grade							
	Pilot				Instructor			
	D	E	Pr	Pe*	D	E	Pr	Pe*
Preflight								
Start								
Before Taxi								
Taxi								
Before Takeoff								
Checklist Use								

Takeoff & Climb

ELEMENTS	Grade							
	Pilot				Instructor			
	D	E	Pr*	Pe	D	E	Pr*	Pe
Normal/ Crosswind Takeoff								
Climb								
Checklist Use								



Cruise

ELEMENTS	Grade							
	Pilot				Instructor			
	D	E	Pr*	Pe	D	E	Pr*	Pe
Initial Cruise								
Enroute Cruise								
Checklist								
GPS Navigation								
EFIS/Autopilot Operation								
EFIS/ PFD/ AHARS Malfunction								
Partial Panel								
Unusual Attitude Recovery								

Descent & Landing

ELEMENTS	Grade							
	Pilot				Instructor			
	D	E	Pr*	Pe	D	E	Pr*	Pe
Descent & Arrival Procedures								
Holding								
Approach								
Traffic Pattern								
Normal/Crosswind Landing								
TAWS Escape Maneuver								
Go Around								
After Landing								
Shutdown								
Checklist Use								

Post Flight

ELEMENTS	Grade							
	Pilot				Instructor			
	D	E	Pr*	Pe	D	E	Pr*	Pe
Post Flight Critique & Discussion								

INTENTIONALLY BLANK

Personal Minimums

14 CFR 61 comprise FAA regulations concerning airmen training, certification, and currency. Part 91 concerns general flight operation rules. While these rules comprise the core of today's aeronautical standards, they are the absolute floor in many situations regarding safety of flight.

A review of accident statistics shows the majority of serious and fatal accidents occur while a pilot new to Lancair aircraft accumulates their first 100 hours in type. Prudence dictates limiting exposure to high-risk operations during this time.

LOBO offers the following matrix to help the PT develop appropriate personal minimums. Pilots with more flight time and/or professional experience may wish to use this matrix as a starting point to develop their own for use while flying Lancair aircraft. Pilots with less overall experience and/or no professional flying experience should adhere to the personal minimums recommended here, or adopt more conservative ones.

NOTE: Night and IFR flight *not recommended* for pilots with less than 100 hours time in type.

QUALIFICATION	DAY		NIGHT	
	TIME IN TYPE (hours)			
	Less than 100	More than 100	Less than 100	More than 100
VMC				
VFR-ONLY (Not-IFR Rated) or IFR RATED -- not proficient	Minimum 3000' Ceiling & 5 SM Visibility		Not Recommended	Minimum 5000' Ceiling & 10 SM Visibility
IMC				
IFR RATED & PROFICIENT	Not Recommended	Minimum 500' Ceiling & 1 SM Visibility	Not Recommended	Minimum 600' Ceiling & 1 SM Visibility
IFR RATED & PROFICIENT CAT 1 MINS (within 60 days)	Not Recommended	Minimum 200' Ceiling & ½ SM Visibility	Not Recommended	Minimum 400' Ceiling & ¾ SM Visibility
NOTE: FILE IFR ANYTIME WEATHER IS BELOW 3000'/5 SM				
TIME IN TYPE (hours)	MAXIMUM WIND			
Less than 25	20 KNOTS SUSTAINED AND/OR 10 KNOT CROSSWIND		20 KNOTS TOTAL SUSTAINED AND/OR 10 KNOT CROSSWIND	
From 25 – 100	25 KNOTS SUSTAINED AND/OR 15 KNOT CROSSWIND		25 KNOTS SUSTAINED AND/OR 15 KNOT CROSSWIND	
More than 100	35 KNOTS SUSTAINED AND/OR 20 KNOT CROSSWIND OR MAX DEMONSTRATED WHICHEVER IS LESS		35 KNOTS SUSTAINED AND/OR 20 KNOT CROSSWIND OR MAX DEMONSTRATED WHICHEVER IS LESS	
FLIGHT INTO KNOWN ICING PROHIBITED				

Supplemental Information

The Lancair 235/320/236 family of aircraft are fun and rewarding to fly, but are unique in a number of aspects. As a few examples to consider:

- The forward visibility during landing is equivalent to many taildraggers
- The glide ratios are closer to a glider than a C-172
- Your wing loading is approximately 30% higher than a training aircraft
- The builder may have included the finest avionics and safety systems imaginable, but more often than not there is not a stall horn, low fuel light, gear not down warning, or pitot heat.
- Instrument operations may be permitted, but any structural icing will immediately and drastically diminish performance.
- There is ample space behind the seats, but in most builds very little available weight due to CG.
- The airspeed in the final turn is only 5-10 knots from maximum flap speed.
- The original gear is firm and unforgiving.
- Elevator stick forces are remarkably light at cruise speeds.
- The cowling is tight, and temperature management is required.
- And lastly, the “fast tail” Lancairs are unstable in pitch at approach speeds.

With the above considerations in mind the pre-requisites for training are complex and varied. Thousands of hours in jet aircraft are not necessarily useful. An ideal Lancair student would have the experience below:

- 100s of hours in complex aircraft
- General aviation experience within the last year
- Their tailwheel endorsement
- Commercial pilot license