
# Private Pilot Certification Course

# Airplane Single Engine Land

## Training Course Outline (TCO)

Revision 9G

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

FAA APPROVED
MSP FSDO, GL15
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Approved 01/16/2025

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| Original | June 05, 2011 | Original Issue entire manual. | 1–63 |
| Rev 1 | October 01, 2011 | Corrections and updates | 1,2,7,9,11,13,14,16,17 21,22,23,24,31,49,62 63,64 |
| Rev 2 | January 15, 2012 | Entire manual revision | 1–81 |
| Rev 3 | May 10, 2012 | Diagram 12 & completion record | 1,2, 9, 61,81 |
| Rev 4 | October 10, 2012 | Merged ground and flight TCO's | 1–110 |
| Rev 5 | April 15, 2013 | Update of TCO | 1,2,5,6,7,8,9,12,13 14,15,17-22,49,50 51,60,62-71,74-90 103,104,106-110 |
| Rev 6 | December 01, 2013 | | 1,2,3,7,8,9,12,13 14,15,17-21, 22, 23-49 51,53-58,59,60,63,65, 66,67,71,75,79,80 81,85,88,89, 90-106 |
| Rev 7 | November 17, 2014 | Chief Flight Instructor change | 1,2,3,9,22 |
| Rev 8 | January 07, 2015 | Entire manual revision | 1–105 |
| Rev 9 | June 1, 2017 | Entire manual revision | 1–106 |
| Rev 9b | August 31, 2017 | Updated to reflect the addition of Piper Archers for ASEL training | 1,2,7,16 |
| Rev 9C | July 8, 2019 | Revision to grading and lesson progression sections in preparation for record keeping system change. Addition of in-house test that was left out of the last revision. | 1,2,3,7,12,13, 88 |
| Rev. 9D | Oct. 27, 2023 | Clarified Objectives, Completion 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 |
| Rev. 9E | March 1, 2024 | Added ability to use Precision Flight Controls Simulators. Added verbiage to clarify precision approach req's on stage checks. | 1-4, 6, 7, 12, 13, 17, 104-111 |

# RECORD OF REVISIONS cont'd

| Number | Date | Summary of Changes | Affected Pages |
|---|---|---|---|
| Rev. 9F | May 31, 2024 | Updated TCO to make correct reference to recently updated ACS documents. | Entire Manual |
| Rev. 9G | December 20, 2024 | Minor updates including Training Course Revision Control, Disenrollment, facilities, and slight page re-numbering. | 1, 2, 4, 6, 8, 11-13 16, 17, 101-110 |

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# SECTION ONE

# Course Description

*Private Pilot Certification Course*
*Airplane Single Engine Land*

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

Welcome to Private Pilot flight 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 Private Pilot. We will do everything possible to help you succeed; however, the ultimate path to a Private Pilot certificate 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 so that you can better retain the information when it's covered by your instructor. 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 Private Pilot certificate.

**Introduction**
This 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 (45 hours) and flight training (44.9 hours), and each course is further divided into stages. The ground school consists of three stages, while flight training consists of two. A student may attend ground school and flight training concurrently, or he/she may complete ground training first and then begin flight training. When a student successfully passes the final stage check of the flight training course he/she will graduate from this TCO*.

[*Note: Unless self-examining approval is granted by the FAA, the student must also pass a written and/or practical flight test given by an FAA representative before earning a Private Pilot certificate.]

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 B.

**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 a Private Pilot Certificate, Airplane Single Engine 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 B to obtain a Private Pilot Airplane Single Engine Land Certificate.

**Enrollment**
Students will be enrolled in the ground and flight training courses separately. They must meet specific prerequisites for each course.

> Ground School Prerequisites: Prior to beginning ground school a student must be able to read, write and speak the English language, or have an English language TOEFL paper based score of 500 or better, or a TOEFL Computer based score of 173 or better, or a TOEFL Internet based score of 61 or better.
>
> Flight Training Prerequisites: Prior to beginning the flight training syllabus a student must be enrolled in, or have completed, Private Pilot ground school, and he/she must possess a valid and current FAA medical (first, second, or third class.) Before the first solo flight a student must possess a recreational pilot certificate, sport pilot certificate, or student pilot certificate.

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 began 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
- Academic failure or withdrawal of the ground school
    - Students Training account may be placed on hold while a student re-enrolls in the Ground school course; however, the 8 month time frame will still apply for stage completion.
- Any other reason the Chief Instructor 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.

