Initial Flight Instructor Certification Course
Airplane Multiengine Land

Training Course Outline (TCO)

Revision 1E

North Star Aviation, Inc.
3030 Airport Road North
Mankato, MN 56001

FAA APPROVED
MSP FSDO, GL15
DANIEL LEO SINDT
Digitally signed by DANIEL LEO SINDT
Date: 2025.01.16 10:16:48 -06'00'
Approved 01/16/2025

LIST OF EFFECTIVE PAGES

Page Title	Page #	Revision #	Date
Title	1	1E	12/20/2024
List of Effective Pages	2	1E	12/20/2024
List of Effective Pages cont'd	3	1E	12/20/2024
Intentionally Left Blank	4	1D	05/31/2024
Table of Contents	5	1E	12/20/2024
Record of Revisions	6	1E	12/20/2024
Record of Revisions cont'd	7	1D	05/31/2024
Intentionally Left Blank	8	1D	05/31/2024
Section One: Course Description	9	1D	05/31/2024
Section One: Course Description cont'd	10	1E	12/20/2024
Section One: Course Description cont'd	11	1E	12/20/2024
Section One: Course Description cont'd	12	1E	12/20/2024
Section Two: Personnel	13	1D	05/31/2024
Section Two: Personnel cont'd	14	1E	12/20/2024
Section Three: Resources	15	1E	12/20/2024
Section Three: Resources cont'd	16	1E	12/20/2024
Section Four: Ground School	17	1D	05/31/2024
Lesson Layout: Stage One and Two	18	1D	05/31/2024
Ground Lesson Template	19	1D	05/31/2024
Stage One Objectives & Completion Standards	20	1D	05/31/2024
- Ground Lesson 1	21	1D	05/31/2024
- Ground Lesson 2	22	1D	05/31/2024
- Ground Lesson 3	23	1D	05/31/2024
- Ground Lesson 4	24	1D	05/31/2024
- Ground Lesson 5	25	1D	05/31/2024
- Ground Lesson 6	26	1D	05/31/2024
- Ground Lesson 7	27	1D	05/31/2024
- Ground Lesson 8	28	1D	05/31/2024
- Ground Lesson 9	29	1D	05/31/2024
- Ground Lesson 10	30	1D	05/31/2024
- Ground Lesson 11	31	1D	05/31/2024
- Ground Lesson 12	32	1D	05/31/2024
- Ground Lesson 13	33	1D	05/31/2024
- Ground Lesson 14	34	1D	05/31/2024
Stage Two Objectives & Completion Standards	35	1D	05/31/2024
- Ground Lesson 15	36	1D	05/31/2024
- Ground Lesson 16	37	1D	05/31/2024
- Ground Lesson 17	38	1D	05/31/2024
- Ground Lesson 18	39	1D	05/31/2024
- Ground Lesson 19	40	1D	05/31/2024
- Ground Lesson 20	41	1D	05/31/2024
- Ground Lesson 21	42	1D	05/31/2024
- Ground Lesson 22	43	1D	05/31/2024

FAA APPROVED
MSP FSDO, GL15
DANIEL LEO SINDT
Digitally signed by DANIEL LEO SINDT
Date: 2025.01.16 10:17:03 -06'00'
Approved 01/16/2025

LIST OF EFFECTIVE PAGES cont'd

INTENTIONALLY
LEFT
BLANK

TABLE OF CONTENTS

RECORD OF REVISIONS

Number	Date	Summary of Changes	Affected Pages
1 (Original)	4/10/2020	Original certification of entire TCO	Entire Manual
Revision 1B	10/27/2023	Clarified Objectives, Completions Standards, and Graduation Requirements. Some minor line item verbiage updates to be more consistent with current FAA publications. Update of Airport Terminal Floor Plan. Updated company logo on each page	Entire Manual
Revision 1C	3/1/2024	Added Ability to use Precision Flight Controls Simulators. Added verbiage to clarify precision approach req's On stage checks.	1, 2, 3, 5, 6, 11, 12, 16 72, 75-82
Revision 1D	5/31/2024	Updated TCO to make correct reference to recently updated ACS documents.	Entire Manual
Revision 1E	12/20/2024	Minor updates including Training Course Revision Control, Disenrollment, requirements to teach in TCO, facilities, and slight page re-numbering.	1, 2, 3, 5, 6, 10 11, 12, 14, 15, 16, 61-81

RECORD OF REVISIONS cont'd

Number	Date	Summary of Changes	Affected Pages

INTENTIONALLY
LEFT
BLANK

SECTION ONE

Course Description

Initial Flight Instructor Certification Course
Airplane Multiengine Land

North Star Aviation, Inc.
3030 Airport Road North
Mankato, MN 56001

Welcome to Initial Flight Instructor training. Minnesota State University, Mankato (MNSU) and North Star Aviation, Inc. (NSA) are committed to providing you with high quality ground and flight instruction designed to transform you into an FAA-certificated Flight Instructor. We will do everything possible to help you succeed; however, the ultimate path to becoming a Flight Instructor requires significant effort on your part. You must come to each lesson fully prepared and ready to learn. Use this Training Course Outline (TCO) as your guide. Look ahead before each lesson so you'll know what to expect and how to prepare. For example, all ground lessons, and most flight lessons, include a section titled "REQUIRED READING/STUDY." Review the material listed there to help you develop thorough lesson plans. As another example, most flight lessons include a review of previously learned maneuvers, procedures, ground topics, etc. Study the lesson and go over those maneuvers/procedures ahead of time by mentally visualizing the flight (i.e. "chair flying.") This is an affordable way to practice, and it will help you progress through your training without repeating lessons. Your instructor will notice the effort, and you will benefit by making steady progress towards your Flight Instructor certificate.

Introduction
This Training Course Outline (TCO) uses the building block approach to maximize learning—each lesson follows the previous in a logical sequence from start to finish. It is divided into two courses, ground school (44 hours) and flight training (26 hours), and each course is further divided into stages. The ground school and flight training both consist of two stages. The ground school and flight training are designed to be conducted concurrently at the airport. The training conducted in this TCO is independent from the ground school class at MNSU Mankato.

[Note: Unless self-examining approval is granted by the FAA, the student must also pass written and/or practical flight tests given by an FAA representative before earning a Flight Instructor certificate, Airplane Multiengine Land.]

Students who progress normally through the TCO may complete all the requirements in the allotted time. Those who progress quicker may complete the training in less than the allotted time, and by accomplishing less than the identified requirements, provided they meet the minimum requirements specified in 14 CFR 141 Appendix F. The final stage checks for the ground school and flight training work together to meet current ACS checkride requirements. When both stage checks are completed, the student will be graduated from the course.

Training Course Revision Control
Revision's to this TCO will be prepared by the NSA Chief Flight Instructor(s), and a record of revisions will be maintained beginning on page 6. Major revisions to this TCO requiring an update to NSA's Electronic lesson grading software will be designated numerically (ex. 1, 2, 3, etc.). Minor revisions to this TCO that do not significantly affect the grading of lessons in NSA's Electronic record keeping system will be designated alphanumerically (ex. 1A, 2C, 3B, etc.).

Course Objective
The student will obtain the knowledge, skill, and aeronautical experience necessary to meet the requirements for an Initial Flight Instructor Certificate, Airplane Multiengine Land.

Completion Standard
This course is complete when the student has satisfied each lesson including the EOC check and FAA written exam, and when they have attained the experience required by 14 CFR Part 141 Appendix F to obtain a Flight Instructor Airplane Multi Engine Land Certificate.

Enrollment
Students will be enrolled in the ground and flight training courses separately. They must meet specific prerequisites prior to beginning:

> Ground School and Flight Training Prerequisites: Prior to beginning ground school and flight training a student must possess a valid Commercial Pilot Airplane Single and Multi-Engine Land certificate with an Instrument Rating, and he/she must possess a valid and current FAA medical.

Student enrollment is documented by a paper and/or electronic enrollment certificate signed by the Chief or Assistant Chief Instructor. In addition to the enrollment certificate, students will receive a copy of this TCO and a Safety Procedures and Practices manual (a.k.a. Flight Operations Manual.)

[Note: As required in 14 CFR 141.93(a) a "copy" will be defined as a written copy, emailed copy, an electronic copy in a PDF format that may be distributed to the student through a central download site or delivered through an electronic means.]

Disenrollment

The Chief Instructor will terminate a student from this training course for any of the following reasons:

- Inability to complete any stage of this TCO within 8 months (244 days) of conducting the first lesson of the stage
    - Students who begin a stage before this TCO revision date will be given 8 months from the date of revision to complete that stage.
    - Students who experience medical and/or family difficulties during this course of training will be able to extend this deadline if approved by the Chief Flight Instructor. Any extensions granted will be documented in the students training record, and they will be considered binding.
- Inactivity; poor attendance of the scheduled flight labs
    - Students will refer to NSA's Flight Operations Manual (FOM) for flight lab attendance and no-show/cancellation policies
- Any other reason the Chief Instructor and/or Aviation Review Board determines valid.

Lesson Progression

This TCO uses the building block approach to maximize learning – each lesson follows the previous in a logical sequence from start to finish. Lessons will be conducted in order, unless there is a logical reason (weather, resource availability, schedule conflicts, etc) to skip a lesson. It is permissible to perform lessons in an individual stage out of order; however, the instructor will ensure that the lesson being skipped does not introduce topics that are reviewed on the lesson to be performed. Topics are commonly introduced on ground lessons, so extra care will be taken to ensure nothing is introduced prior to skipping a ground lesson.

In order to prevent excessive acceleration through the ground school or through flight training, certain ground and flight lessons have pre-requisite lessons (e.g. Ground lesson 4 (Stall/Spins) is a pre-requisite for Flight lesson 3 (Spin Training Flight)). North Star's electronic record keeping system has blocks in place to ensure pre-requisites are completed for each lesson.

To complete a flight lesson all required maneuvers must receive a passing grade in an airplane; however, additional flight training may be performed in the Precision Flight Controls DCX Max Advanced Aviation Training Device (AATD). Time in the Simulator will be documented in the training record, but it will not count towards course minimums unless the lesson is designated as a sim lesson.

Ground School and Flight Training Testing

Initial Flight Instructor Ground School stage checks are oral examinations like the oral portion of FAA practical tests. They will be conducted with a plan of action that covers the required elements of the lesson and the required elements of the applicable FAA Test Standards.

Initial Flight Instructor Flight Training stage checks are flight examinations like the flight version of FAA practical tests. They will be conducted with a plan of action that covers the required elements of the lesson and the required elements of the applicable FAA Test Standards. Both the ground stage checks, and flight stage checks work together to meet all FAA requirements. Because of this relationship, check pilots may use discretion to continue assessing ground items on the flight portion if the evaluator determines instructional knowledge would be better demonstrated in the flight environment.

Incomplete or unsatisfactory results of an End of Course check will need to be completed and satisfied within 60 days of the original date of the start of the check. When more than 60 days has elapsed since the start of the End of Course check, the examiner must test the student on all areas of operation required for that certificate. Receiving an unsatisfactory grade three times on any combination of the ground and flight portions of an End of Course check will result in repeating the entire ground and flight check series.

Flight Training Lesson Grading
Lesson items or maneuvers are graded on a letter scale of “S”, “U”, “I”, and “N/A” based on the following table and procedures:

Grade	Description	Result	Application
S	Satisfactory	PASS	The lesson completion standards have been met
U	Unsatisfactory	FAIL	Performance did not meet completion standards
I	Incomplete	N/A	Required item/maneuver was not performed
N/A	Optional	N/A	Task is not a TCO requirement

- For a lesson to be completed all required items/maneuvers must receive a passing grade of “S”.
- Where there are optional items/maneuvers on a lesson that were not performed, the instructor will use an “N/A” indicating the item was not required to complete the lesson. Otherwise the appropriate grade of “S” “U” or “I” is required.
- When an individual item/maneuver is graded “U” it will require further training on the same or subsequent training sessions until a grade of “S” is earned to complete the lesson.
- If an item is graded “U” with a previous attempt resulting in an “S”, the student must repeat the item until the final attempt of that item is an “S”.
- In the case where required items/maneuvers were not trained or performed during a lesson a grade of “I” will be applied. That will leave the item open on the electronic system showing it incomplete.
- Any lesson that needs to be repeated more than two times will be brought to the attention of the supervising instructor (Senior CFI, Asst. Chief, Chief).
- Stage checks requiring a “Precision Approach”, are preferred to use the ILS; however, any approach meeting the requirements of the Precision approach task found in the Instrument ACS may satisfy these line items.

Simulator Lesson Conduct
Part 141 Appendix F section 4(b)(1) requires that training in an AATD be conducted in a device that is representative of the aircraft for which the course is approved; therefore, simulator lessons will be conducted in a simulator configured for the aircraft applicable to the stage of training that lesson is found in.

Documentation
Students will document all flight and simulator training time used to earn the Initial Flight Instructor Certificate in their logbooks per 14 CFR 61.51. Additionally, the training provider will maintain paper and/or electronic training records for each student for a period of not less than one year per 14 CFR 141.101. All lessons in the record system will reflect the TCO presented here as accurately as possible, and all flights will be tracked to the corresponding lesson flown.

Graduation
To graduate from this Initial Flight Instructor Course, a student must have satisfied the Course Completion Standard. The student’s training records will be audited per NSA’s Student Training Record Certification process to ensure the above requirements are met, and a graduation certificate, signed by the Chief or Assistant Chief Instructor will be issued.

SECTION TWO

Personnel

Chief Instructor
The Chief Instructor must meet the minimum qualification requirements per 14 CFR 141.35 for an Initial Flight Instructor, Airplane Multiengine Land training course. Specifically, he/she must hold a commercial or airline transport pilot certificate, along with a current flight instructor certificate appropriate to the category, classes, and rating taught in this TCO (i.e. CFI airplane single and multiengine land; instrument airplane.) He/she must also have logged at least 2,000 hours as pilot in command and have accumulated a total of 3 years and 1000 hours, or 1,500 hours, of primary flight training experience.

The Chief Instructor has overall responsibility for the flight school training program. He/she will conduct initial and annual qualification checks of flight instructors, unless delegated to the Assistant Chief Instructor or an approved stage check pilot. Other duties, as outlined in 14 CFR 141.85, include certification of student training records, graduation certificates, stage and final test reports, and stage and final test recommendations. These duties are encompassed in NSA's Student Training Record Certification process and may be delegated to the Assistant Chief Instructor.

When training is taking place the Chief and/or Assistant Chief Instructor will be available for consultation in person or by phone, email, or text.

Assistant Chief Instructor
The Assistant Chief Instructor must meet the minimum qualification requirements per 14 CFR 141.36 for an Initial Flight Instructor, Airplane Multiengine Land training course. Specifically, he/she must hold a commercial or airline transport pilot certificate, along with a current flight instructor certificate appropriate to the category, classes, and rating taught in this TCO (i.e. CFI airplane single and multiengine land; instrument airplane.) He/she must also have logged at least 1000 hours as pilot in command and have accumulated a total of 1.5 years and 500 hours, or 750 hours, of primary flight training experience.

The Assistant Chief Instructor will perform duties as delegated by the Chief Instructor and outlined above. When training is taking place the Chief and/or Assistant Chief Instructor will be available for consultation in person or by phone, email, or text.

Check Instructors
Check Instructors must meet the minimum qualification requirements per 14 CFR 141.37 for an Initial Flight Instructor, Airplane Multiengine Land training course. Specifically, they must hold a commercial or airline transport pilot certificate, along with a current flight instructor certificate appropriate to the category, classes, and rating taught in this TCO (i.e. CFI airplane single and multiengine land; instrument airplane.) There is no minimum flight time requirement; however, check instructors must pass a test, given by the chief instructor, on teaching methods, applicable provisions of the Aeronautical Information Manual, applicable provisions of 14 CFR 61, 91, and 141, and the objectives and course completion standards of this TCO. Check Instructors will be designated in writing by the Chief Instructor and approved by the FAA.

Check Instructors will perform stage checks appropriate to their FAA approval letter, and they will assist in student record certification, as defined in NSA's Student Training Record Certification process. Additionally, Check Instructors will perform duties as delegated by the Chief Instructor. A Check Instructor may serve as the primary instructor for a student provided, he/she does not conduct a stage check for that student.

Instructors (Ground and Flight)
Flight Instructors must hold at least a commercial pilot certificate for an airplane, single and multiengine land, and a current flight instructor certificate appropriate to the category, classes, and rating taught in this TCO (i.e. CFI airplane single and multiengine land; instrument airplane.) Flight Instructors must also meet the requirements of Part 61.195(h) to train initial flight instructor candidates.

Flight Instructors will train students per this course outline, will document all training in the students' records, and will ensure the records for their assigned students are kept in good order and in accordance with North Star Aviation's record-keeping plan.

Chief Ground Instructor (if applicable)
To be eligible for designation as chief instructor for a ground school course, a person must have 1 year of experience as a ground school instructor at a certificated pilot school.

Dispatcher
Dispatchers are responsible for releasing flights during normal training hours. North Star Aviation will train dispatchers on how to enter aircraft and student information, how to review student flight logs and documents for appropriate endorsements and currency, how to print dispatch releases, and how to understand aircraft maintenance due dates, among other duties.

SECTION THREE

Resources

Ground Instruction Facilities
Ground instruction is conducted in facilities occupied by North Star Aviation, Inc. at the Mankato Regional Airport, and in rooms available to the Department of Aviation on campus at Armstrong Hall, Minnesota State University, Mankato. Details of ground instruction facilities, including room square footage, seating capacity, tools and resources, heating and ventilation, etc. are listed in Appendix A.

Airports
Training flights are dispatched from Mankato Regional Airport (KMKT). Other airports in the vicinity, such as Waseca (KACQ), New Ulm (KULM), Owatonna (KOWA), Flying Cloud (KFCM), and Rochester (KRST) are also available for pattern and instrument approach training. Because our candidates are often partnered up for this training, lessons originate from KMKT, but candidates may change seats at satellite airports. The above-named airports are commonly used to change seats; however, the list is not all inclusive. As the base of origination, KMKT meets all requirements per 14 CFR 141.38.

Airport Facilities
The Mankato Regional Airport is equipped with two flight briefing areas located in the terminal. Both briefing areas provide communication access to Flight Service and/or the internet. A 1,670 sq. ft. training room (Flight Office 139) consists of instructor cubicles (18), tables, dry erase boards, aeronautical charts, and current publications such as the FAR/AIM. This training room can support up to 38 students at a time. There are three offices used for the Chief and Assistant Chief Flight Instructors (144, 145, and 146), and each can hold 2-3 students. These three offices are equipped with tables, whiteboards, and monitors capable of being hooked up to with laptop computers. Two 86 sq. ft. rooms (135A and B) are designated for stage checks/checkrides, but they could also support instruction of up to two students at a time. These rooms are equipped with tables and monitors capable of being plugged into by laptop computers. There is also a large conference room (Conference 105, 454 sq. ft) and three smaller conference rooms (106A (145 sq. ft.), 106B (190 sq. ft.), and 111 (160sq. ft.)) available for classroom training, meetings, or private one-on-one training. Each room is furnished with tables, and wall mounted TV's capable of being plugged into with laptop computers. Room 105 can hold 35 people and the three smaller rooms can hold 6 people each. Students also have access to a Student Study Lounge capable of holding 64 people, and it is furnished with tables, chairs, and vending machines. Behind the front office (FBO Staff) there is a testing center appropriately equipped to provide space for FAA written exams. The dispatch center includes a dispatch counter with room for up to three dispatchers, and informational resources on the walls such as chart of the practice areas, three TV's displaying varying information, and an AWOS monitor. See Appendix C for a floor plan of the entire facility.

NSA has also constructed office space around it's corporate hangar. The ground floor of this addition has room for four simulator bays, four table top simulators/briefing areas, and twelve cubicles for flight instructor use. This training room is 3,300 sq. ft. and up to 45 people could conduct training activities at a time. The second floor contains administrative offices, and two are set aside for Chief/Assistant Chief Flight Instructor offices, each capable of holding 4 people. This space is constructed to current local building codes and it is furnished with similar training resources as the main training area in the Airport Terminal Building.

Aircraft

North Star Aviation uses the Piper Warrior/Archer (PA-28), Piper Seminole (PA-44), and the Cessna 152 (C152) for Initial Flight Instructor training. Both the PA-28 and the C152 are fixed-gear, non-complex four-place aircraft (152 is two place) with dual flight controls that meet the requirements of 14 CFR 141.39. The Seminole is a twin-engine, complex, four-place airplane with dual flight controls that also meets the requirements of 14 CFR 141.39. While avionics equipment may vary among each airplane, they are all equipped for day/night VFR/IFR flight in the National Airspace System (NAS), including all airspace requiring a Mode-C transponder.

Flight Simulators

North Star Aviation primarily utilizes three aircraft specific Precision Flight Controls DCX Max AATDs. The DCX max's feature motion platforms, fully enclosed cockpits, wrap around exterior visuals with a complete terrain and airport database. These simulators are dedicated to the aircraft they represent featuring actual airplane or replica components. The DCX Max simulators are capable of utilizing Pilot Edge software allowing a student and instructor to connect with actual Air Traffic Controllers to enhance training. For a copy of the FAA letter of authorization (LOA), see Appendix B.

Reference Books and Materials

All students will equip themselves with the PA-28-161/181 POH/IM as applicable, the PA-44 POH/IM, current FAR/AIM, current charts, a view limiting device, a fuel tester, and other resources applicable to complete this training course. Each lesson will contain a "Required Reading/Study" section listing applicable study materials to use during this course of training. Additionally, Appendix C contains an expanded list of supplemental references.

SECTION FOUR

Ground School

INITIAL FLIGHT INSTRUCTOR GROUND SCHOOL LESSON LAYOUT

STAGE ONE (27 HOURS)

LESSON	DISCUSSION TOPIC	HOURS	PREREQS
1	Enrollment Checklist / TCO Overview / Endorsements	2.0	
2	Fundamentals of Instruction	2.0	
3	Various Maneuver Briefings	2.0	
4	Spin Training	1.0	
5	Flight by Reference to Instruments / Emergency Operations	2.0	
6	Aircraft Flight Instruments and Navigation Equipment / 14 CFR and Publications	2.0	
7	Principles of Flight / Runway Incursion Avoidance	2.0	
8	Navigation and Flight Planning (VFR and IFR Perspectives)	2.0	
9	Aeromedical Factors / Visual Scanning and Collision Avoidance	2.0	
10	National Airspace System / Navigation Aids and Radar Services	2.0	
11	Night Operations / High Altitude Operations	2.0	
12	Runway Incursion Avoidance / Flight Controls	2.0	
13	Review Lesson	2.0	
14	STAGE ONE CHECK	2.0	FL 6
	TOTAL	**27**	
	CUMULATIVE TOTAL	**27**	

STAGE TWO (17 HOURS)

LESSON	DISCUSSION TOPIC	HOURS	PREREQS
15	Fundamentals of Instruction / Logbook Entries and Certificate Endorsements / PA-44-180 Pre-Flight Inspection	2.0	
16	V_{MC} / Demonstration of Effects of Various Airspeeds and Configurations during Engine Inoperative Performance	2.0	
17	Weight and Balance / Performance and Limitations	2.0	
18	Certificate and Documents / Operation of Systems	2.0	
19	Weather Information / Airworthiness Requirements	2.0	
20	Review Lesson	2.0	
21	Review Lesson	2.0	
22	STAGE TWO CHECK	3.0	FL 15
	TOTAL	**17**	
	CUMULATIVE TOTAL	**44**	

Note: A student may complete the training in less than the allotted time, and by accomplishing less than the identified requirements, provided he/she meets the minimum requirements specified in 14 CFR 141 Appendix F (Minimum ground training is 40 hours).

GROUND LESSON TEMPLATE

GROUND LESSON
X.X HOURS [Approximate hours required to complete the lesson]

LESSON OBJECTIVE
Summarizes the subjects all students are expected to learn from this lesson.

ACADEMIC CONTENT

- ☐ A bulleted list of the lesson's primary subjects
    - Sub-bullets, if required
    - Sub-bullets, if required

COMPLETION STANDARDS
Summarizes how the instructor will assess student learning (e.g. oral or written quiz.) Complete comprehension results from individual study and/or practice before and after the lecture.

REQUIRED READING/STUDY

- A bulleted list of the reference materials for this lesson
- Students are expected to come prepared to each lecture…
- By studying the material from this list beforehand

INITIAL FLIGHT INSTRUCTOR GROUND SCHOOL

STAGE ONE (27 HOURS)

Lessons 1-14

STAGE ONE OBJECTIVES: The Candidate will be introduced to the Fundamentals of Instruction, and they will practice developing and teaching lesson plans from a CFI/CFI-I perspective. The Candidate will also build upon what they have learned in previous Training Course Outlines, and they will begin moving into an Application/Correlation level of knowledge.

STAGE ONE COMPLETION STANDARD: This stage will be complete when the candidate has passed the Stage One Check.

GROUND LESSON 1
2.0 HOURS

LESSON OBJECTIVE

This lesson will introduce the CFI candidate to the initial flight instructor training procedures, expectations throughout training, and differences between this TCO structure and previously completed TCO structures. This lesson will also ensure that the candidate is enrolled in/eligible for this course of training before beginning training content. This lesson will begin to put the candidate in an instructor mindset by reviewing AC-61.65, and the candidate will review the endorsements they received throughout training.

ACADEMIC CONTENT

- ☐ CFI/CFII/MEI Training Overview
  - ACS Content
  - TCO review
  - How to succeed in instructor training
  - Checkride expectations
  - All Three written tests (FOI, FIA, FII) completed before Stage 1 check
- ☐ Enrollment
  - Possess a 1st, 2nd, or 3rd class FAA Medical
  - TSA approval (if applicable)
  - Signed Terms of Agreement
- ☐ Endorsements
  - Introduce AC-61.65(H)
  - Elements of an endorsement
  - Required instructor records to keep
  - Review candidate's logbook for correct endorsements

COMPLETION STANDARDS

This lesson is complete when it has been determined through oral questioning that the candidate understands the expectations of this training course and that they have begun to develop instructional knowledge of endorsements.

REQUIRED READING/STUDY

- Flight Instructor for Airplane Category Airmen Certification Standards (FAA-S-ACS-25)
- NSA Instructor TCO
- AC-61.65(H)
- Aviation Instructor's Handbook (FAA-H-8083-9A) **Must have Paper Copy**

GROUND LESSON 2
2.0 HOURS

LESSON OBJECTIVE

This lesson will introduce the candidate to the Fundamentals of Instructing. Prior to conducting this lesson, the candidate will have acquired a paper copy of the Aviation Instructor's Handbook, Pilot's Handbook of Aeronautical Knowledge, and the Airplane Flying Handbook. Understanding of these concepts will continue to be reviewed and assessed as the candidate progresses through this TCO.

ACADEMIC CONTENT

- ☐ Fundamentals of Instruction
  - Human behavior and effective communication
  - The learning process
  - The teaching process (lesson development, organization, and delivery methods)
  - Assessments and Critiques
  - Instructor Responsibilities and Professionalism
  - Techniques of Flight Instruction
  - Risk Management

COMPLETION STANDARDS

This lesson is complete when the student has been presented the Fundamentals of Instructing information, and when they can demonstrate through oral questioning that they have begun to develop a rote level of knowledge on the FOI.

REQUIRED READING/STUDY

- ACS AOO I. Task A, B, C, E, and F
- Aviation Instructor's Handbook (FAA-H-8083-9A) Chapters 1,2, and 4

GROUND LESSON 3
2.0 HOURS

LESSON OBJECTIVE

For this lesson the candidate will conduct preflight briefings on maneuvers to be performed in flight. The primary maneuvers are Slow Flight and Stalls (AOO X), Takeoffs, Landings, and Go-Arounds (AOO VII), Performance Maneuvers (AOO IX) and Ground Reference Maneuvers (AOO IX). For each primary maneuver the candidate may choose to teach two or more specific tasks as listed in the Flight Instructor ACS. (note: Steep Turn is the only performance maneuver listed in the ACS for AMEL; therefore, it is recommended the candidate teach this in addition to one other.) Assume the student for this lesson is a pre-solo pilot working towards his/her Private Pilot certificate when teaching slow flight, stalls, takeoff/landings/go-arounds and ground reference maneuvers. Assume the student is working on a commercial rating for the performance maneuvers. If conditions allow, this lesson may immediately precede a flight lesson covering the same maneuvers.

Note: This lesson will be completed before Flight Lesson 1.

ACADEMIC CONTENT

- ❑ Slow Flight and Stalls
  - Slow Flight
  - Power on Stall
  - Power Off Stall
  - Cross Control Stall
  - Elevator Trim Stall
  - Secondary Stall
  - Accelerated Stall
- ❑ Takeoffs, Landings, and Go-Arounds
  - Include Radio Communication procedures
  - Normal
  - Short Field
  - Soft Field
  - Slip to Land
  - Go-Around
  - Power-Off 180
- ❑ Performance Maneuvers
  - Steep Turns
  - Steep Spirals
  - Chandelles
  - Lazy Eights
- ❑ Ground Reference Maneuvers
  - Rectangular Course
  - S-Turns Across a Road
  - Turns Around a Point
  - Eights on Pylons

COMPLETION STANDARDS

This lesson is complete when the candidate has presented their lesson(s), and when they have taken notes on how to improve this/these and other lessons. The candidate will be showing instructional knowledge on these topics, and they will be providing a good debrief of their partners presentation (if working with a partner). The instructor may also assess the candidate's knowledge through the use of general Q & A, or any other methods of assessment deemed appropriate by the instructor.

REQUIRED READING/STUDY

- Airplane Flying Handbook Ch. 4, 5, 6, 8, and 9

GROUND LESSON 4
1.0 HOUR

LESSON OBJECTIVE

This lesson is designed to complete the ground training leading to a spin endorsement required by FAR 61.183. The candidate will come prepared to teach spins (including aerodynamic stalls) on the ground and in the airplane. This lesson is a pre-requisite to flight lesson 3 (spin training flight).

Note: This lesson will be complete before Flight Lesson 3.

ACADEMIC CONTENT

- ❑ Loss of control in flight
  - Why is awareness important?
  - Upset Recovery Training vs. Intentional Flight Maneuvers
- ❑ Spin Awareness/Avoidance
  - **Review** normal stall entry/recovery (will be taught in depth on lesson 10)
  - Discuss how an uncoordinated stall can result in a spin
  - Anxiety factors associated with spins
  - Aerodynamics of spins
  - Flight conditions that could lead to an unintentional spin
  - Effects of various weights and CG locations
  - How to recognize an unintentional spin
  - Instrument indications during a spin
  - Common errors
- ❑ Spin Training
  - How to enter a spin deliberately
  - Generic spin recovery (PARE)
  - Cessna 152 recovery
  - Suggested improvements
- ❑ Cessna 152 limitations

COMPLETION STANDARDS

The Candidate will demonstrate instructional knowledge of stall/spin awareness and avoidance from a ground briefing perspective.

REQUIRED READING/STUDY

- Cessna 152 POH
- Airplane Flying Handbook Ch. 4
- AC 61-67
- AC 120-109
- AC 120-111
- FAR 61.183(i)(1)(2)

GROUND LESSON 5
2.0 HOURS

LESSON OBJECTIVE

For this lesson the instructor candidate will conduct a lesson on the basics of Instrument Flight (Instructor ACS AOO XI and CFI-I PTS AOO VI). This will provide a good review of instrument skills that may not have been utilized since the candidates own Instrument Training. The second lesson to be taught will be on Single Engine Emergency Operations (Instructor ACS AOO XII and CFI-I PTS AOO IX). Special emphasis will be placed on Emergency Approach and Landing, Systems and Equipment Malfunction, and Recovery from Unusual Attitudes as these are required tasks for the single engine and instrument add-on ratings. Assume the student for this lesson is working towards his/her Private Pilot certificate or Instrument rating as appropriate. If conditions allow, this lesson will immediately precede a flight lesson covering the same maneuvers.

Note: This lesson will be complete before Flight lesson 4.

ACADEMIC CONTENT

- ☐ Flight by Reference to Instruments
  - Attitude Instrument Flying (Steam and Glass)
    - Control and Performance method
    - Primary and Supporting Method
    - Instrument Scanning Techniques
  - Compass Turns/Timed turns
  - VOR Navigation
  - Unpublished VOR Arcs
  - Unpublished VOR/GPS/Intersection Holds
  - Unusual Attitudes
- ☐ Emergency Operations
  - Emergency Approach and Landing
  - Systems and Equipment Malfunctions
  - Emergency Equipment and Survival Gear
  - Emergency Descent
  - Lost Comms
  - Partial panel approach

COMPLETION STANDARDS

This lesson is complete when the candidate has presented their lesson(s), and when they have taken notes on how to improve this/these and other lessons. The candidate will be showing instructional knowledge on these topics, and they will be providing a good debrief of their partners presentation (if working with a partner). The instructor may also assess the candidate's knowledge through the use of general Q & A, or any other methods of assessment deemed appropriate by the instructor.

REQUIRED READING/STUDY

- Instrument Flying Handbook Ch. 4, 5, 7, and 11
- Airplane Flying Handbook Ch. 17
- Pilots Handbook of Aeronautical Knowledge Ch. 17

GROUND LESSON 6
2.0 HOURS

LESSON OBJECTIVE

The candidate will practice lesson plan development and teaching skills by conducting a lesson on the Aircraft Flight Instruments and Navigation Equipment and/or Regulations and Publications Related to IFR Operations. If the candidate teaches only one of the lessons, he/she will observe the other lesson being taught by a training partner, or the lesson content will be discussed with the instructor.

Notes: (1) Special emphasis will be placed on Autopilot/Flight director use, Anti-ice/deicing, and Part 93. These topics may have not been stressed in prior training courses.
(2) This lesson and lesson 8 will be completed before flight lesson 5.

ACADEMIC CONTENT

- ❑ Aircraft Flight Instruments and Navigation Equipment (CFI-I PTS AOO II Task A)
  - Pitot-Static/Gyroscopic Instruments (Steam and Glass)
  - Magnetic Compass (include errors)
  - PFD/MFD
  - VOR, DME, ILS, ADF, GPS
  - Transponder use
  - Autopilot/Flight Director use
  - Anti-ice/deicing and weather detection equipment
- ❑ Regulations and Publications Related to IFR Operations (CFI-I PTS AOO II Task C)
  - 14 CFR parts 61, 71, 91, 93, 95, and 97.
  - Plan a short IFR flight to cover all documents included in Task C
    - FAA-H-8083-15, Instrument Flying Handbook.
    - Aeronautical Information Manual.
    - Practical Test Standards.
    - Airport Facility Directory.
    - Standard Instrument Departures/Terminal Arrivals.
    - En Route Charts.
    - Standard Instrument Approach Procedure Charts.

COMPLETION STANDARDS

This lesson is complete when the candidate has presented their lesson(s), and when they have taken notes on how to improve this/these and other lessons. The candidate will be showing instructional knowledge on these topics, and they will be providing a good debrief of their partners presentation (if working with a partner). The instructor may also assess the candidate's knowledge through the use of general Q & A, or any other methods of assessment deemed appropriate by the instructor.

REQUIRED READING/STUDY

- Instrument Flying Handbook Ch. 3, 7, 10
- FAR/AIM (Appropriate chapters)

GROUND LESSON 7
2.0 HOURS

LESSON OBJECTIVE

The instructor candidate will practice lesson plan development and teaching skills by conducting a lesson on Principles of Flight and/or Runway Incursion Avoidance.

Note – Because Runway Incursions are a special emphasis item on the checkride, runway incursions will also be taught on lesson 12 by whichever candidate observed it on this lesson.

ACADEMIC CONTENT

- ❑ Principles of Flight (AOO II Task D)
  - Airfoil design characteristics
  - Airplane stability/controllability
  - Load factors in airplane design
  - Turning tendency (torque effect)
  - Stall awareness, spin entry, spins, and spin recovery techniques
  - Wingtip vortices and precautions to be taken
- ❑ Runway Incursion Avoidance (AOO II Task C)
  - Definition of a Runway Incursion
  - Airport Signs and Markings
  - May follow a Scenario: (e.g. Fly KSTP-KMKT in the morning, return at night)
  - Cockpit Organization
  - Requesting/Receiving/Recording ATC taxi Instructions
  - Taxi route planning, briefing the location of hot spots, use of airport diagrams
  - Minimizing Distractions:
    - Sterile Cockpit
    - Minimizing Heads Down Time
    - Appropriate use of technology during taxi, takeoff, and landing
  - Low visibility taxy procedures (fold a piece of paper into fourths, tear a corner off, unfold, and move hole along taxi route to simulate Low Vis)
  - Maintaining taxiway, runway position, and situational awareness:
    - Point out signage along scenario taxi route
  - How to use a moving map to increase SA (MFD/iPad)
  - LAHSO/Landing on a runway with an intersecting runway
  - Hazards of short taxiways between parallel runways
  - Night operations (towered and non-towered airports, airport and aircraft lighting)

COMPLETION STANDARDS

This lesson is complete when the candidate has presented their lesson(s), and when they have taken notes on how to improve this/these and other lessons. The candidate will be showing instructional knowledge on these topics, and they will be providing a good debrief of their partners presentation (if working with a partner).