Instructors will consult with their supervising Assistant Chief Flight Instructor before skipping to look at ways to complete the lessons in order. Approval to skip will be documented in the students Talon file.

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). Simulator lessons may be completed in an airplane provided the lesson topics are able to be performed in the airplane (e.g. spins and other emergency procedures that would fall outside of NSA's FOM would not be able to be completed in the airplane.).

**Ground School Testing**

Private Pilot Ground School exams are instructor-created and employ testing methods similar the FAA's knowledge exam. However, to ensure student comprehension ground instructors are encouraged to employ additional testing methods such as fill-in-the-blank, short essay, oral quizzing, etc. Ground school stage exams are designed to cover the material introduced in the stage. The final stage exam (Stage Three Exam) will cover all course material, and it will provide a good measurement of student ability to pass the FAA knowledge exam.

A student who fails to receive a passing grade on any stage exam may continue with the next stage of training. For part 141 purposes a failing grade will be considered a grade less than 70%. The first score will reflect on the student's academic grade; however, any failed exams will be retaken until a grade of 70% or higher is achieved prior to TCO Graduation.

**Flight Training Testing**

The Private End of Course ground check is an oral examination like the oral portion of FAA practical test. It 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.

The Private End of Course flight check is a flight examination like the flight version of FAA practical test. It 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 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 B section 4(c)(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 Private Pilot 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, and all flights will be tracked to the corresponding lesson flown.

**Graduation**
To graduate from this Private Pilot 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. When completed, 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 a Private Pilot, Airplane Single Engine Land training course. Specifically, he/she must hold a commercial or airline transport pilot certificate, along with a current flight instructor certificate, for an airplane, single engine land. He/she must also have logged at least 1,000 hours as pilot in command and have accumulated a total of 2 years and 500 hours, or 1,000 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 detailed 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 a Private Pilot, Airplane Single Engine Land training course. Specifically, he/she must hold a commercial or airline transport pilot certificate, along with a current flight instructor certificate, for an airplane, single engine land. He/she must also have logged at least 500 hours as pilot in command and have accumulated a total of 1 year and 250 hours, or 500 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 a Private Pilot, Airplane Single Engine Land training course. Specifically, they must hold a commercial or airline transport pilot certificate, along with a current flight instructor certificate, for an airplane, single engine land. 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.

**Flight Instructors**
Flight Instructors must hold at least a commercial pilot certificate for an airplane, single engine land, and a flight instructor certificate for the same category and class. Flight Instructors will train students per this TCO, 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 NSA'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.

**Ground Instructors**
Ground instructors must hold a flight or ground instructor certificate with the appropriate rating for this course. If a person does not meet these requirements he/she may still be assigned ground training duties provided the chief instructor finds the person qualified and the training is given while under the supervision of the Chief Instructor or the Assistant Chief Instructor.

Ground Instructors are responsible for keeping attendance and will provide NSA with an attendance record following each class period. If a student misses a class he/she must make it up with the Ground Instructor or with a NSA Flight Instructor. At the end of the course Ground Instructors will certify student completion in a manner acceptable to the Chief Instructor, who will then ensure the students' training records are updated.

**Dispatcher**
Dispatchers are responsible for releasing flights during normal training hours. NSA 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 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 originate from Mankato Regional Airport (KMKT). Other airports in the vicinity, such as Waseca (KACQ) and New Ulm (KULM), are also available for pattern training, including student solo flights. 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 B 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) for its Private Pilot training. This is a fixed-gear, non-complex four-place aircraft with dual flight controls that meets the requirements of 14 CFR 141.39. While avionics equipment varies 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 C.