REQUIRED READING/STUDY

- Airplane Flying Handbook Ch. 2 and 10
- AIM Ch. 2-3, Ch. 4-2, Ch. 4-3
- PHAK Appendix

GROUND LESSON 8
2.0 HOURS

LESSON OBJECTIVE

The instructor candidate will practice lesson plan development and teaching skills by conducting a lesson on Navigation and Flight Planning including a briefing of 14 CFR and Publications applicable to the planning process (see Tech. S. Area J for specific items to cover). If the candidate is working with a partner, the second candidate will teach a lesson on the same topic but from an IFR perspective. If there is no partner, both perspectives will be taught by the candidate.

ACADEMIC CONTENT

- ❑ Navigation and Flight Planning **VFR** (AOO II Task I)
  - Build a scenario to flight plan for
  - Briefing of 14 CFR and Publications, along with how they are used in flight planning
  - How to tell if publications are current (paper and electronic)
  - Filling out paper flight log
    - Calculating True Course, True Heading, Mag Heading, Compass heading, TAS, GS, ETE, Fuel Burn, Etc.
    - Calculating fuel consumption, fuel requirements, and planning fuel stops
  - Navigation techniques
    - Pilotage and dead reckoning
    - Fundamentals of radio navigation (VOR and GPS)
    - Diversion to an alternate
    - Lost procedures
  - Weather Brief
    - Different sources of information
    - Making a Go/No-Go decision
    - Filing a flight plan
- ❑ Navigation and Flight Planning **IFR** (CFI-I PTS AOO III Task B)
  - See topics from VFR perspective
  - Weather Brief will include dangers of icing
    - Types of ice
    - De-Ice/Anti-Ice systems
    - Icing forecasts
    - Risk Management

COMPLETION STANDARDS

This lesson is complete when the candidate has presented their lesson(s), and when they have taken notes on how to improve this/these and other lessons.

REQUIRED READING/STUDY

- Instrument Flying Handbook Ch. 10
- PHAK Ch. 15
- FAR Part 91.103
- AIM Ch. 5-1
- Instructor ACS AOO II Task I
- CFI-I PTS AOO III Task B

GROUND LESSON 9
2.0 HOURS

LESSON OBJECTIVE

The instructor candidate will practice lesson plan development and teaching skills by conducting a lesson on Aeromedical Factors and/or Visual Scanning and Collision Avoidance. If the candidate teaches only one of the lessons, he/she will observe the other lesson being taught by a training partner, or the lesson content will be discussed with the instructor.

ACADEMIC CONTENT

- ❑ Human Factors (AOO II Task A)
  - Obtaining a medical certificate, including obtaining a "SODA".
  - Causes, symptoms, effects, and corrective action of:
    - Hypoxia
    - Hyperventilation
    - Middle ear and sinus problems
    - Spatial disorientation
    - Motion sickness
    - Carbon monoxide poisoning
    - Fatigue and stress
    - Dehydration
  - The effects of alcohol and drugs, and their relationship to flight safety
  - Nitrogen excesses during scuba dives and how this affects flight
- ❑ Visual Scanning & Collision Avoidance (AOO II Task B)
  - Relationship between a pilot's physical condition and vision
  - Environmental conditions that degrade vision
  - Vestibular and visual illusions
  - "See and avoid" concept
  - Visual scanning procedures
  - Common errors and how they increase collision risk
  - Clearing procedures
  - Aircraft blind spots
  - Relationship between aircraft speed differential and collision risk
  - Situations which involve the greatest collision risk.

COMPLETION STANDARDS

This lesson is complete when the candidate has presented their lesson, and when they have taken notes on how to improve this and other lessons.

REQUIRED READING/STUDY

- Aviation Instructor's Handbook Ch. 3 and 6
- AIM Ch. 8
- Airplane Flying Handbook 1-11
- Commercial Pilot ACS
- AC 90-48
- PHAK Ch. 16

GROUND LESSON 10
2.0 HOURS

LESSON OBJECTIVE

The instructor candidate will practice lesson plan development and teaching skills by conducting a lesson on the National Airspace System (NAS) and/or Navigation Aids and Radar Services. If the candidate teaches only one of the lessons, he/she will observe the other lesson being taught by a training partner, or the lesson content will be discussed with the instructor.

ACADEMIC CONTENT

- ❑ National Airspace System (AOO II Task G)
  - Basic VFR weather minimums—for all classes of airspace.
  - Airspace classes—their operating rules, pilot certification, and airplane equipment requirements for the following:
    - Class A
    - Class B
    - Class C
    - Class D
    - Class E
    - Class G
  - Special use airspace (SUA)
  - Temporary flight restrictions (TFR)
- ❑ Navigation Aids and Radar Services (AOO II Task H)
  - Ground-based navigational aids (VOR/VORTAC, NDB, and DME)
  - Satellite-based navigation aids
  - Radar service and procedures

COMPLETION STANDARDS

This lesson is complete when the candidate has presented their lesson(s), and when they have taken notes on how to improve this/these and other lessons.

REQUIRED READING/STUDY

- 14 CFR Part 91
- AIM Ch. 2 and 3
- Private Pilot ACS
- PHAK Ch. 14 and 15
- Instrument Flying Handbook Ch. 1 and 9

GROUND LESSON 11
2.0 HOURS

LESSON OBJECTIVE

The instructor candidate will practice lesson plan development and teaching skills by conducting a lesson on Night Operations and/or High-Altitude Operations. If the candidate teaches only one of these lessons, he/she will observe the other lesson being taught by a training partner, or the lesson content will be discussed with the instructor.

ACADEMIC CONTENT

☐ Night Operations (ACS AOO II Task M) Factors related to night vision

- Disorientation and night optical illusions
- Proper adjustment of interior lights
- Importance of having a flashlight with a red lens
- Night preflight inspection
- Engine starting procedures, including use of position and anti-collision lights prior to start
- Taxiing and orientation on an airport
- Takeoff and climb-out
- In-flight orientation
- Importance of verifying the airplane's attitude by reference to flight instruments
- Night emergency procedures
- Traffic patterns
- Approaches and landings with and without landing lights
- Go-arounds.

☐ High Altitude Operations (ACS AOO II Tasks N and O)

- Regulatory requirements for use of oxygen
- Physiological hazards associated with high altitude operations
- Characteristics of a pressurized airplane and various types of supplemental oxygen systems
- Importance of "aviator's breathing oxygen."
- Care and storage of high-pressure oxygen bottles
- Problems associated with rapid decompression and corresponding solutions.
- Basic concepts of cabin pressurization
- Operation of cabin pressurization

COMPLETION STANDARDS

This lesson is complete when the candidate has presented their lesson(s), and when they have taken notes on how to improve this/these and other lessons. The candidate will be showing instructional knowledge on these topics, and they will be providing a good debrief of their partners presentation (if working with a partner).

REQUIRED READING/STUDY

- Airplane Flying Handbook Ch. 10
- PHAK Ch. 6 and 16
- AC 61-107A
- Aircraft Systems for Pilots Ch. 9 (ASA book)

GROUND LESSON 12
2.0 HOURS

LESSON OBJECTIVE

The instructor candidate will practice lesson plan development and teaching skills by conducting a lesson on Runway Incursion Avoidance and/or Flight Controls. If the candidate teaches only one of the lessons, he/she will observe the other lesson being taught by a training partner, or the lesson content will be discussed with the instructor.

Note – Because Runway Incursions are a special emphasis item on the checkride, runway incursions will be taught by whichever partner observed them on lesson 7. If the candidate is not working with a partner, they will teach runway incursions for a second time.

ACADEMIC CONTENT

- ❑ Runway Incursion Avoidance (AOO II Task C)
  - Definition of a Runway Incursion
  - Airport Signs and Markings
  - May follow a Scenario: (e.g. Fly KSTP-KMKT in the morning, return at night)
  - Cockpit Organization
  - Requesting/Receiving/Recording ATC taxi Instructions
  - Taxi route planning, briefing the location of hot spots, use of airport diagrams
  - Minimizing Distractions:
    - Sterile Cockpit
    - Minimizing Heads Down Time
    - Appropriate use of technology during taxi, takeoff, and landing
  - Low visibility taxy procedures (fold a piece of paper into fourths, tear a corner off, unfold, and move hole along taxi route to simulate Low Vis)
  - Maintaining taxiway, runway position, and situational awareness:
    - Point out signage along scenario taxi route
  - How to use a moving map to increase SA (MFD/iPad)
  - LAHSO/Landing on a runway with an intersecting runway
  - Hazards of short taxiways between parallel runways
  - Night operations (towered and non-towered airports, airport and aircraft lighting)
- ❑ Flight Controls (AOO II Task E)
  - Purpose, location, direction of movement, effect and proper procedure for use of:
    - Primary flight controls
    - Trim control(s)
    - Wing flaps

COMPLETION STANDARDS

This lesson is complete when the candidate has presented their lesson(s), and when they have taken notes on how to improve this/these and other lessons.

REQUIRED READING/STUDY

- AIM Ch. 2-3, Ch. 4-2, Ch. 4-3
- Airplane Flying Handbook Ch. 2 and 10
- PHAK CH. 5 and Appendix 1k

GROUND LESSON 13
2.0 HOURS

LESSON OBJECTIVE

This lesson will serve as a review before the stage 1 check. Most topics on this lesson are Optional, and topics covered are at the discretion of the flight instructor. Grades will be assigned to the topics covered. This lesson also contains the Record Audit required prior to Stage check.

ACADEMIC CONTENT

Lessons

- ☐ Endorsements
- ☐ Fundamentals of Instruction
- ☐ Runway Incursion Avoidance
- ☐ OPTIONAL: Aeromedical Factors
- ☐ OPTIONAL: Visual Scanning & Collision Avoidance
- ☐ OPTIONAL: Flight Controls
- ☐ OPTIONAL: National Airspace System
- ☐ OPTIONAL: Navigation Aids and Radar Services
- ☐ OPTIONAL: Navigation and Flight Planning **VFR**
- ☐ OPTIONAL: Navigation and Flight Planning **IFR**
- ☐ OPTIONAL: Night Operations
- ☐ OPTIONAL: High Altitude Operations
- ☐ OPTIONAL: Principles of Flight
- ☐ OPTIONAL: Loss of control in flight
- ☐ OPTIONAL: Spin Awareness/Avoidance
- ☐ OPTIONAL: Spin Training
- ☐ OPTIONAL: Slow Flight and Stalls
- ☐ OPTIONAL: Takeoffs, Landings, and Go-Arounds
- ☐ OPTIONAL: Performance Maneuvers
- ☐ OPTIONAL: Ground Reference Maneuvers
- ☐ OPTIONAL: Aircraft Flight Instruments and Navigation Equipment
- ☐ OPTIONAL: Regulations and Publications Related to IFR Operations
- ☐ OPTIONAL: Flight by Reference to Instruments
- ☐ OPTIONAL: Emergency Operations

Record Audit

- ☐ Complete the Flight Instructor Stage One Auditing Checklist and correct all errors

COMPLETION STANDARDS

This lesson is complete when the candidate has demonstrated instructional knowledge in the topics selected by the instructor, and when the Records Audit has been completed.

REQUIRED READING/STUDY

- All Previous Lessons

GROUND LESSON 14: Stage 1 Check
2.0 HOURS

LESSON OBJECTIVE

The Chief/Assistant Chief Instructor or an approved Stage Check Pilot will evaluate the student's progress thus far in the stage. A lesson on Runway Incursion avoidance and one maneuver will be given, along with a sampling of the other technical subject areas covered in this stage at the instructor/evaluator's discretion. The evaluator will use the current FAA Flight Instructor (ASEL and Instrument as applicable) test standards as a guide when determining which topics to cover within the allotted time

Note: This stage check is a pre-requisite to the Flight Stage 1 check.

ACADEMIC CONTENT

Scenario Based Assessments

- ☐ Endorsements
- ☐ Fundamentals of Instruction

Lessons (req'd)

- ☐ Runway Incursion Avoidance
- ☐ One Maneuver (note which one was done)
  - Slow Flight/Stalls
  - Takeoffs, Landings, Go-Arounds
  - Performance Maneuvers
  - Ground Reference Maneuvers

Lessons (opt)

- ☐ OPTIONAL: Aeromedical Factors
- ☐ OPTIONAL: Visual Scanning & Collision Avoidance
- ☐ OPTIONAL: Flight Controls
- ☐ OPTIONAL: National Airspace System
- ☐ OPTIONAL: Navigation Aids and Radar Services
- ☐ OPTIONAL: Navigation and Flight Planning **VFR**
- ☐ OPTIONAL: Cross Country Flight Planning (CFI-I PTS AOO III Task B)
- ☐ OPTIONAL: Night Operations
- ☐ OPTIONAL: High Altitude Operations
- ☐ OPTIONAL: Principles of Flight
- ☐ OPTIONAL: Loss of control in flight
- ☐ OPTIONAL: Spin Awareness/Avoidance
- ☐ OPTIONAL: Spin Training
- ☐ OPTIONAL: Aircraft Flight Instruments and Navigation Equipment
- ☐ OPTIONAL: Regulations and Publications Related to IFR Operations
- ☐ OPTIONAL: Flight by Reference to Instruments
- ☐ OPTIONAL: Emergency Operations

COMPLETION STANDARDS

This lesson is complete when, through oral questioning, the candidate has demonstrated an Application and/or Correlation level of knowledge in the topics/lessons selected by the evaluator.

REQUIRED READING/STUDY

- All Previous Lessons

INITIAL FLIGHT INSTRUCTOR GROUND SCHOOL

STAGE TWO (17 HOURS)

Lessons 15-22

STAGE TWO OBJECTIVES: The Candidate will continue learning and applying the Fundamentals of Instruction. In this Stage, the candidate will prepare and practice teaching lessons from the MEI perspective. All lessons will be taught around PA-44-180 operations. The Candidate will also build upon what they have learned in previous Training Course Outlines, and they will continue moving into an Application/Correlation level of knowledge.

STAGE TWO COMPLETION STANDARD: This stage will be complete when the candidate has passed the Stage Two Check.

GROUND LESSON 15
2.0 HOURS

LESSON OBJECTIVE

This lesson will serve as a review of FOI and Endorsements along with an introduction to PA-44-180 pre-flighting. FOI and Endorsements will be taught in a scenario-based manner to assess the student's current knowledge base, identify areas for continued study, and to continue developing an understanding/application level of knowledge.

Note: This lesson will be complete before Flight lesson 8.

ACADEMIC CONTENT

- ☐ Fundamentals of Instruction
  - Human behavior and effective communication
  - The learning process
  - The teaching process (lesson development, organization, and delivery methods)
  - Assessments and Critiques
  - Instructor Responsibilities and Professionalism
  - Techniques of Flight Instruction
  - Risk Management

- ☐ Logbook Entries and Certificate Endorsements
  - Actions required to take a student from nothing to Solo
  - Recommendation for an initial practical test
  - Recommendation for an additional rating test
  - How to conduct a BFR or IPC
  - Records flight instructor records
  - How to renew a flight instructor certificate

- ☐ PA-44-180 Preflight
  - Look at a Seminole in Maintenance if able
  - Candidate will teach in-depth preflight including:
    - Types of flight controls
    - Vents/drains
    - Micro switches
    - Magnetometer location
    - Engine Components
    - Documents
    - Data Plate
    - Etc.

COMPLETION STANDARDS

This lesson is complete when the candidate has demonstrated their current knowledge base through the use of oral/scenario-based questioning, and the instructor has identified areas for continued study/training.

REQUIRED READING/STUDY

- Flight Instructor ACS, AOO I and II (Task K)
- NSA Piper Seminole Preflight PowerPoint
- Aviation Instructor's Handbook

GROUND LESSON 16
2.0 HOURS

LESSON OBJECTIVE

This lesson will introduce V_{MC} and the Drag Demo maneuver. If time permits, a review of runway incursions may also be covered.

Note: This lesson will be complete before Flight lesson 9.

ACADEMIC CONTENT

- ☐ V_{MC} (XIV Task E)
  - Definition of VMC and Critical Engine
  - Types of Twins
  - How to identify the Critical Engine
  - Factors affecting VMC
  - VMC vs. Stall Speed
  - How do we recover
  - How to Perform the Maneuver
  - Common Errors Associated

- ☐ Demonstration of Effects of Various Airspeeds and Configurations during Engine Inoperative Performance (AOO XIII Task C)
  - Will emphasize how to fly Single Engine, and how different A/C configurations will affect performance.
  - Importance of and how to establish Zero-Sideslip
  - Reference “Summary of Factors Affecting Single Engine Operations” and other applicable parts POH of Section 3.5

- ☐ OPTIONAL: Runway Incursions
  - Reference Ground Lessons 7 and 12

COMPLETION STANDARDS

This lesson is complete when the candidate has presented or observed the above lessons. The candidate will have taken notes on areas of improvement, so they can further develop this and other lessons.

REQUIRED READING/STUDY

- PA-44-180 Pilot Operating Handbook Section 3.5

GROUND LESSON 17
2.0 HOURS

LESSON OBJECTIVE

The instructor candidate will practice lesson plan development and teaching skills by conducting a lesson on Airplane Weight and Balance and/or Performance and Limitations. If the candidate teaches only one of the lessons, he/she will observe the other lesson being taught by a training partner, or the lesson content will be discussed with the instructor. Both lessons will be discussed as they relate to the PA-44 (Piper Seminole).

ACADEMIC CONTENT

- ☐ Weight and balance (AOO II Task F)
  - Terms
  - Effect of weight and balance on performance, including exceedance of limitations
  - Methods of weight and balance control
  - Determination of total weight and center of gravity and the changes that occur when adding, removing, or shifting weight

- ☐ Performance and Limitations (AOO II Task F)
  - Use of performance charts, tables, and other data in determining performance in various phases of flight
  - Effects of exceeding airplane limitations
  - Effects of atmospheric conditions, including density altitude, on performance
  - Factors to be considered in determining that the required performance is within the airplane's capabilities
  - Where/how to obtain information on runway lengths at airports of intended use
  - Fuel requirements, and how to plan for alternatives if the planned flight cannot be completed or delays are encountered

COMPLETION STANDARDS

This lesson is complete when the candidate has presented or observed the above lessons. The candidate will have taken notes on areas of improvement, so they can further develop this and other lessons.

REQUIRED READING/STUDY

- PHAK Chapter 9 and 10

GROUND LESSON 18
2.0 HOURS

LESSON OBJECTIVE

The instructor candidate will practice lesson plan development and teaching skills by conducting a lesson on Certificates and Documents and the Operation of Systems. If the candidate teaches only one of the lessons, he/she will observe the other lesson being taught by a training partner, or the lesson content will be discussed with the instructor. The systems topics will be discussed as they relate to the PA-44 (Piper Seminole). The candidate will choose at least two primary systems to discuss in detail but will be prepared to discuss all systems.

ACADEMIC CONTENT

☐ Pilot Qualifications (AOO III Task A)

- Training requirements for the issuance of recreational, private, and commercial pilot certificates.
- Privileges and limitations of pilot certificates and ratings at recreational, private, and commercial levels.
- Class and duration of medical certificates.
- Recent pilot flight experience requirements.
- Required entries in pilot logbook or flight record.

☐ Aircraft Flight Controls and Operation of Systems (AOO II Task E)

- Primary and secondary flight controls
- Trim
- Powerplant and propeller
- Landing gear
- Fuel, oil, and hydraulic
- Electrical
- Avionics including autopilot
- Pitot static, vacuum/pressure and associated instruments
- Environmental (Heater)
- Deicing and anti-icing

COMPLETION STANDARDS

This lesson is complete when the candidate has presented or observed the above lessons. The candidate will have taken notes on areas of improvement, so they can further develop this and other lessons.

REQUIRED READING/STUDY

- 14 CFR Parts 61, 91, and 141
- PHAK Chapters 1, 5, and 6
- ASA Aircraft Systems for Pilots by Dale De Remer

GROUND LESSON 19
2.0 HOURS

LESSON OBJECTIVE

The instructor candidate will practice lesson plan development and teaching skills by conducting a lesson on Weather Information (AOO III Task C) and Airworthiness Requirements (AOO III Task B). If the candidate teaches only one of the lessons, he/she will observe the other lesson being taught by a training partner, or the lesson content will be discussed with the instructor. The Airworthiness Requirements topics will be discussed as they relate to the PA-44 (Piper Seminole) where appropriate.

ACADEMIC CONTENT

☐ Weather Information

- Importance of a thorough preflight weather briefing.
- Means and sources of obtaining weather information.
- Use of real-time weather reports, forecasts, and charts for developing scenario-based training.
- In-flight weather advisories.
- Recognition of aviation weather hazards from the ground and in flight, to include wind shear.
- Factors to be considered in making a “go/no-go” decision.

☐ Airworthiness Requirements

- Required instruments and equipment for day/night VFR.
- Procedures and limitations for determining airworthiness of the airplane with inoperative instruments and equipment without a minimum equipment list (MEL).
- Requirements and procedures for obtaining a special flight permit.
- Airworthiness directives, compliance records, maintenance/ inspection requirements, and appropriate records.
- Procedures for deferring maintenance on aircraft without an approved MEL.

COMPLETION STANDARDS

This lesson is complete when the candidate has presented or observed the above lessons. The candidate will have taken notes on areas of improvement, so they can further develop this and other lessons.

REQUIRED READING/STUDY

- 14 CFR Part 91
- PHAK Chapters 8, 11, 12, and 17
- Everything Explained Chapter 8

GROUND LESSON 20
2.0 HOURS

LESSON OBJECTIVE

At this point, all technical subject areas will have been addressed. This lesson will be used as a review to cover any subject areas that may need further practice. All graded topics are optional, so grade what is performed.

Note: Part 141 Appendix F requires 40 hours of ground training. Please check to make sure the candidate is on track to meet this requirement by the end of the Stage 2 Check.

ACADEMIC CONTENT

- ☐ Principles of Flight (AOO II Task D)
- ☐ Runway Incursion Avoidance (AOO II Task C)
- ☐ OPTIONAL: Endorsements and Logbook Entries (AOO II Task K)
- ☐ OPTIONAL: Fundamentals of Instruction (AOO I)
- ☐ OPTIONAL: Human Factors (AOO II Task A)
- ☐ OPTIONAL: Visual Scanning & Collision Avoidance (AOO II Task B)
- ☐ OPTIONAL: Aircraft Flight Controls and Operation of Systems (AOO II Task E)
- ☐ OPTIONAL: National Airspace System (AOO II Task G)
- ☐ OPTIONAL: Navigation Aids and Radar Services (AOO II Task H)
- ☐ OPTIONAL: Navigation and Flight Planning (AOO II Task I)
- ☐ OPTIONAL: Night Operations (AOO II Task M)
- ☐ OPTIONAL: High Altitude Operations (AOO II Task N/O)
- ☐ OPTIONAL: Spin Awareness/Avoidance
- ☐ OPTIONAL: Slow Flight and Stalls (AOO X)
- ☐ OPTIONAL: Takeoffs, Landings, and Go-Arounds (AOO VII)
- ☐ OPTIONAL: Performance and Ground Reference Maneuvers (AOO IX)
- ☐ OPTIONAL: 14 CFR and Publications (AOO II Task J)
- ☐ OPTIONAL: Performance and Limitations (AOO II Task F)
- ☐ OPTIONAL: Pilot Qualifications (AOO III Task A)
- ☐ OPTIONAL: Airworthiness Requirements (AOO III Task B)
- ☐ OPTIONAL: Weather Theory (AOO III Task C)
- ☐ OPTIONAL: V_{MC} (AOO XIII Task B)

COMPLETION STANDARDS

This lesson is complete when the candidate has demonstrated instructional knowledge in the topics selected by the instructor.

REQUIRED READING/STUDY

- All Previous Lessons

GROUND LESSON 21
2.0 HOURS

LESSON OBJECTIVE

This lesson will be used to prepare for the stage 2 check. Required topics to grade include the topics guaranteed to come up on the End of Course stage check. It is encouraged that this lesson be performed as a mock stage check by an instructor other than the candidate's primary instructor. The Instructor will develop a plan of action that would simulate that of the stage 2 check and checkride.

Note: Part 141 Appendix F requires 40 hours of ground training. Please check to make sure the candidate is on track to meet this requirement by the end of the Stage 2 Check.

ACADEMIC CONTENT

Lessons

- ☐ Aircraft Flight Controls and Operation of Systems (AOO II Task E)
- ☐ V_{MC} (AOO XIII Task B)
- ☐ Endorsements and Logbook Entries (AOO II Task K)
- ☐ Fundamentals of Instruction (AOO I)
- ☐ OPTIONAL: Principles of Flight (AOO II Task D)
- ☐ OPTIONAL: Runway Incursion Avoidance (AOO II Task C)
- ☐ OPTIONAL: Human Factors (AOO II Task A)
- ☐ OPTIONAL: Visual Scanning & Collision Avoidance (AOO II Task B)
- ☐ OPTIONAL: National Airspace System (AOO II Task G)
- ☐ OPTIONAL: Navigation Aids and Radar Services (AOO II Task H)
- ☐ OPTIONAL: Navigation and Flight Planning (AOO II Task I)
- ☐ OPTIONAL: Night Operations (AOO II Task M)
- ☐ OPTIONAL: High Altitude Operations (AOO II Task N/O)
- ☐ OPTIONAL: Spin Awareness/Avoidance
- ☐ OPTIONAL: Slow Flight and Stalls (AOO X)
- ☐ OPTIONAL: Takeoffs, Landings, and Go-Arounds (AOO VII)
- ☐ OPTIONAL: Performance and Ground Reference Maneuvers (AOO IX)
- ☐ OPTIONAL: 14 CFR and Publications (AOO II Task J)
- ☐ OPTIONAL: Performance and Limitiations (AOO II Task F)
- ☐ OPTIONAL: Pilot Qualifications (AOO III Task A)
- ☐ OPTIONAL: Airworthiness Requirements (AOO III Task B)
- ☐ OPTIONAL: Weather Theory (AOO III Task C)

Record Audit

- ☐ Complete the Flight Instructor Stage Two Auditing Checklist and correct all errors

COMPLETION STANDARDS

This lesson is complete when the candidate has demonstrated instructional knowledge in the topics selected by the instructor.

REQUIRED READING/STUDY

- All Previous Lessons

GROUND LESSON 22:
Stage 2 Check
3.0 HOURS

LESSON OBJECTIVE
The Chief/Assistant Chief Instructor or an approved Stage Check Pilot will evaluate the student's progress thus far in the stage. This stage check should pattern the checkride, so emphasis should be placed on using the Flight Instructor for Airplane Category ACS while developing the plan of action. The evaluator should mix in questions on endorsements and FOI throughout the stage check, and the candidate should be prepared to teach any lesson.

Notes: (1) This stage check is a pre-requisite to the Flight Stage 2 check.
(2) Flight lesson 15 must be complete before conducting this stage check.
(3) Per part 141, the Candidate MUST have 40 hours of ground training in this TCO by the end of this stage check.

ACADEMIC CONTENT
Fundamentals of Instructing (AOO I)

- ☐ Elements of Effective Teaching in a Professional Environment
- ☐ Elements of Effective Teaching that Include Risk Management and Accident Prevention
- ☐ Select One Other Task (note which one)
  - Effects of Human Behavior and Communication on the Learning Process
  - Learning Process
  - Course Development, Lesson plans, and Classroom Training Techniques
  - Student Evaluation, Assessment, and Testing

Technical Subject Areas (AOO II)

- ☐ Runway Incursion Avoidance
- ☐ Logbook Entries and Certificate Endorsements
- ☐ One Engine Inoperative Performance
- ☐ One Other Task
  - Human Factors
  - Visual Scanning and Collision Avoidance
  - Principles of Flight
  - Aircraft Flight Controls and operation of systems
  - Performance and Limitations
  - National Airspace System
  - Navigation Systems and Radar Services
  - Navigation and Cross-Country Flight Planning
  - 14 CFR and Publications
  - Night Operations
  - High Altitude Operations – Supplemental Oxygen
  - High Altitude Operations – Pressurization

Preflight Preparation (AOO III)

- ☐ Select at least One Task. (note which one was done)
  - Pilot Qualifications
  - Airworthiness Requirements
  - Weather Information

Multiengine Operations (AOO XIII)

- ☐ Maneuvering with One Engine Inoperative

Preflight Lesson on a Maneuver to be Performed in Flight (AOO IV)

- ☐ Brief at least one maneuver task from Areas of Operation VII through XIII (note which one was done)
  - Takeoffs, Landings, Go-Arounds
  - Fundamentals of Flight
  - Performance and Ground Reference Maneuvers
  - Slow Flight, Stalls, and Spins
  - Basic Instrument Maneuvers
  - Emergency Operations
  - Multiengine Operations

COMPLETION STANDARDS

- This check will serve as the Initial Multi-engine instructor practical oral exam, and it is complete when the applicant performs within current ACS

SECTION FIVE

Flight Training

INITIAL FLIGHT INSTRUCTOR FLIGHT TRAINING LESSON LAYOUT

STAGE ONE (11.0 HOURS)

LESSON	TOTAL	ME Complex	ASEL	DUAL	Prereq	DUAL X/C	SOLO X/C	NIGHT	INST	PRE/POST
1	1.5		1.5	1.5	GL 3					0.5
2	1.5		1.5	1.5						0.5
3	1.5		1.5	1.5	GL 4					0.5
4	1.5		1.5	1.5	GL 5					0.5
5	2.0		2.0	2.0	GL 6 and 8					0.5
6	1.5		1.5	1.5						0.5
7	1.5		1.5	1.5	GL 14					0.5
Stage 1 Totals	**11.0**		**11.0**	**11.0**						**3.5**

STAGE TWO (15.0 HOURS)

LESSON	TOTAL	ME Complex	ASEL	DUAL	Prereq	DUAL X/C	SOLO X/C	NIGHT	INST	PRE/POST
8	1.5	1.5		1.5	GL 15					0.5
9	1.5	1.5		1.5	GL 16					0.0
10	1.5	1.5		1.5						0.0
11	1.5	1.5		1.5						0.0
12	1.5	1.5		1.5						0.0
13	3.0	3.0		3.0		3.0			1.0	0.0
14	1.5	1.5		1.5						0.0
15	1.5	1.5		1.5						0.0
16	1.5	1.5		1.5	GL 22					0.5
Stage 1 Totals	**15.0**	**15.0**		**15.0**		**3.0**			**1.0**	**1.0**
Totals	**26.0**	**15.0**	**11.0**	**26.0**		**3.0**			**1.0**	**4.5**

Note: A student may complete the training in less than the allotted time, and by accomplishing less than the identified requirements, provided he/she meets the minimum requirements specified in 14 CFR 141 Appendix F (Minimum Flight Training is 25 hours Total, and the Candidate Must have 15 hours PIC in AMEL).

*Note: *Note: Per 14 CFR 141 Appendix F, Section 4(b)(3), credit for flight training in a flight training device cannot exceed 5% of the total training requirement of the course or this section, whichever is less. Therefore, up to 1.25 hours (5% of 25) may be credited in the Precision Flight Control AATD. See the Precision Flight Control Letter of Authorization (LOA) in Appendix F.*

FLIGHT LESSON TEMPLATE

LESSON #: [Flight, Simulator, or Pre/Post Ground]
X.X HOURS DUAL/SOLO [Approximate flight hours required]
X.X HOURS INSTRUMENT [Simulated or actual]
X.X HOURS Pre/Post [Approximate Pre/Post briefing time required]

LESSON OBJECTIVE
[Summarizes the ground and flight training the student is expected to receive and/or accomplish during this lesson. Lesson requirements will be listed here to clarify expectations.]

GROUND TRAINING: Review [Identifies elements introduced on a previous lesson]

Topic in Bold [The primary topic to reviewed]
- ☐ Square bullets represent graded items
  - Not graded, extra information
  - Not graded, extra information
- ☐ OPTIONAL [Not required]

GROUND TRAINING [Identifies topics to be introduced on this lesson]

Topic in Bold [The primary topic to introduced]
- ☐ Square bullets represent graded items
  - Not graded, extra information
  - Not graded, extra information
- ☐ OPTIONAL [Not required]

FLIGHT TRAINING: Review [Identifies maneuvers/skills to be reviewed on this lesson.]

Maneuver/Skill in Bold: [The primary maneuver/skill to be reviewed]
- ☐ Square bullets represent graded maneuvers/skills
  - Not graded, extra information
  - Not graded, extra information
- ☐ OPTIONAL [Not required]

FLIGHT TRAINING [Identifies maneuvers/skills to be introduced on this lesson]

Maneuver/Skill in Bold: [The primary maneuver/skill to be introduced]
- ☐ Square bullets represent graded maneuvers/skills
  - Not graded, extra information
  - Not graded, extra information
- ☐ OPTIONAL [Not required]

COMPLETION STANDARDS
[Summarizes the level of student performance required to complete the lesson.]

REQUIRED READING/STUDY
- A bulleted list of the reference materials for this lesson
- Students are expected to come prepared to each lesson…
- by studying the material from this list beforehand

INITIAL FLIGHT INSTRUCTOR FLIGHT TRAINING

STAGE ONE (11 HOURS)

Lessons 1-7

STAGE ONE OBJECTIVES: Stage One of this syllabus is designed to provide the Candidate time to learn how to fly from the right seat and how to teach while maintaining safe control of the aircraft. This learning will be done in an airplane that the Candidate will already be familiar with, so learning will happen quickly. During this stage, the Candidate will practice plan of action building, time management skills, and increased situational awareness during flight.

STAGE ONE COMPLETION STANDARD: This stage will be complete when the candidate has developed instructional knowledge in CFI/CFI-I operations and has passed the Stage One Check.

LESSON 1: FLIGHT
1.5 HOURS DUAL
0.5 HOURS PRE/POST

LESSON OBJECTIVE

This lesson is for the candidate to practice flying a familiar airplane from the right seat while talking/teaching through maneuvers. This lesson will primarily cover takeoff/landings. If time permits, basic maneuvers may be practiced.

Lesson Requirements:

- 4 landings, one slip to land incorporated

Note: Ground lesson 3 will be complete before flying this lesson.

GROUND TRAINING: Review

Takeoffs, Landings, and Go-Arounds

- ☐ Normal takeoff/landings
- ☐ Short takeoff/landings
- ☐ Soft takeoff/landings
- ☐ Slip to Land
- ☐ Go-Around
- ☐ Power off 180

FLIGHT TRAINING

Start, Taxi, Run-Up

- ☐ Demonstrate and explain checklist use
- ☐ Instruct “Student” during start-up
- ☐ Demonstrate/explain taxi and run-up

Takeoffs, Landings, Go-Arounds

(Demonstrate/Explain the following)

- ☐ Normal/Crosswind takeoff/landing
  - How to teach a student pilot to land (low approaches)
- ☐ Short field takeoff/landing
- ☐ Soft field takeoff/landing
- ☐ Slip to landing
- ☐ Go-around
- ☐ Power off 180

Navigation

- ☐ Practice area navigation
  - Entry
  - How to remain within
- ☐ Climb/Cruise/Pre-maneuver checklists
- ☐ Teach Pilotage
- ☐ Trim usage

Traffic Patterns

- ☐ Appropriate entry procedures
  - Mankato entries only apply to Mankato
- ☐ Radio communication

Slow Flight and Stalls

- ☐ OPTIONAL: Slow flight
- ☐ OPTIONAL: Power on/off stall
- ☐ OPTIONAL: Cross control
- ☐ OPTIONAL: Elevator trim stall
- ☐ OPTIONAL: Secondary stall
- ☐ OPTIONAL: Accelerated stall

Performance Maneuvers

- ☐ OPTIONAL: Steep turns
- ☐ OPTIONAL: Steep spirals
- ☐ OPTIONAL: Chandelles
- ☐ OPTIONAL: Lazy eights

Ground Reference Maneuvers

- ☐ OPTIONAL: Rectangular Course
- ☐ OPTIONAL: Turns around a Point
- ☐ OPTIONAL: S-Turns across a road
- ☐ OPTIONAL: Eights on pylons

COMPLETION STANDARDS

This lesson is complete when the student has been introduced to right seat flying and teaching while flying.

REQUIRED READING/STUDY

- Ground Lesson 3

LESSON 2: FLIGHT
1.5 HOURS DUAL
0.5 HOURS PRE/POST

LESSON OBJECTIVE

This lesson is for the candidate to continue gaining proficiency flying from the right seat while talking/teaching through maneuvers. This lesson will primarily cover the maneuvers taught on ground lesson 3. If time permits, takeoff/landing topics can be reviewed.