### 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 D contains an expanded list of supplemental references.

# SECTION FOUR

# Ground School

# PRIVATE PILOT GROUND SCHOOL LESSON LAYOUT

## STAGE ONE (21 HOURS)

| LESSON | DISCUSSION TOPIC | REQUIRED READING/STUDY | HOURS |
|---|---|---|---|
| 1 | Flight training process and careers in aviation | Jeppesen Pvt Pilot 1A&B; Gleim Intro; Gleim Study Unit 4.5 (FAR Part 61) Intro and Questions | 1.5 |
| 2 | Airplane components and principles of aerodynamics | Jeppesen Pvt Pilot 2A & 3A; Gleim SU 1.2 – 1.5; 4.8 (91.7, 91.9) | 1.5 |
| 3 | Airplane wing design and flight controls | Jeppesen Pvt Pilot 2A & 3A; Gleim SU 1.1 & 1.6 | 1.5 |
| 4 | Airplane stability and control | Jeppesen Pvt Pilot 3B & 3C; Gleim SU 1.7-1.11 | 1.5 |
| 5 | Powerplant & related aircraft systems and instruments | Jeppesen 2B; Gleim 2.10 – 2.19 | 1.5 |
| 6 | Basic flight instruments – standard panel and glass panel | Jeppesen 2C; Gleim 2.1 – 2.9; 4.8 (91.117, 91.119, 91.121) | 1.5 |
| 7 | Aircraft performance, effects of density altitude, and performance computations | Jeppesen 8A; Gleim 5.1 – 5.6 | 1.5 |
| 8 | Weight and balance computations; aerodynamic review of stalls and spins | Jeppesen 3A, 3B & 8B; Gleim 5.7 – 5.10; Gleim 1.3 – 1.4 | 1.5 |
| 9 | Airports and preflight actions on how to obtain runway lengths; applicable subjects of the Airman's Information Manual (AIM) and FAA Advisory Circulars (AC) | Jeppesen 4B & 4C; Gleim 3.1-3.5; 3.14-3.15; 3.17; 4.8 (91.103); 9.5-9.7; AIM Ch 2, Sec 3; AIM Ch 4, Sec 3 | 1.5 |
| 10 | Aeronautical charts; airspace | Jeppesen 4C & 4D; Gleim 3.9-3.10; 4.8 (91.130, 91.131, 91.133, 91.135), 4.9 (91.155, 91.157); 9.1-9.3 | 1.5 |
| 11 | Radio communication procedures | Jeppesen 5B; Gleim 3.8, 3.13-3.16, 4.8 (91.123); 9.4 | 1.5 |
| 12 | Radar and ATC services | Jeppesen 5A; Gleim 3.11-3.12; 4.9 (91.215, 91.413) | 1.5 |
| 13 | Exam One preview | All reading material from lessons 1-12 | 1.5 |
| 14 | STAGE ONE EXAM | All reading material from lessons 1-12 | 1.5 |
| | **TOTAL** | | **21** |
| | **CUMULATIVE TOTAL** | | **21** |

# STAGE TWO (16.5 HOURS)

| LESSON | DISCUSSION TOPIC | REQUIRED READING/STUDY | HOURS |
|---|---|---|---|
| 15 | Weather theory and weather patterns | Jeppesen 6A & 6B; Gleim 7.1-7.11 | 1.5 |
| 16 | Weather hazards and wake turbulence | Jeppesen 6C; Gleim 3.6; 7.4-7.5, 7.7 | 1.5 |
| 17 | Weather services; printed weather reports, forecasts, and graphic weather; recognition of weather hazards | Jeppesen 7A, 7B, 7C & 7D; Gleim 8.1-8.11 | 1.5 |
| 18 | Federal Aviation Regulations for private pilots; NTSB accident reporting requirements | Federal Aviation Regulations Part 61 and 91; Gleim 4.1 – 4.5; 4.7 -4.10 | 1.5 |
| 19 | Safety of flight; collision avoidance | Jeppesen 4A; Gleim 3.7; 4.8 (91.111, 91.113, 91.119, 91.209) | 1.5 |
| 20 | Basic navigation skills; fuel requirements | Jeppesen 9A & 9B; Gleim 11.3, 11.5 – 11.13 | 1.5 |
| 21 | Cross country flight planning | Jeppesen 11A & 11B; AIM 5-1-1 – 5-1-9; Gleim 11.1 – 11.7 | 1.5 |
| 22 | Review of cross country planning | Jeppesen 11A & 11B; AIM 5-1-1 – 5-1-9; Gleim 11.1 – 11.7 | 1.5 |
| 23 | Radio and satellite navigation aids | Jeppesen 9B, 9C, & 9D; Gleim 10.1 – 10.4 | 1.5 |
| 24 | Exam Two preview | All reading material from lessons 15 – 23 | 1.5 |
| 25 | STAGE TWO EXAM | All reading material from lessons 15 – 23 | 1.5 |
| | **TOTAL** | | **16.5** |
| | **CUMULATIVE TOTAL** | | **37.5** |

# STAGE THREE (7.5 HOURS)

| LESSON | DISCUSSION TOPIC | REQUIRED READING/STUDY | HOURS |
|---|---|---|---|
| 26 | Human factors and Aeronautical Decision Making (ADM) | Jeppesen 1C & 10B; Gleim 6.6 | 1.5 |
| 27 | Flight physiology | Jeppesen 10A; Gleim 6.1 – 6.5 | 1.5 |
| 28 | Advanced aeronautical decision making | Jeppesen 10B; Gleim 6.6 | 1.5 |
| 29 | Exam Three preview | All reading material from all lessons | 1.5 |
| 30 | STAGE THREE EXAM (Final Exam) | All reading material from all lessons | 1.5 |
| | **TOTAL** | | **7.5** |
| | **CUMULATIVE TOTAL** | | **45** |

# 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

# PRIVATE PILOT GROUND SCHOOL

## STAGE ONE (21 HOURS)

## Lessons 1 - 14

**STAGE ONE OBJECTIVES:** The student will be instructed in aerodynamics, engine power-plant and aircraft related systems, flight instruments, aircraft performance, effects of density altitude, takeoff and landing data, weight and balance, stalls and spins, airports and sources of information, preflight actions on how to obtain runway lengths on airports of intended use, aeronautical charts and airspace, radio communications and procedures, and radar and ATC services.

**STAGE ONE COMPLETION STANDARDS:** The stage will be completed when the student satisfactorily passes the Stage One Exam with a score of 70% or better.

# GROUND LESSON 1
# 1.5 HOURS

LESSON OBJECTIVE

At the completion of this lesson students will gain an understanding of aviation careers available to them, the flight training process, and basic Federal Aviation Regulations (FARs) governing their training and certification.

ACADEMIC CONTENT

- ☐ Course syllabus and expectations
- ☐ Aviation careers
- ☐ Pilot qualifications (including medical)
- ☐ Certification privileges and restrictions

COMPLETION STANDARDS

Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY

- Jeppesen Guided Flight Discovery: Private Pilot 1A&B
- Gleim FAA Knowledge Test Introduction
- Gleim Study Unit 4.5 (FAR Part 61) Intro and Questions

# GROUND LESSON 2
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of basic airplane components and aerodynamics.

ACADEMIC CONTENT
- ☐ Primary aircraft components (wing, fuselage, empennage, flight controls, landing gear, power plant, etc.)
- ☐ Pilot Operating Handbook/Information Manual (POH/IM)
- ☐ Basic Aerodynamics
  - Properties of air and Relative Wind
  - Angle of Attack
  - Newton's and Bernoulli's principles
- ☐ Intro to Stalls and Spins
- ☐ Aerodynamic forces
  - Lift
  - Weight
  - Thrust
  - Drag

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 2A & 3A
- Gleim Study Units 1.2 – 1.5; 4.8 (91.7, 91.9)

# GROUND LESSON 3
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of wing design and flight controls.

ACADEMIC CONTENT
- ☐ Wing design terms
  - Camber
  - Aspect Ratio
  - Angle of Incidence
  - Wing Twist
- ☐ Ground effect
- ☐ Flight Controls
  - Axis of rotation
  - Primary
  - Secondary

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 2A & 3A
- Gleim Study Units 1.1 & 1.6

# GROUND LESSON 4
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of airplane stability, turning forces, and load factor.

ACADEMIC CONTENT
- ☐ Stability
  - Terms
  - Review axis of rotation
  - Static and Dynamic stability
  - Effects of stability on control
  - Power effects
  - How stability is achieved through design
- ☐ Torque (Left-turning tendencies)
- ☐ Glide
- ☐ Turning flight
  - Adverse yaw
  - Overbanking
  - Turn radius
  - Load factor
  - Load limit factor

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 3B & 3C
- Gleim Study Units 1.7-1.11

# GROUND LESSON 5
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of airplane powerplants, systems, and related instruments.

ACADEMIC CONTENT
- ☐ Engine types
- ☐ Four-stroke engine operation
- ☐ Jet engine operation (intro only)
- ☐ Induction system
  - Carburetor operation
  - Carburetor ice
  - Rich vs. lean
- ☐ Fuel injection
- ☐ Supercharger vs. Turbocharger
- ☐ Ignition system and operation
- ☐ Abnormal combustion (detonation and pre-ignition)
- ☐ Fuel systems components and operation
- ☐ Oil system
- ☐ Engine cooling
- ☐ Exhaust system
- ☐ Propeller system
- ☐ Electric system and operation

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 2B
- Gleim Study Units 2.10-2.19

# GROUND LESSON 6
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of airplane standard and glass-panel flight instruments.