Lesson Requirements:

- 1 landing

GROUND TRAINING: Review

Slow Flight and Stalls

- ☐ Slow Flight
- ☐ Power on stall
- ☐ Power off stall
- ☐ Cross control stall
- ☐ Elevator trim stall
- ☐ Secondary stall
- ☐ Accelerated stall

Performance Maneuvers

- ☐ Steep turns
- ☐ Chandelles
- ☐ Steep spirals
- ☐ Lazy eights

Ground Reference Maneuvers

- ☐ Rectangular course
- ☐ Turns around a point
- ☐ S-turns across a road
- ☐ Eights on pylons

FLIGHT TRAINING: Review

Start, Taxi, Run-Up

- ☐ Demonstrate and explain checklist use
- ☐ Instruct “Student” during start-up
- ☐ Demonstrate/explain taxi and run-up

Takeoffs, Landings, Go-Arounds

(Demonstrate/Explain the following)

- ☐ OPTIONAL: Normal/Crosswind takeoff/landing
  - How to teach a student pilot to land (low approaches)
- ☐ OPTIONAL: Short field takeoff/landing
- ☐ OPTIONAL: Soft field takeoff/landing
- ☐ OPTIONAL: Slip to landing
- ☐ OPTIONAL: Go-around
- ☐ OPTIONAL: Power off 180

Navigation

- ☐ Practice area navigation
  - Entry
  - How to remain within
- ☐ Climb/Cruise/Pre-maneuver checklists
- ☐ Teach Pilotage
- ☐ Trim usage

Traffic Patterns

- ☐ Appropriate entry procedures
  - Mankato entries only apply to Mankato
- ☐ Radio communication

FLIGHT TRAINING

Slow Flight and Stalls

- ☐ Slow Flight
- ☐ Power on/off stall
- ☐ Cross control stall
- ☐ Elevator trim stall
- ☐ Secondary stall
- ☐ Accelerated stall

Performance Maneuvers

- ☐ Steep turns
- ☐ Chandelles
- ☐ Steep spirals
- ☐ Lazy eights

Ground Reference Maneuvers

- ☐ Rectangular course
- ☐ Turns around a point
- ☐ S-turns across a road
- ☐ Eights on pylons

COMPLETION STANDARDS

This lesson is complete when the student has gained more experience flying/teaching from the right seat.

REQUIRED READING/STUDY

- Ground Lesson 3

LESSON 3: FLIGHT
1.5 HOURS DUAL
0.5 HOURS PRE/POST

LESSON OBJECTIVE

This lesson will satisfy the flight portion of the Spin training. At the completion of this lesson, the student will be issued the spin training endorsement required for the checkride.

Lesson Requirements:

- 1 landing

Note: Ground lesson 4 will be complete before flying this lesson.

GROUND TRAINING:

Preflight Briefing

- ☐ Candidate flies right seat
- ☐ Speak up if feeling sick
- ☐ Clearing Turns (watch below)
- ☐ Pre-spin safety check
- ☐ Typical training order

FLIGHT TRAINING:

Warm-up Maneuvers

- ☐ Climb to 6,000’ (5,000’ Minimum)
- ☐ Clearing turns
- ☐ Power on stall to full stall (note airspeed at break for reference)

Spin Demo(s)

- ☐ “Ice breaker” spin
  - Instructor flies a spin to the left
- ☐ Instructor flies a spin to the right
  - Candidate follows on controls

Candidate flies/teaches spins

- ☐ Practice spins
  - One left/one right
  - Instructor verbalizes when to recover
- ☐ Teach Spins
  - One Left/one right
  - Candidate verbalizes recovery

Scenario-based training

- ☐ OPTIONAL: Instructor acts as student pilot
  - Skid during stall entry.
  - Candidate gives verbal instruction/critique during stall
  - Candidate takes over to recover spin.
- ☐ OPTIONAL: Candidate attempts cross control stall to enter spin
- ☐ OPTIONAL: Induce wing drop during a stall and level wings with rudder

COMPLETION STANDARDS

This lesson is complete when the candidate has demonstrated instructional knowledge in stall/spin recoveries and the endorsement has been issued.

REQUIRED READING/STUDY

- Ground Lesson 4

LESSON 4: Flight
1.5 HOURS DUAL
0.5 HOURS PRE/POST

LESSON OBJECTIVE

This lesson will provide the candidate an opportunity to simulate an Instrument Proficiency Check (IPC). The Candidate will develop a plan of action that would meet all requirements for an IPC. The Candidate will pretend to be ATC, and practice teaching students while also planning out realistic clearances/instructions.

Lesson Requirements:

- 3 approaches

Note: Ground lesson 5 will be complete before flying this lesson.

GROUND TRAINING:

Preflight Preparation

- ☐ Review Plan of Action

FLIGHT TRAINING:

Basic Instrument Maneuvers

- ☐ Straight-and-level flight
- ☐ Turns and climbing turns
- ☐ OPTIONAL: Constant airspeed climbs and descents
- ☐ OPTIONAL: Constant rate climbs and descents
- ☐ Unusual Attitudes

Cross Country Procedures

- ☐ Departure
  - Candidate gives clearance
- ☐ Enroute navigation
  - Victor Airway (using GPS)
  - Candidate will create a diversion scenario
- ☐ ATC communication
- ☐ In range procedures

Instrument Approach Procedures

- ☐ ILS approach to the DA
- ☐ DME Arc
  - Turn-Ten-Twist-Ten only
  - Can be simulated with OBS if no arc is available
- ☐ Partial Panel GPS approach
- ☐ VOR approach
- ☐ Missed approach

Emergency Procedures

- ☐ Loss of communication
- ☐ PFD failure
- ☐ Emergency equipment and survival gear

After Landing & Post Flight Procedures

- ☐ Close IFR flight plan
- ☐ After landing checklist
- ☐ Parking and securing the aircraft
- ☐ Post flight inspection

COMPLETION STANDARDS

This lesson is complete when the candidate has taught the above tasks in the PA28 while simultaneously maintaining safe flight.

REQUIRED READING/STUDY

- AC 61-98

LESSON 5: Flight
2.0 HOURS DUAL
0.5 HOURS PRE/POST

LESSON OBJECTIVE

This lesson will provide the candidate an opportunity to apply skills learnt thus far. This lesson will be conducted as an IFR cross country. The candidate will develop a plan of action that will allow all graded topics on this lesson to be completed in a logical sequence. The flight will be conducted on an actual IFR clearance with ATC.

Lesson Requirements:

- 3 approaches
- 1 landing

Note: Ground lessons 6, and 8 will be complete before flying this lesson.

GROUND TRAINING:

Preflight Preparation

- ☐ Flight Planning
- ☐ Weather Brief
- ☐ Filing a Flight Plan

FLIGHT TRAINING:

Basic Instrument Maneuvers

- ☐ Straight-and-level flight
- ☐ Turns and climbing turns
- ☐ Constant airspeed climbs and descents
- ☐ Constant rate climbs and descents
- ☐ Unusual Attitudes

Partial Panel Maneuvers

- ☐ Timed Turns
- ☐ Compass Turns
    - Discuss Pattern D and Vertical S series

Cross Country Procedures

- ☐ Departure
- ☐ Enroute navigation
    - Victor airway (using VOR)
- ☐ ATC communication
- ☐ In range procedures

Instrument Approach Procedures

- ☐ ILS approach to the DA
- ☐ DME Arc
    - Turn-Ten-Twist-Ten method
    - Can be simulated with OBS if no arc is available
- ☐ Partial Panel GPS approach
- ☐ VOR Approach

Emergency Procedures

- ☐ Loss of communication
- ☐ PFD failure
- ☐ Emergency equipment and survival gear

After Landing & Post Flight Procedures

- ☐ Close IFR flight plan
- ☐ After landing checklist
- ☐ Parking and securing the aircraft
- ☐ Post flight inspection

COMPLETION STANDARDS

This lesson is complete when the candidate has performed the above tasks within Instrument ACS standards. The Candidate will be able to teach in a controlled environment while maintaining safe flight and complying with ATC instructions.

REQUIRED READING/STUDY

- Ground Lessons 5, 6, and 8

LESSON 6: Flight
1.5 HOURS DUAL
0.5 HOURS PRE/POST

LESSON OBJECTIVE

The content of this lesson is at the discretion of the Instructor and Candidate. This lesson will be conducted like a flight review, but it will also review maneuvers before the stage check. Time will be used to focus on any weak areas for the Candidate.

Note: This lesson will be complete before the Ground Stage 1 Check (lesson 14).

GROUND TRAINING:

Preflight Preparation

- ☐ PA-28 Preflight
- ☐ Flight review
  - Requirements
  - Plan of Action Building
  - WINGS Program

FLIGHT TRAINING:

Takeoffs, Landings, Go-Arounds

- ☐ OPTIONAL: Normal/X-wind Takeoff/Land
- ☐ OPTIONAL: Short Field Takeoff/Land
- ☐ OPTIONAL: Soft Field Takeoff/Land
- ☐ OPTIONAL: Low Approach to Go-Around
- ☐ OPTIONAL: Slip to landing
- ☐ OPTIONAL: Power Off 180

Slow Flight and Stalls

- ☐ OPTIONAL: Slow flight
- ☐ OPTIONAL: Power on/off stall
- ☐ OPTIONAL: Cross control
- ☐ OPTIONAL: Elevator trim stall
- ☐ OPTIONAL: Secondary stall
- ☐ OPTIONAL: Accelerated stall

Performance Maneuvers

- ☐ OPTIONAL: Steep turns
- ☐ OPTIONAL: Steep spirals
- ☐ OPTIONAL: Chandelles
- ☐ OPTIONAL: Lazy eights

Ground Reference Maneuvers

- ☐ OPTIONAL: Rectangular Course
- ☐ OPTIONAL: Turns around a Point
- ☐ OPTIONAL: S-Turns across a road
- ☐ OPTIONAL: Eights on pylons

Basic Instrument Maneuvers

- ☐ OPTIONAL: Straight-and-level flight
- ☐ OPTIONAL: Turns and climbing turns
- ☐ OPTIONAL: Constant airspeed climbs and descents
- ☐ OPTIONAL: Unusual Attitudes

Cross Country Procedures (IFR)

- ☐ OPTIONAL: Departure
  - Candidate gives clearance
- ☐ OPTIONAL: Enroute navigation
  - Victor Airway (using GPS)
  - Create a diversion scenario
- ☐ OPTIONAL: ATC communication
- ☐ OPTIONAL: Arrival procedures

Partial Panel Maneuvers

- ☐ OPTIONAL: Timed Turns
- ☐ OPTIONAL: Compass Turns
  - Discuss Pattern D and Vertical S series

Instrument Approach Procedures

- ☐ OPTIONAL: ILS approach to the DA
- ☐ OPTIONAL: DME Arc
  - Can be simulated with OBS if no arc is available
- ☐ OPTIONAL: Partial Panel GPS approach
- ☐ OPTIONAL: VOR approach
- ☐ OPTIONAL: Missed approach

Emergency Procedures

- ☐ OPTIONAL: Loss of communication
- ☐ OPTIONAL: PFD failure
- ☐ OPTIONAL: Emergency Approach/Land
- ☐ OPTIONAL: Emergency Descent

After Landing & Post Flight Procedures

- ☐ After landing checklist
- ☐ Parking and securing the aircraft
- ☐ Post flight inspection

COMPLETION STANDARDS

This lesson is complete when the candidate has flown the above tasks within Flight Instructor Airplane or Flight Instructor Instrument PTS/ACS standards as applicable. The Candidate will demonstrate instructional knowledge in the PA28, and they will be ready for the stage 1 check.

REQUIRED READING/STUDY

- All Previous Flight Lessons
- “Conducting an Effective Flight Review”
  - Faasafety.gov

LESSON 7: STAGE ONE CHECK
1.5 HOURS DUAL
0.5 HOURS PRE/POST

LESSON OBJECTIVE

The Chief/Assistant Chief Instructor or an approved Stage Check Pilot will evaluate the student's progress thus far in the stage. The evaluator will tell the candidate what items will be evaluated on the stage check, and the candidate will develop a plan of action to allow all items to be completed. Items covered on the stage check are mostly at the discretion of the evaluator; however, at least one task in each **Bold** section will be evaluated.

Lesson Requirements:

- 3 landings
- 1 approach

GROUND TRAINING: Review

Preflight Preparation

- ☐ Plan of Action Building
- ☐ PA-28 Preflight

FLIGHT TRAINING: Review

Start, Taxi, Run-Up

- ☐ Checklist use
- ☐ Instruct "Student" during start-up
- ☐ Demonstrate/explain taxi and run-up

Takeoffs, Landings, Go-Arounds

- ☐ Short Field Takeoff/Land
- ☐ Soft Field Takeoff/Land
- ☐ OPTIONAL: Low Approach to Go-Around
- ☐ OPTIONAL: Slip to landing
- ☐ Power Off 180

Slow Flight and Stalls

- ☐ OPTIONAL: Slow flight
- ☐ Power on stall
- ☐ Power off stall
- ☐ Accelerated stall

Performance Maneuvers

- ☐ Steep turns
- ☐ Steep spirals
- ☐ Chandelles
- ☐ Lazy eights

Ground Reference Maneuvers

- ☐ OPTIONAL: Rectangular Course
- ☐ OPTIONAL: Turns around a Point
- ☐ OPTIONAL: S-Turns across a road
- ☐ Eights on pylons

Basic Instrument Maneuvers

- ☐ OPTIONAL: Straight-and-level flight
- ☐ OPTIONAL: Turns and climbing turns
- ☐ OPTIONAL: Constant airspeed climbs and descents
- ☐ Unusual Attitudes

Cross Country Procedures

- ☐ OPTIONAL: Departure
  - Candidate gives clearance
- ☐ OPTIONAL: Enroute navigation
  - Victor Airway (using GPS)
  - Candidate will create a diversion scenario
- ☐ ATC communication
- ☐ OPTIONAL: Arrival procedures

Instrument Approach Procedures

- ☐ ILS approach to the DA
- ☐ DME Arc
  - Turn-Ten-Twist-Ten/Bearing Pointer
  - Can be simulated with OBS if no arc is available
- ☐ OPTIONAL: Partial Panel GPS approach
- ☐ OPTIONAL: VOR approach
- ☐ OPTIONAL: Missed approach

Emergency Procedures

- ☐ Loss of communication
- ☐ OPTIONAL: PFD failure
- ☐ Emergency Approach/Land
- ☐ OPTIONAL: Emergency Descent

After Landing & Post Flight Procedures

- ☐ After landing checklist
- ☐ Parking and securing the aircraft
- ☐ Post flight inspection

COMPLETION STANDARDS

This lesson is complete when the Candidate has flown the above tasks within Flight Instructor Airplane or Flight Instructor Instrument PTS/ACS standards as applicable, and when they have demonstrated instructional knowledge in the completed maneuvers.

REQUIRED READING/STUDY

- All Previous Flight Lessons

INITIAL FLIGHT INSTRUCTOR FLIGHT TRAINING

STAGE TWO (15.0 HOURS)

LESSONS 8-16

STAGE TWO OBJECTIVES: In this stage the Candidate will develop instructional knowledge in Multi-Engine operations. The Candidate will also develop the aeronautical experience and proficiency requirements of Part 141 Appendix F and the Flight Instructor for Airplane Category Airmen Certification Standards.

STAGE TWO COMPLETION STANDARDS: This stage is complete when the Candidate has demonstrated instructional knowledge in Multi-Engine flight operations, and when they have passed the Stage Two Check.

LESSON 8: Flight
1.5 HOURS DUAL
0.5 HOURS PRE/POST

LESSON OBJECTIVE

This lesson is the first flight lesson in the PA-44-180, and the goal is to reacquaint the candidate with flying the Seminole while introducing right seat operations. Prior to going to the airplane, the Candidate will pre-brief a landing topic, a slow flight and stalls topic, and steep turns. The briefing will include the purpose of the maneuver, description of how to perform the maneuver, common errors, and applicable ACS standards for the maneuver. The Candidate will practice instruct during all ground operations (start-up, taxi, ground-run, shutdown); however, practice instruction of flight maneuvers is not required. The goal in flight is to regain confidence flying a complex airplane.

Note: Ground Lesson 15 will be complete before conducting this lesson.

GROUND TRAINING:

Preflight Briefing

- ☐ Takeoff/Landing
- ☐ Slow Flight and Stalls
- ☐ Steep Turns

Preflight Preparation

- ☐ PA-44 Preflight
- ☐ Engine Start
- ☐ Taxi Procedures

FLIGHT TRAINING:

Takeoffs, Landings, Go-Arounds

- ☐ Normal/X-wind Takeoff/Land
- ☐ OPTIONAL: Short Field Takeoff/Land
- ☐ OPTIONAL: Go-Around

Slow Flight and Stalls

- ☐ Slow flight
- ☐ Power on stall
- ☐ Power off stall
- ☐ OPTIONAL: Accelerated stall

Performance Maneuvers

- ☐ Steep turns

Ground Reference Maneuvers

- ☐ OPTIONAL: Rectangular Course
- ☐ OPTIONAL: Turns around a Point
- ☐ OPTIONAL: S-Turns across a road

After Landing & Post Flight Procedures

- ☐ After landing checklist
- ☐ Parking and securing the aircraft
- ☐ Post flight inspection

COMPLETION STANDARDS

This lesson is complete when the candidate has been introduced to teaching in the PA44 during ground operations. The preflight briefing of maneuvers to be performed will demonstrate instructional knowledge of the correct procedures, applicable techniques, common errors, and the associated ACS standards.

REQUIRED READING/STUDY

- Airplane Flying Handbook Ch. 12
- Ground Lesson 15

LESSON 9: Flight
1.5 HOURS DUAL

LESSON OBJECTIVE

This lesson introduces the candidate to instructing in the PA-44-180.

Lesson Requirements:

- 2 landings

Note: Ground Lesson 16 will be completed prior to conducting this lesson.

GROUND TRAINING:

Preflight Preparation

- ☐ Engine Start
  - Demonstrate and explain checklist usage
  - Instruct during start-up
- ☐ Taxi Procedures
  - Demonstrate and explain
- ☐ Run-Up

FLIGHT TRAINING:

Takeoffs, Landings, Go-Arounds

- ☐ Normal/X-wind Takeoff
- ☐ Normal/X-wind Landing
- ☐ Short Field Takeoff
- ☐ Short Field Landing
- ☐ Go-Around

Fundamentals of Flight

- ☐ Straight and Level
  - Trim
  - Sight Picture
- ☐ Level Turns
  - Turns with Rudder Only
- ☐ Straight Climbs and Climbing turns
- ☐ Straight Descents and Descending Turns

Slow Flight and Stalls

- ☐ Slow flight
- ☐ Power on stall
- ☐ Power off stall
- ☐ Accelerated stall
  - Level wings with Rudder

Performance Maneuvers

- ☐ Steep turns

Multiengine Operations

- ☐ OPTIONAL: V_{MC}
- ☐ OPTIONAL: Full engine shutdown and air restart

Traffic Pattern

- ☐ Proper Entry Procedures
- ☐ Maintain Situational Awareness
  - Know when to teach and when to fly

After Landing & Post Flight Procedures

- ☐ After landing checklist
- ☐ Parking and securing the aircraft
- ☐ Post flight inspection

COMPLETION STANDARDS

This lesson is complete when the candidate has been introduced to instructing while flying in the PA44 safely.

REQUIRED READING/STUDY

- Ground Lesson 16

LESSON 10: Flight
1.5 HOURS DUAL

LESSON OBJECTIVE

This lesson introduces the candidate to teaching V_{MC} (If it wasn't introduced on lesson 9), Drag Demo, and Ground Reference Maneuvers. Since these lessons would have already been taught on the ground, briefings on the maneuver can be conducted in the airplane. Auto Pilot and Flight Director use will be taught to/from the practice area. If time permits, other topics may be practiced (grade what is done).

GROUND TRAINING:

Preflight Preparation

- ☐ Engine Start
- ☐ Taxi Procedures

FLIGHT TRAINING:

Takeoffs, Landings, Go-Arounds

- ☐ OPTIONAL: Normal/X-wind Takeoff/Land
- ☐ Short Field Takeoff
- ☐ Short Field Landing
- ☐ OPTIONAL: Go-Around

Slow Flight and Stalls

- ☐ OPTIONAL: Slow flight
- ☐ OPTIONAL: Power on/off stall
- ☐ OPTIONAL: Accelerated stall

Performance Maneuvers

- ☐ OPTIONAL: Steep turns

Ground Reference Maneuvers

- ☐ S-Turns
- ☐ Turn Around a Point
- ☐ OPTIONAL: Rectangular Course

Auto Pilot Use

- ☐ Levels of Automation
- ☐ Flight Director Use
  - TO/GA
- ☐ Vertical Modes
- ☐ Lateral Modes
- ☐ Approach Mode

Multiengine Operations

- ☐ V_{MC}
- ☐ Demonstration of Effects of Various Airspeeds and Configurations during Engine Inoperative Performance (AOO XIII Task C)
- ☐ OPTIONAL: Full engine shutdown and air restart

After Landing & Post Flight Procedures

- ☐ After landing checklist
- ☐ Parking and securing the aircraft
- ☐ Post flight inspection

COMPLETION STANDARDS

This lesson is complete when the candidate has performed the above tasks. At the end of this lesson, the Candidate will recognize areas to improve on while teaching during simulated single engine operations.

REQUIRED READING/STUDY

- Ground Lesson 16

LESSON 11: Flight
1.5 HOURS DUAL

LESSON OBJECTIVE

This lesson allows the Candidate to continue gaining proficiency flying and teaching all normal maneuvers in the Piper Seminole. Most maneuvers are listed as optional to allow the Candidate and Instructor to determine what maneuvers need additional practice before moving into emergency procedures on the next lesson. The Candidate will develop a plan of action that will cover all maneuvers to be practiced, and the Instructor will fly some of the maneuvers while the candidate instructs. Employing common errors is vital for the candidate to build his/her evaluation skills.

Lesson Requirements:

- 1 landing

GROUND TRAINING:

Preflight Preparation

- ☐ Preflight Inspection
- ☐ Engine Start
- ☐ Taxi Procedures

FLIGHT TRAINING:

Takeoffs, Landings, Go-Arounds

- ☐ Traffic Pattern Entry
- ☐ Short Field Takeoff (Vx ±10kts)
- ☐ Short Field Landing (within 200ft)
- ☐ OPTIONAL: Normal/X-wind Takeoff/Land
- ☐ OPTIONAL: Go-Around

Slow Flight and Stalls

- ☐ OPTIONAL: Slow flight
- ☐ OPTIONAL: Power off stall
- ☐ OPTIONAL: Power on stall
- ☐ OPTIONAL: Accelerated stall

Performance Maneuvers

- ☐ OPTIONAL: Steep turns

Ground Reference Maneuvers

- ☐ OPTIONAL: S-Turns
- ☐ OPTIONAL: Turn Around a Point
- ☐ OPTIONAL: Rectangular Course

Auto Pilot Use

- ☐ Flight Director Use

Multiengine Operations

- ☐ OPTIONAL: V_{MC}
- ☐ OPTIONAL: Engine failure (simulated) after liftoff and in the traffic pattern (>500') (AOO XII Task F)
- ☐ OPTIONAL: Single engine (simulated) pattern and landing
- ☐ OPTIONAL: Full engine shutdown and air restart

After Landing & Post Flight Procedures

- ☐ After landing checklist
- ☐ Parking and securing the aircraft
- ☐ Post flight inspection

COMPLETION STANDARDS

This lesson is complete when the student has performed all required landings and maneuvers to the standards noted in ( ), when applicable. The Candidate will demonstrate instructional knowledge during normal operations. If the Instructor/Candidate progress into the "optional" emergency maneuvers on this lesson, the Candidate will be introduced to flying the maneuvers safely from the right seat. Proficiency is not required; however, the correct procedures and techniques will be used. When the Instructor flies, the Candidate will provide debriefs to the instructor containing obvious errors. The Candidate will start noticing more subtle errors (ex. Feet on the floor instead of on the rudder pedals).

REQUIRED READING/STUDY

- All Previous Flight Lessons

LESSON 12: Flight
1.5 HOURS DUAL

LESSON OBJECTIVE

This flight lesson focuses on single engine/emergency operations. The Instructor (i.e. "student") will perform the takeoff, and the candidate will initiate an Engine Failure During Takeoff Before 50% of V_{MC}, monitoring the "student" for safe operation during the rejected takeoff. The candidate will create a scenario which strings the required maneuvers together in a way that flows and maximizes efficiency.

Lesson Requirements:

- 2 landings
- 1 approach

GROUND TRAINING:

Preflight Preparation

- ☐ Preflight Inspection
- ☐ Engine Start
- ☐ Taxi Procedures

FLIGHT TRAINING:

Takeoffs, Landings, Go-Arounds

- ☐ Short Field Takeoff (Vx ±10kts)
- ☐ Short Field Landing (within 200ft)
- ☐ OPTIONAL: Normal/X-wind Takeoff (V_y, ±10) /Land (1.3 V_{SO}, ±10)
- ☐ OPTIONAL: Go-Around

Slow Flight and Stalls

- ☐ OPTIONAL: Slow flight (±150ft, ±15° heading)
- ☐ OPTIONAL: Power off stall (±15° heading)
- ☐ OPTIONAL: Power on stall (±15° heading)
- ☐ OPTIONAL: Accelerated stall (recover at first stall indication)

Performance Maneuvers

- ☐ OPTIONAL: Steep turns (±150ft, ±15° heading, ±10° bank)

Ground Reference Maneuvers

- ☐ OPTIONAL: S-Turns (±150ft, ±15 knots)
- ☐ OPTIONAL: Turn Around a Point (±150ft, ±15 knots)
- ☐ OPTIONAL: Rectangular Course (±150ft, ±15 knots)

Auto Pilot Use

- ☐ Flight Director Use
- How to use on a single engine approach or in cruise

Emergency Operations

- ☐ Emergency descent (AOO XII Task A) (+0/-15kts)

Multiengine Operations – OEI

- ☐ Engine failure (simulated) during takeoff prior to 50% V_{MC} (maintain directional control)
- ☐ Engine failure (simulated) after liftoff and in the traffic pattern >500' (±15° heading, ±10 kts)
- ☐ Single engine (simulated) pattern and landing (maintain centerline and first third of available runway)
- ☐ Full engine shutdown and air restart (±150 feet or a minimum sink rate if applicable, 15° heading)
- ☐ Maneuvering OEI by reference to instruments (±150 feet or a minimum sink rate if applicable, 15° heading)
- ☐ OEI (simulated) instrument approach (±150 feet or a minimum sink rate if applicable, 15° heading)
- ☐ V_{MC} (commercial ACS)
- ☐ OPTIONAL: Demonstration of Effects of Various Airspeeds and Configurations during Engine Inoperative Performance (AOO XIII Task C)

After Landing & Post Flight Procedures

- ☐ After landing checklist
- ☐ Parking and securing the aircraft
- ☐ Post flight inspection

COMPLETION STANDARDS

This lesson is complete when the student has performed all required landings and maneuvers to the standards noted in ( ), when applicable. The Candidate will demonstrate instructional knowledge during normal operations. The Candidate will be introduced to various methods of simulating an engine failure, and they will begin to recognize when to take flight controls from a "student". While the Instructor flies, the Candidate will provide debriefs containing obvious errors. The Candidate isn't expected to catch all subtle errors, but they will be progressing to that point. The Candidate will demonstrate the ability to plan instructional activity in an organized timely manner.

REQUIRED READING/STUDY

- POH Section 3

LESSON 13: Flight
3.0 HOURS DUAL XC
1.0 HOUR INSTRUMENT

LESSON OBJECTIVE

This lesson introduces teaching in the Seminole in a towered environment. One leg of the cross country will be IFR, and the other will be VFR. Extreme care will be taken not to violate any ATC instructions, but the Instructor (i.e. "student") will simulate common errors when it is safe to do so. Multiple take-offs and landings will be conducted to a full stop taxi back at the towered airport. At some point during the IFR leg, the candidate will request a block altitude to perform several maneuvers (kind of maneuvers is at the discretion of the instructor and candidate).

Lesson Requirement:

- 1 approach
- 3 landings

GROUND TRAINING:

Preflight Preparation

- ☐ IFR/VFR Cross Country Planning
- ☐ Preflight Inspection
- ☐ Engine Start
- ☐ Taxi Procedures

FLIGHT TRAINING:

Takeoffs, Landings, Go-Arounds

- ☐ Short Field Takeoff (Vx ±10kts)
- ☐ Short Field Landing (within 200ft)
- ☐ OPTIONAL: Normal/X-wind Takeoff/Land
- ☐ OPTIONAL: Go-Around

Slow Flight and Stalls

- ☐ OPTIONAL: Slow flight (±150ft, ±15° heading)
- ☐ OPTIONAL: Power off stall (±15° heading)
- ☐ OPTIONAL: Power on stall (±15° heading)
- ☐ OPTIONAL: Accelerated stall (recover at first stall indication)

Performance Maneuvers

- ☐ OPTIONAL: Steep turns (±150ft, ±15° heading, ±10° bank)

Auto Pilot Use

- ☐ Flight Director Use
  - How to use on a single engine approach or in cruise
- ☐ Auto Pilot Use

Emergency Operations

- ☐ Diversion
  - If time doesn't allow, discuss the procedure
- ☐ Partial Panel
  - How to simulate in G1000
- ☐ Loss of Communications
- ☐ Emergency Gear Extension
  - Will be done once in training

Multiengine Operations – OEI

- ☐ Engine failure (simulated) during takeoff prior to 50% V_{MC} (maintain directional control)
- ☐ Engine failure (simulated) after liftoff and in the traffic pattern (>500') (±15° heading, ±10 kts)
- ☐ Single engine (simulated) pattern and landing (maintain centerline and first third of available runway)
- ☐ Full engine shutdown and air restart (±150 feet or a minimum sink rate if applicable, 15° heading)
- ☐ Maneuvering OEI by reference to instruments (±150 feet or a minimum sink rate if applicable, 15° heading)
- ☐ OEI (simulated) instrument approach (±150 feet or a minimum sink rate if applicable, 15° heading)
- ☐ V_{MC} (commercial ACS)
- ☐ OPTIONAL: Demonstration of Effects of Various Airspeeds and Configurations during Engine Inoperative Performance (AOO XIII Task C)

Cross Country Procedures

- ☐ Air traffic control clearance
- ☐ Clearance copying and readback
- ☐ Enroute procedures and clearances
- ☐ Pilotage/Dead Reckoning
- ☐ Use of navigation systems and radar services
  - Airway navigation
  - Direct-to navigation

After Landing & Post Flight Procedures

- ☐ After landing checklist
- ☐ Parking and securing the aircraft
- ☐ Post flight inspection

COMPLETION STANDARDS

This lesson is complete when the student has performed all required landings and maneuvers to the standards noted in ( ), when applicable. Cross-country procedures will be flown to the commercial ACS. The Candidate will be demonstrating instructional knowledge on all maneuvers outside of an ATC environment, and they will recognize when Instruction needs to stop in an ATC environment to maintain safe/legal flight.

REQUIRED READING/STUDY

- Ground Lesson 6
- POH Section 5

LESSON 14: Flight
1.5 HOURS DUAL

LESSON OBJECTIVE

This lesson and the next are review lessons in preparation for the stage two check. Most graded items are optional to allow time to be spent on the weakest areas. The candidate will determine a lesson plan to include a sampling of maneuvers to be flown on the checkride.

Lesson Requirements:

- 2 landings

GROUND TRAINING:

Preflight Preparation

- ☐ Preflight Inspection
- ☐ Engine Start
- ☐ Taxi Procedures

FLIGHT TRAINING:

Takeoffs, Landings, Go-Arounds

- ☐ Short Field Takeoff
- ☐ Short Field Landing
- ☐ OPTIONAL: Normal/X-wind Takeoff/Land
- ☐ OPTIONAL: Go-Around

Slow Flight and Stalls

- ☐ OPTIONAL: Slow flight
- ☐ OPTIONAL: Power off stall
- ☐ OPTIONAL: Power on stall
- ☐ OPTIONAL: Accelerated stall

Performance Maneuvers

- ☐ OPTIONAL: Steep turns

Emergency Operations

- ☐ OPTIONAL: Emergency Descent

Multiengine Operations – OEI

- ☐ Engine failure (simulated) during takeoff prior to 50% V_{MC}
- ☐ Engine failure (simulated) after liftoff and in the traffic pattern (>500')
- ☐ Single engine (simulated) pattern and landing
- ☐ V_{MC}
- ☐ OPTIONAL: OEI (simulated) instrument approach
- ☐ OPTIONAL: Full engine shutdown and air restart
- ☐ OPTIONAL: Demonstration of Effects of Various Airspeeds and Configurations during Engine Inoperative Performance (AOO XIII Task C)

After Landing & Post Flight Procedures

- ☐ After landing checklist
- ☐ Parking and securing the aircraft
- ☐ Post flight inspection

COMPLETION STANDARDS

This lesson is complete when the candidate has performed the above tasks within Commercial ACS standards. The Candidate will be demonstrating instructional knowledge on all maneuvers, and they will be able to identify and correct common errors.

REQUIRED READING/STUDY

- All Previous Flight Lessons

LESSON 15: Flight
1.5 HOURS DUAL

LESSON OBJECTIVE

This lesson, like the previous lesson, is a review lesson in preparation for the stage two check. Most graded items are optional to allow time to be spent on the weakest areas. The candidate will determine a lesson plan to include a sampling of maneuvers to be flown on the checkride.

Lesson Requirements:

- 2 landings

Note: This lesson will be complete before the Ground Stage 2 check (lesson 22).

GROUND TRAINING:

Preflight Preparation

- ☐ Preflight Inspection
- ☐ Engine Start
- ☐ Taxi Procedures

FLIGHT TRAINING:

Takeoffs, Landings, Go-Arounds

- ☐ Short Field Takeoff
- ☐ Short Field Landing
- ☐ OPTIONAL: Normal/X-wind Takeoff/Land
- ☐ OPTIONAL: Go-Around

Slow Flight and Stalls

- ☐ OPTIONAL: Slow flight
- ☐ OPTIONAL: Power off stall
- ☐ OPTIONAL: Power on stall
- ☐ OPTIONAL: Accelerated stall

Performance Maneuvers

- ☐ OPTIONAL: Steep turns

Emergency Operations

- ☐ OPTIONAL: Emergency Descent

Multiengine Operations – OEI

- ☐ Engine failure (simulated) during takeoff prior to 50% V_{MC}
- ☐ Engine failure (simulated) after liftoff and in the traffic pattern (>500')
- ☐ Single engine (simulated) pattern and landing
- ☐ V_{MC}
- ☐ OPTIONAL: OEI (simulated) instrument approach
- ☐ OPTIONAL: Full engine shutdown and air restart
- ☐ OPTIONAL: Demonstration of Effects of Various Airspeeds and Configurations during Engine Inoperative Performance (AOO XIII Task C)

After Landing & Post Flight Procedures

- ☐ After landing checklist
- ☐ Parking and securing the aircraft
- ☐ Post flight inspection

COMPLETION STANDARDS

This lesson is complete when the candidate has performed the above tasks within Commercial ACS standards. The Candidate will be demonstrating instructional knowledge on all maneuvers, and they will be able to identify and correct common errors.

REQUIRED READING/STUDY

- All Previous Flight Lessons

LESSON 16: STAGE 2 CHECK
1.5 HOURS DUAL
0.5 HOURS PRE/POST

LESSON OBJECTIVE

The Stage Two flight check should be conducted in the same manner as the checkride. The check pilot should use the FAA Flight Instructor for Airplane Category ACS as a guide when determining which topics to cover within the allotted time.

Lesson Requirements:

- 3 landings

Note: The ground Stage 2 check must be complete/satisfied before conducting this stage check.

Preflight Procedures (AOO V)
- ☐ Preflight Assessment
- ☐ Flight Deck Management
- ☐ Engine Starting
- ☐ Taxiing, Airport Signs, and Lighting
- ☐ Before Takeoff Check

Airport and Seaplane Base Operations (AOO VI)
- ☐ Must Select one (note which one(s))
  - Communications, Light Signals, and Runway Lighting Systems
  - Traffic Patterns

Takeoffs, Landings, Go-Arounds (AOO VII)
- ☐ Short Field Takeoff and Maximum Performance Climb
- ☐ Short Field Approach and Landing
- ☐ Normal Takeoff and Climb
- ☐ Normal Approach and Landing
- ☐ Go-Around

Fundamentals of Flight (AOO VIII)
- ☐ Must Select one (note which one(s))
  - Straight and Level Flight
  - Level Turns
  - Straight Climbs and Climbing Turns
  - Straight Descents and Descending Turns

Slow Flight, Stalls, and Spins (AOO X)
- ☐ Slow flight
- ☐ Must Select one
  - Power off stall
  - Power on stall
  - Accelerated stall

Performance and Ground Reference Maneuvers (AOO IX)
- ☐ Steep turns
- ☐ Must select one
  - Rectangular Course
  - S-Turns
  - Turns Around a Point

Basic Instrument Maneuvers (AOO XI)
- ☐ Must Select one
  - Recovery from Unusual Flight Attitudes
  - Straight and Level Flight
  - Constant Airspeed Climbs
  - Constant Airspeed Descents
  - Turns to Headings

Emergency Operations (AOO XII)
- ☐ Must Select one
  - Engine Failure During Takeoff Before VMC (Simulated)
  - Engine Failure After Liftoff (Simulated)
- ☐ Approach and Landing with an Inoperative Engine (Simulated)
- ☐ Must Select one
  - Systems and Equipment Malfunctions
  - Emergency Equipment and Survival Gear
  - Emergency Descent

Multiengine Operations (AOO XIII)
- ☐ Maneuvering with One Engine Inoperative
- ☐ V_{MC} Demonstration
- ☐ Demonstration of Effects of Various Airspeeds and Configurations during Engine Inoperative Performance

Post Flight Procedures (AOO XIV)
- ☐ After Landing, Parking, and Securing

COMPLETION STANDARDS

The student must meet current FAA Flight Instructor for Airplane Category ACS in all areas of operation.