ACADEMIC CONTENT
- ☐ Atmospheric pressure
- ☐ Pitot-Static system
  - Airspeed indicator
  - Types of airspeeds
  - Altimeter
  - Types of altitudes
  - Altimeter errors
  - Vertical speed indicator
  - Pitot-static blockage
- ☐ Gyroscopic system
  - Rigidity in space and precession
  - Sources of power
  - Attitude indicator
  - Heading indicator
  - Turn coordinator (Turn and slip)
- ☐ Magnetic compass
  - Deviation
  - Errors
- ☐ Glass panel (Avidyne)

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 2C
- Gleim Study Units 2.1-2.9; 4.8 (91.117, 91.119, 91.121)

# GROUND LESSON 7
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of aircraft performance, effects of density altitude, and performance computations.

ACADEMIC CONTENT
- ☐ Density altitude
  - Definition
  - Computation
  - Effects on performance
- ☐ Performance charts
  - Takeoff distance
  - Climb
  - Cruise
  - Descent
  - Landing
- ☐ Crosswind computation

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 8A
- Gleim Study Units 5.1 – 5.6

# GROUND LESSON 8
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of weight and balance computations, and the dangers of stalls/spins.

ACADEMIC CONTENT
- ☐ Hazards of improper weight and balance
- ☐ Weight and balance terms and definitions
  - Basic empty weight
  - Ramp weight
  - Takeoff weight
  - Landing weight
  - Useful load
  - Payload
  - Arm
  - Datum
  - Moment
  - Center of gravity
- ☐ Weight and balance limitations
- ☐ Weight and balance computations
- ☐ Shifting weight
- ☐ Critical angle of attack
- ☐ Indications of a stall
- ☐ Stall recovery
- ☐ Causes of spins
- ☐ Spin recovery (PARE acronym)

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 3A, 3B, & 8B
- Gleim Study Units 5.7 – 5.10
- Gleim Study Units 1.3 – 1.4

# GROUND LESSON 9
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of airport operations, including how to obtain runway information when flight planning.

ACADEMIC CONTENT
- ☐ Controlled vs. uncontrolled airports
- ☐ Runway and taxiway layout
  - Runway markings
  - Taxiway markings
  - Airport signs
- ☐ Traffic patterns
  - Legs of the pattern
  - Standard vs. non-standard
  - Wind indications
  - Radio calls (controlled and uncontrolled)
  - Noise abatement
- ☐ Runway incursions
  - Hot spots
  - Land and hold short operations (LAHSO)
- ☐ Airport lighting
  - Glidepath
  - Beacons
  - Runway and taxiway
  - ATC light gun signals
- ☐ Airport information
  - Airport facilities directory
  - NOTAMS
  - Advisory Circulars
  - Charts
  - Unofficial sources (e.g. airnav.com)
  - Calculate takeoff and landing distance

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 4B & 4C
- Gleim Study Units 3.1 – 3.5; 3.14-3.15; 3.17; 4.8 (91.103); 9.5-9.7
- AIM Chapter 2, Section 3 (Airport Marking Aids and Signs)
- AIM Chapter 4, Section 3 (Airport Operations)

# GROUND LESSON 10
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of VFR charts and airspace.

ACADEMIC CONTENT
- ☐ VFR charts
  - World aeronautical chart
  - Terminal area chart
  - Sectional
  - Legend
- ☐ Latitude and longitude
- ☐ Airspace (A,B,C,D,E and G)
  - Controlled vs. uncontrolled
  - Chart depiction
  - Rules for VFR operations (ceiling/visibility; equipment)
  - Special VFR
- ☐ Special use airspace
  - Military
  - Temporary
  - Other

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 4C & 4D
- Gleim Study Units 3.9 – 3.10; 4.8 (91.130, 91.131, 91.133, 91.135), 4.9 (91.155, 91.157); 9.1-9.3

# GROUND LESSON 11
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of radio communication procedures.

ACADEMIC CONTENT
- ☐ Importance of effective radio communication
- ☐ Radio equipment
- ☐ Terminology
    - Phonetic alphabet
    - Proper phraseology
    - Common errors
- ☐ Universal Coordinated Time
- ☐ Lost communication procedures
- ☐ Common radio usage
    - Air traffic control
    - Common traffic advisory frequency
    - ATIS/AWOS/ASOS
    - FSS
    - HIWAS
- ☐ Sources of radio frequencies
- ☐ Lost communication and emergency procedures
- ☐ Emergency Locater Transmitters

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 5B
- Gleim Study Units 3.8, 3.13 – 3.16; 4.8 (91.123); 9.4

# GROUND LESSON 12
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of radar and ATC services.

ACADEMIC CONTENT
- ☐ RADAR operation
- ☐ Transponder operation
- ☐ FAA radar services
- ☐ ADS-B (in and out)

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 5A
- Gleim Study Units 3.11 – 3.12; 4.9 (91.215, 91.413)

# GROUND LESSON 13
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will be prepared to pass the Stage One Exam.

ACADEMIC CONTENT
- ☐ Preview all the material covered in lessons 1 through 12
- ☐ Cover specific questions from students
- ☐ Sample Gleim questions

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor.