REQUIRED READING/STUDY

- All Previous Flight Lessons

INTENTIONALLY
LEFT
BLANK

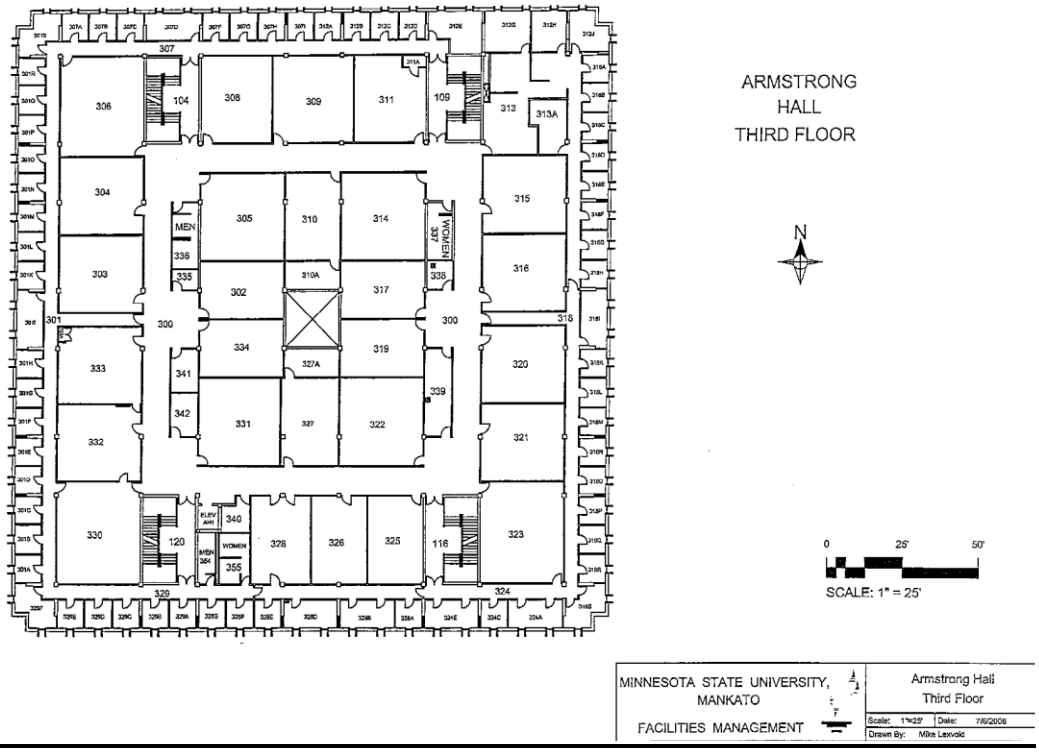
APPENDIX A
Ground Instruction Facilities

The training rooms at MNSU and NSA are well lighted, and the temperature is thermostatically controlled. Each room is ventilated and conforms to the city of Mankato building, sanitation, and health codes. The rooms are designed and located so that students will not be distracted by instruction conducted in the other rooms or by flight and maintenance operations at the airport.

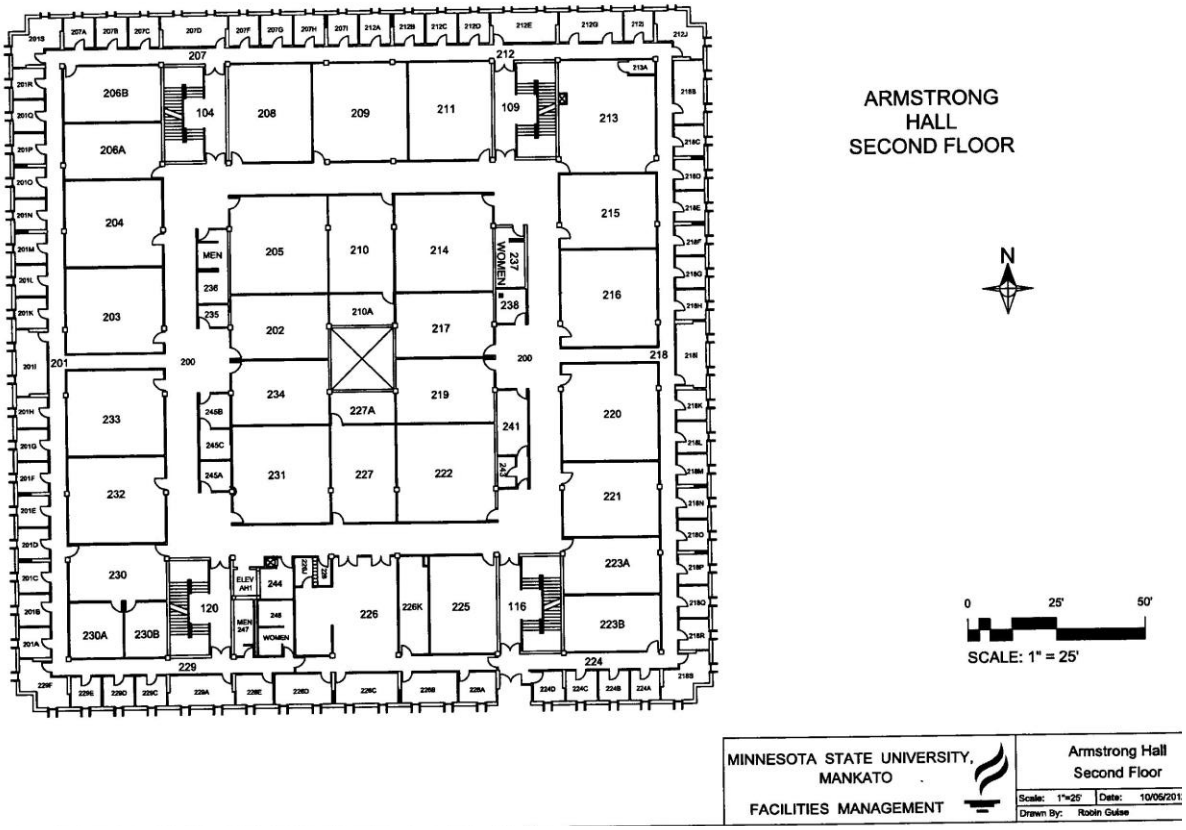
MNSU Armstrong Hall Room Capacity and Square Footage

Room #	Capacity	Sq. Ft.	Room #	Capacity	Sq. Ft.
302	33	503	334	33	501
303	36	669	202	33	504
304	43	674	203	27	665
305	48	762	204	27	670
306	58	881	205	40	761
308	42	644	208	40	650
309	40	733	209	36	741
310	32	501	211	42	650
311	41	653	213	55	882
314	40	764	214	50	761
315	34	671	215	38	581
316	44	664	216	40	763
317	30	501	217	33	503
319	33	500	219	33	505
320	32	665	220	40	761
321	38	671	221	28	581
322	35	765	222	50	770
323	58	881	225	30	522
325	30	502	231	50	762
326	25	502	232	44	668
327	26	528	233	42	668
330	43	882	101	161	1539
331	30	740	102	112	1282
332	10	673	123	42	633
333	30	669			

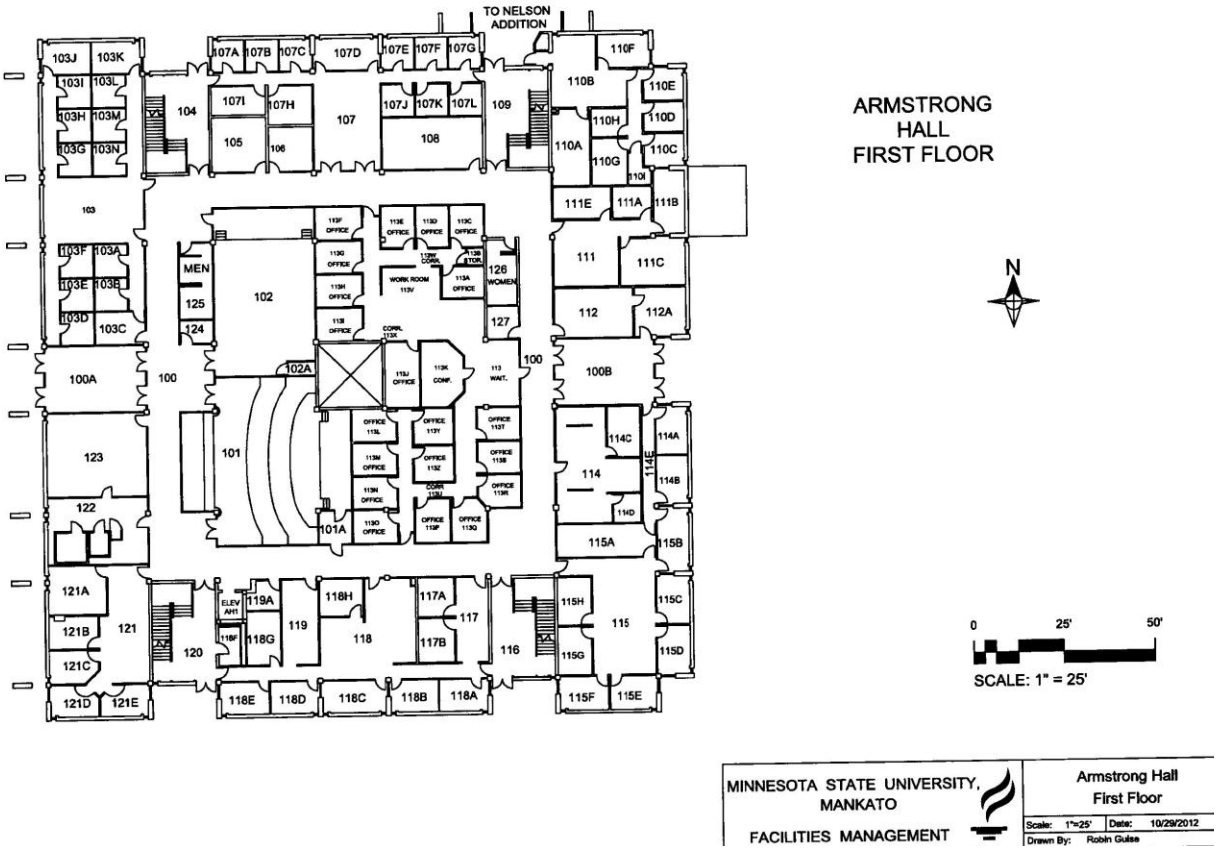
MNSU Armstrong Hall Room Third Floor



MNSU Armstrong Hall Room Second Floor



MNSU Armstrong Hall Room First Floor

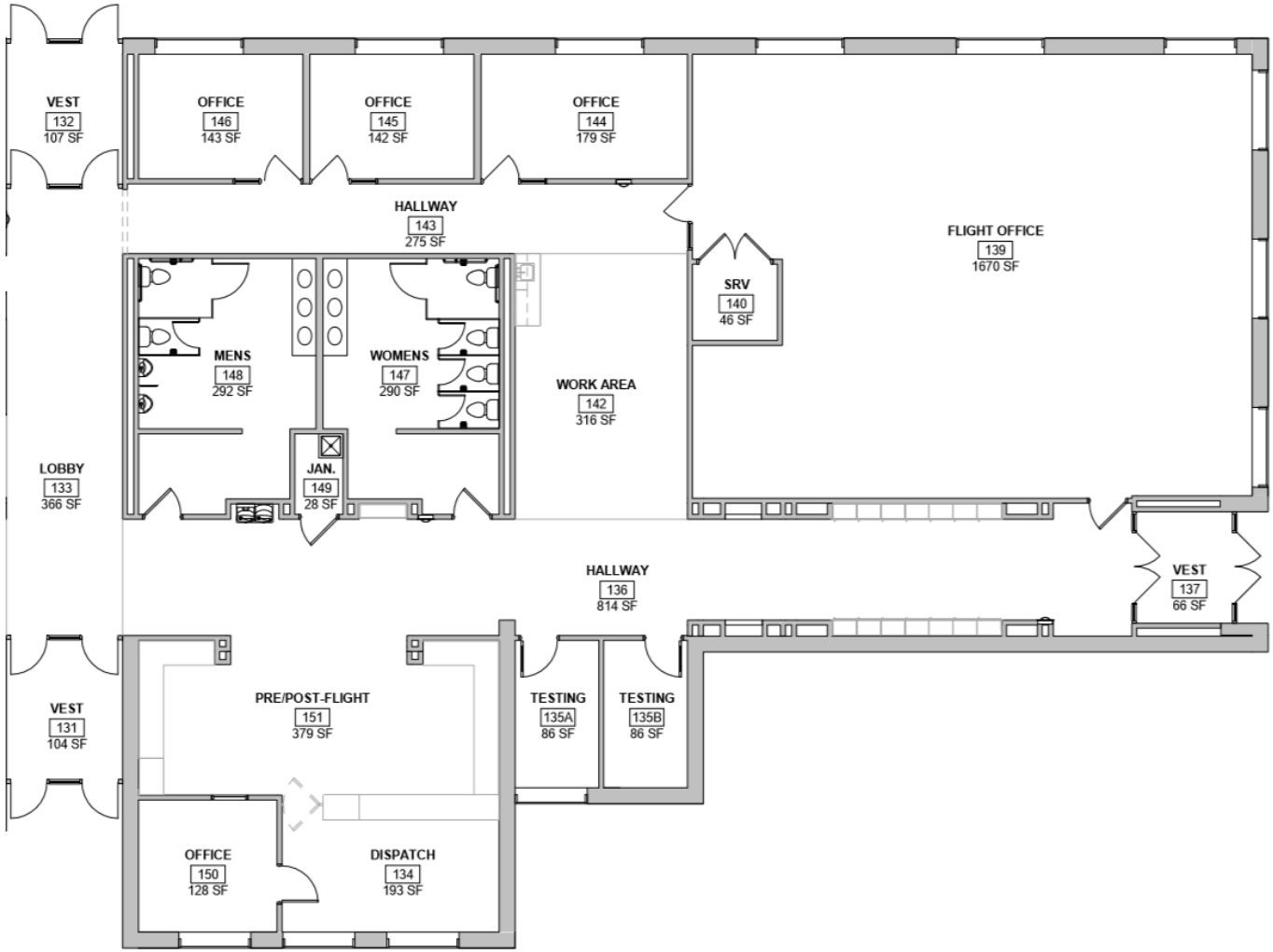


Airport Terminal (North)

FBO Offices, Conference Rooms, Student Waiting Area

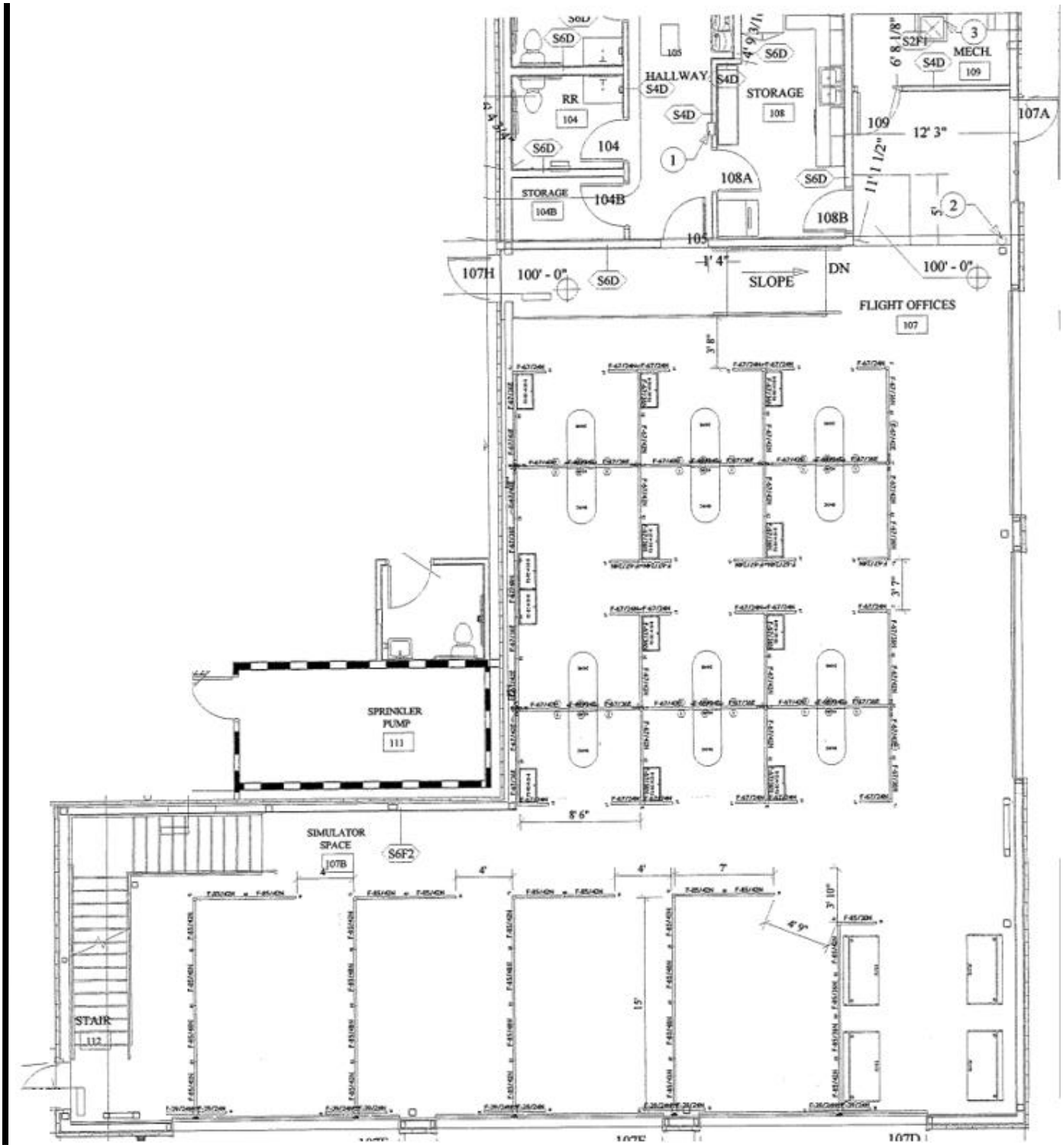
Airport Terminal (South)

Flight Training Room, Chief/Asst. Chief Offices, Dispatch Area, Preflight Preparation Areas, Checkride Rooms

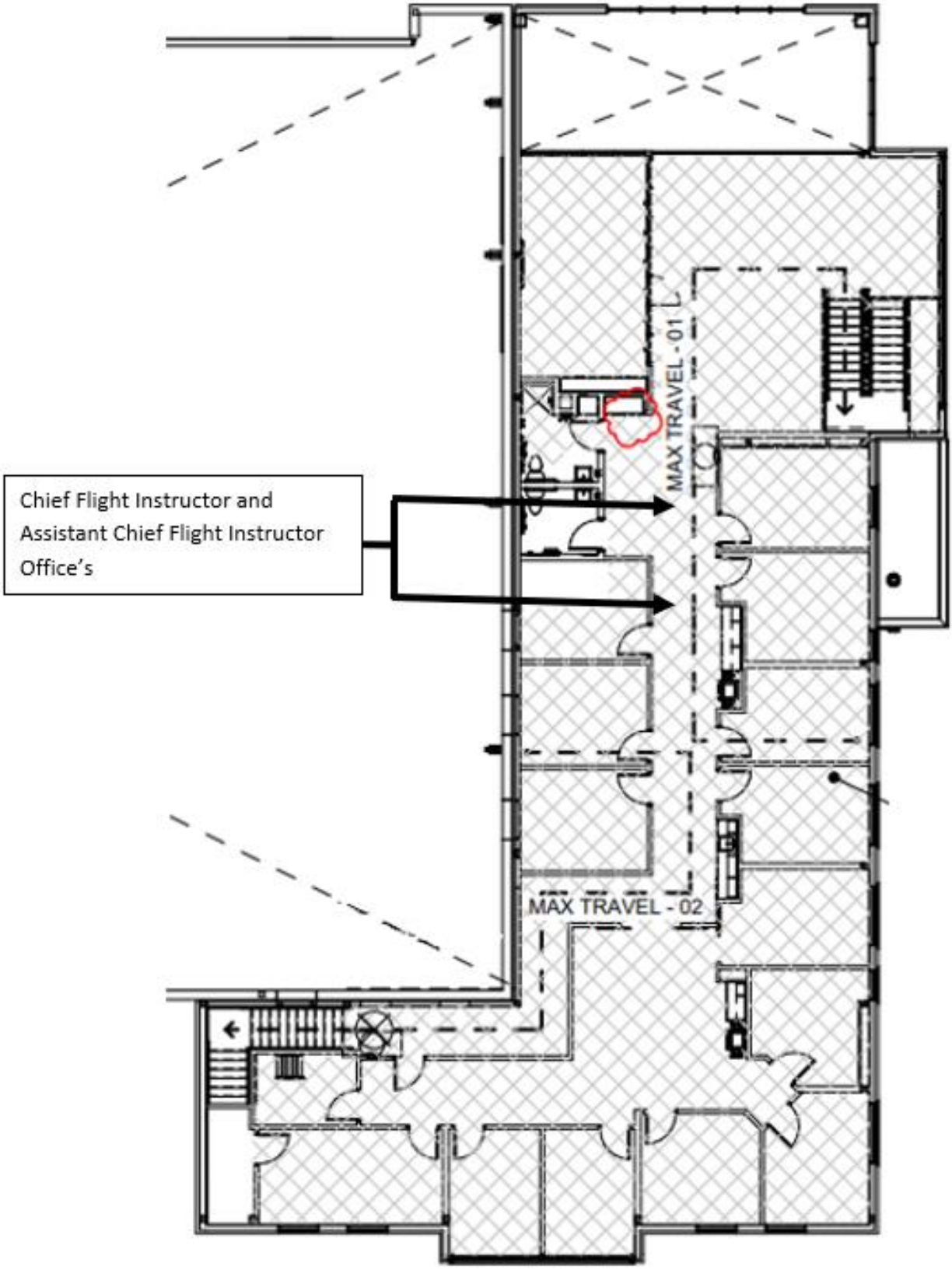


North Star Aviation Corporate Hangar (Lower Level)

Simulator Bays and Standards Department Cubicles



North Star Aviation Corporate Hangar (Upper Level)
Corporate business offices including Chief/Assistant Chief Office (indicated)



APPENDIX B

Simulator Letters of Authorization (LOA)

Precision Flight Controls:

U.S. Department of Transportation
Federal Aviation Administration

Aviation Safety

800 Independence Ave., SW
Washington DC 20591

February 27, 2024

Mike Altman
CEO, Precision Flight Controls, Inc.
2747 Mercantile Drive, Suite 100
Rancho Cordova, CA 95742

Dear Mr. Altman:

The Federal Aviation Administration (FAA) last qualified and approved your airplane Precision Flight Controls, Inc. model GTX, GTX ProMotion, GTX MAX and GTX MAX ProMotion as an Advanced Aviation Training Device (AATD) on February 25, 2020, in accordance with Title 14 of the Code of Federal Regulations (14 CFR) § 61.4(c).

Review of the revised Qualification and Approval Guide (QAG) revision 1 dated January 11, 2024, validates the current standards and criteria for approval as provided in Advisory Circular (AC) 61-136, *FAA Approval of Aviation Training Devices and Their Use for Training and Experience*. The Precision Flight Controls, Inc. model GTX, GTX ProMotion, GTX MAX and GTX MAX ProMotion airplane AATD is approved for use in satisfying the following sections of parts 61 and 141:

Precision Flight Controls, Inc.
Model GTX, GTX ProMotion, GTX MAX and GTX MAX ProMotion
Airplane Single and Muliengine Land
Advanced Aviation Training Device (AATD)

- § 61.51(b)(3) – Logbook entries;
- § 61.51 (h) – Logging training time;
- § 61.57(c)(2) – Instrument experience;
- § 61.57(d)(1) – Instrument proficiency check, per the Instrument ACS;
- § 61.65(i) – Instrument rating; up to 20 hours;
- § 61.109(k)(1) – Private Pilot Certificate aeronautical experience: up to 2.5 hours;
- § 61.129(i)(1)(i) – Commercial Pilot Certificate: up to 50 hours;
- § 61.159(a)(4)(i) – Airline Transport Pilot Certificate: up to 25 hours; and
- § 141.41(b) – Approved for use under the part 141 appendices as follows:
  - *Appendix B* – Up to 15% toward the total Private Pilot training time requirements;
  - *Appendix C* – Up to 40% toward the total Instrument training time requirements;
  - *Appendix D* – Up to 20% toward the total Commercial Pilot training time requirements;

Expires: 02/28/2029

- *Appendix E* – Up to 25% toward the total Airline Transport Pilot training time requirements;
- *Appendix F* – Up to 5% toward the total Flight Instructor training time requirements;
- *Appendix G* – Up to 5% toward the total Flight Instructor Instrument training time requirements;
- *Appendix I, Private Pilot adding Airplane Category and Single Engine or Multiengine Class Rating Course* – Up to 3 hours toward the total training time requirements;
- *Appendix I, Commercial Pilot adding Airplane Category and Single Engine or Multiengine Class Rating Course* – Up to 11 hours toward the total training time requirements;
- *Appendix I, Airline Transport Pilot adding Airplane Category and Single Engine or Multiengine Class Rating Course* – Up to 6.25 hours toward the total training time requirements; and
- *Appendix M, Combined Private Pilot Airplane Certification and Instrument Rating* – Up to 25% toward the total training time requirements

Note: Minimum training or experience requirements for cross country, night, solo, takeoffs and landings, and the 3 hours of training with an authorized instructor in preparation for the practical test within the preceding 2 calendar months from the month of the test must be accomplished in an aircraft. Private Pilot Airplane applicants must also accomplish the minimum requirement for 3 hours of control and maneuvering of an airplane solely by reference to instruments specified in § 61.109 in an airplane.

No portion of the practical test or type specific training credit can be conducted in an AATD. The flight portion of a flight review specified in § 61.56(a) cannot be accomplished in an AATD. Additionally, an instrument proficiency check (IPC) specified in § 61.57(c) cannot be completed in its entirety in an AATD (see Instrument Rating Airman Certification Standards FAA-S-ACS-8, as amended).

This approval is contingent upon the following conditions and limitations:

1) This AATD must maintain its performance and function without degradation. The minimum instrument requirements specified under § 91.205 for day visual flight rules (VFR) and instrument flight rules (IFR) must be functional during the training session;

2) Only the aircraft make/model and configurations that are in the approved QAG can be utilized. A copy of the FAA approved QAG detailing the approved makes, models, and configurations must be provided to the operator and be readily available when the AATD is in use;

3) A copy of this letter of authorization (LOA) must be readily available in a location near the device when in use. Additionally, a copy must be provided to the person using the above credits for pilot certification or ratings;

4) When used for instructional purposes, only an appropriately qualified FAA-certificated flight instructor may make any subsequent endorsements and/or pilot logbook entries. Pilot time in an ATD may be logged as instruction received, instrument time, or total time only. See FAA airman application 8710-1;

5) Any changes or modifications to this AATD which have not been individually reviewed, evaluated, and approved in writing by the Air Transportation Division will terminate this LOA; and

6) The FAA reserves the right to withdraw this LOA at any time if the Administrator determines that this AATD has been used in a manner contrary to the conditions and limitations described within this LOA, FAA regulation, guidance, or safety.

This approval is valid for sixty (60) calendar months from the date of this letter. Any requests for a new LOA should be made by the aviation training device manufacturer in writing to The Air Transportation Division at least 90 days in advance of expiration. The Air Transportation Division may require a review of the QAG, an on-site functional evaluation, and verification of all the AATD requirements as described in FAA Order 8900.1 Volume 11, Chapter 10, Section 1, *Approval, Oversight, and Authorized Use Under 14 CFR Parts 61 and 141* before a new LOA is issued.

This approval expires on February 28, 2029.

The enclosed signed QAG is approved and a copy of this letter is retained in our files.

Sincerely,

ANDREW SELIGA Digitally signed by ANDREW SELIGA
Date: 2024.02.27 13:52:52 -05'00'

Andrew Seliga
Section Manager, Training and Simulation Group
Air Transportation Division

Enclosure

APPENDIX C
Reference Books and Materials

The following list is not all-inclusive. Instructors may refer to any supplemental source of information (e.g. Advisory Circulars and other FAA publications, NASA training videos, FAA Safety Videos, AOPA Air Safety Foundation web-based safety training, etc.) in order to increase the quality of training. Students will refer to the REQUIRED READING/STUDY section of each lesson for specific study material.

- The Garmin GNS 430: A Pilot Friendly Manual by Jon Dittner
- Pilot Operating Handbooks / Aircraft Flight Manuals (POH/AFM)
- FAA Chart Supplements (a.k.a. Airport Facility Directory)
- Everything Explained for Professional Pilots by Richie Lengel
- Aircraft Systems for Pilots by Dale De Remer, Phd
- ASA Flight Instructor Oral Exam Guide
- FAA Private Pilot/Instrument Pilot/Commercial Pilot/Flight Instructor Airmen Certification Standards
- North Star Aviation, Inc. Standard Operating Procedures - Piper Aircraft Warrior/Archer PA-28-161/181
- North Star Aviation, Inc. Preflight Power Point Presentation on the Piper Aircraft Warrior III PA-28-161
- North Star Aviation, Inc. Checklist for the Piper Aircraft Warrior/Archer PA-28-161/181
- G1000 NXi Textbook (found on NSA website)
- Garmin's 400 and 500 Series online flight simulator
- Garmin's 400W and 500W Series downloadable flight simulator
- Garmin's 500 Series downloadable flight simulator
- Jeppesen's Garmin 430 and Garmin 530 Training Software
- Aeronautical Information Manual (AIM)
- Federal Aviation Regulations (FARs)
- Federal Aviation Regulations EXPLAINED by Kent Jackson
- FAA-H-8083-25B: Pilot's Handbook of Aeronautical Knowledge
- FAA-H-8083-1B: Aircraft Weight and Balance Handbook
- FAA-H-8083-3B: Airplane Flying Handbook
- FAA-H 8083-6: Advanced Avionics Handbook
- FAA-H-8083-15: Instrument Flying Handbook
- AC 00-6B: Aviation Weather
- AC 00-45H: Aviation Weather Services
- AC 60-22: Aeronautical Decision Making
- AC 61-65: Certification - Pilots and Flight Instructors
- AC 61-67: Stall and Spin Awareness Training
- AC 90-23G: Aircraft Wake Turbulence
- AC 90-48D: Pilot's Role in Collision Avoidance
- AC 90-66B: Recommended Standard Traffic Patterns and Practices for Aeronautical Operations at Airports without Operating Control Towers
- AC 91-33A: Use of Alternate Grades of Aviation Gasoline for Grade 80/87, and use of Automotive Gasoline
- AC 91-67: Minimum Equipment for General Aviation Operations under FAR Part 91

- AC 120-51E: Crew Resource Management Training
- AC 00-54: Pilots Windshear Guide
- AC 00-24C: Thunderstorms
- AC 00-34A: Aircraft Ground Handling and Servicing
- AC 20-43C: Aircraft Fuel Control
- AC 20-73A: Aircraft Ice Protection
- AC 43-9C: Maintenance Records
- AC 43-12A: Preventative Maintenance

APPENDIX D
Acronyms

A/C	Aircraft
AC	Advisory Circular
ACS	Airmen Certification Standards
AD's	Airworthiness Directive's
ADC	Air Data Computer
ADM	Aeronautical Decision Making
AFD	Airport/Facility Directory
AGL	Above Ground Level
AHRS	Attitude Heading Reference System
AIM	Aeronautical Information Manual
AIRMET	Airmen's Meteorological Information
ALS	Approach Lighting System
AME	Airmen Medical Examiner
AMEL	Airplane Multi Engine Land
AOA	Angle of Attack
APP	Approach
ARR	Arrival
ARTCC	Air Route Traffic Control Center
ASAP	Aviation Safety Action Program
ASEL	Airplane Single Engine Land
ASI	Airspeed Indicator
ASR	Airport Surveillance Radar
ATC	Air Traffic Control
ATIS	Automated Terminal Information Service
AWOS	Automated Weather Observing System
CAP	Civil Air Patrol
CDI	Course Deviation Indicator
CDL	Configuration Deviation List
CFI	Certified Flight Instructor
CFIT	Controlled Flight into Terrain
CFR	Code of Federal Regulations
CG	Center of Gravity
CRM	Crew Resource Management
DA/H	Decision Altitude/Height
DEP	Departure
DG	Directional Gyro
DME	Distance Measuring Equipment
DP	Departure Procedure
EFB	Electronic Flight Bag
EFC	Expect Further Clearance
EFIS	Electronic instrument flight system
ELT	Emergency Locator Transmitter
ETA	Estimated Time of Arrival
ETE	Estimated Time Enroute
FAA	Federal Aviation Administration
FAASTeam	FAA Safety Team
FAF	Final Approach Fix
FAR	Federal Aviation Regulation
FBO	Fixed Base Operator
FD	Flight Director
FOM	Flight Operations Manual
FSDO	Flight Standards District Office
FSS	Flight Service Station
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GS	Glide Slope
HAT	High Above Touchdown
HIRL	High Intensity Runway Lights
HSI	Horizontal Situation Indicator
HWAS	Hazardous In-Flight Weather Advisory System
IAF	Initial Approach Fix
IAP	Instrument Approach Procedure
IF	Intermediate Fix
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
KCAS	Knots Calibrated Airspeed
KIAS	Knots Indicted Airspeed
LDA	Localizer Directional Aid
LLWAS	Low Level Wind Shear Alert System
LNAV	Lateral Navigation
LOA	Letter of Authorization
LOC	Localizer
LPV	Localizer Performance w/ Vertical Navigation
MAA	Maximum Authorized Altitude
MAP	Missed Approach Point
MCA	Minimum Crossing Altitude
MDA	Minimum Descent Altitude
MEA	Minimum Enroute Altitude
MEL	Minimum Equipment List

METAR	Meteorological Information
MFD	Multifunction Flight Display
MOA	Military Operations Area
MOCA	Minimum Obstacle Clearance Altitude
MRA	Minimum Reception Altitude
MSA	Minimum Safe Altitude
MSL	Mean Sea Level
MVFR	Marginal Visual Flight Rules
N/A	Not Applicable
NAVAID	Navigation Aid
NDB	Nondirectional Beacon
NEXRAD	Next Generation Weather Radar
NM	Nautical Mile
NOTAM	Notice to Airmen
NTSB	National Transportation Safety Board
OAT	Outside Air Temperature
OBS	Omni Bearing Selector
ODP	Obstacle Departure Procedure
OEI	One Engine Inoperative
OROCA	Off Route Obstacle Clearance Altitude
OTS	Out of Service
PAPI	Precision Approach Path Indicator
PAR	Precision Approach Radar
PED	Personal Electronic Device
PFD	Primary Flight Display
PIC	Pilot in Command
PIREP	Pilot Weather Report
POH	Pilot's Operating Handbook
PTS	Practical Test Standards
RCO	Remote Communications Outlet
REIL	Runway End Identifier Lights
RNAV	Area Navigation
RPM	Revolutions Per Minute
RVR	Runway Visual Range
RWY	Runway
SDF	Simplified Directional Facility
SIGMET	Significant Meteorological Information
SM	Statute Mile
SMS	Safety Management System
SOP	Safety Operating Procedure
SPRM	Single Pilot Resource Management
STAR	Standard Terminal Arrival Route
SUA	Special Use Airspace
SVFR	Special Visual Flight Rules
T/O	Take Off
TAC	Terminal Area Chart
TACAN	Tactical Aircraft Control and Navigation
TAF	Terminal Area Forecast
TAS	True Airspeed
TCO	Training Course Outline
TFR	Temporary Flight Restriction
TOGA	Take Off/Go Around
TRACON	Terminal Radar Approach Control
TRSA	Terminal Radar Service Area
TSA	Transportation Security Administration
TXY	Taxiway
UAS	Unmanned Aircraft System
UTC	Coordinated Universal Time (ZULU)
VASI	Visual Approach Slope Indicator
VDP	Visual Descent Point
VFR	Visual Flight Rules
VHF	very high frequency
VMC	Visual Meteorological Conditions
VNAV	Vertical Navigation
VOR	VHF Omnidirectional Range
VOR/DME	VOR/Distance Measuring Equipment
VORTAC	VOR with TACAN
VOT	VOR Test Facility
VSI	Vertical Speed Indicator
WAAS	Wide Area Augmentation System
WX	Weather

INTENTIONALLY
LEFT
BLANK