REQUIRED READING/STUDY
All reading from lessons 1-12

# GROUND LESSON 14
# 1.5 HOURS

LESSON OBJECTIVE
This lesson assesses the student's comprehension of material introduced in Stage One.

ACADEMIC CONTENT
Stage One Exam

COMPLETION STANDARDS
The stage will be completed when the student satisfactorily passes the Stage One Exam with a score of 70% or better.

REQUIRED READING/STUDY
N/A

# PRIVATE PILOT GROUND SCHOOL

## STAGE TWO (16.5 HOURS)

## Lessons 15 - 25

**STAGE TWO OBJECTIVES:** The student will be instructed in weather theory, how to obtain and decipher weather reports, weather hazards to aviation, Federal Aviation Regulations (FARs), National Transportation Safety Board (NTSB) accident reporting requirements, safety of flight (including collision avoidance), basic and advanced navigation skills (including radio and satellite navigation), and cross country planning.

**STAGE TWO COMPLETION STANDARDS:** The stage will be completed when the student satisfactorily passes the Stage Two Exam with a score of 70% or better.

# GROUND LESSON 15
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of weather causes and patterns.

ACADEMIC CONTENT
- ☐ The atmosphere
  - Contents
  - Levels
  - Circulation
  - Pressure
- ☐ Wind patterns
- ☐ Weather patterns
  - Stability
  - Adiabatic heating and cooling
- ☐ Temperature inversions
- ☐ Moisture
  - Relative humidity
  - Temperature/dew point spread
- ☐ Clouds
- ☐ Thunderstorms
  - Life cycles
  - Movement
- ☐ Precipitation
- ☐ Air masses and fronts

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 6A & 6B
- Gleim Study Units 7.1 – 7.11

# GROUND LESSON 16
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of weather hazards and wake turbulence hazards.

ACADEMIC CONTENT
- ☐ Atmospheric restrictions to visibility
  - Fog
  - Haze or smoke
  - Heavy rain
- ☐ Wind hazards
  - Wind shear and microburst
  - Crosswinds
  - Taxiing in strong winds
- ☐ Turbulence
  - Convective activity
  - Clear air turbulence
  - Wake turbulence
  - Mountain wave
  - Maintaining aircraft control (attitude vs. altitude)
- ☐ Thunderstorms
  - Squall line
  - Lightening
  - Turbulence
  - Hail
  - Wind shear
  - Microburst
  - Tornadoes
- ☐ Icing
  - Rime
  - Clear
  - Effects on performance

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 6C
- Gleim Study Units 3.6, 7.4 – 7.5; 7.7

# GROUND LESSON 17
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of weather services, including how to obtain and read weather reports and graphs.

ACADEMIC CONTENT
- ☐ Weather reports
  - METAR
  - PIREP
  - TAF
  - Area forecast
  - AIRMET
  - SIGMET
- ☐ Graphic weather products
  - Radar summary chart
  - Weather depiction chart
  - Prognostic chart
  - Satellite imagery
  - Convective outlook chart
  - Forecast winds and temperatures aloft
  - Volcanic ash and dispersion chart
- ☐ Weather information sources
  - Flight service station
  - HIWAS
  - ATIS/AWOS/ASOS
  - ATC
  - Internet

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 7A, 7B, 7C, & 7D
- Gleim Study Units 8.1 – 8.11

# GROUND LESSON 18
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of the pertinent Federal Aviation Regulations for private pilot privileges.

ACADEMIC CONTENT
- ☐ FAR structure
- ☐ FAR Part 1, 21, 39, 43: applicable rules
- ☐ FAR Part 61: currency and privileges
- ☐ FAR Part 91: applicable rules
- ☐ NTSB Part 830

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY
- Federal Aviation Regulations Parts 61 & 91
- Gleim Study Units 4.1 – 4.5; 4.7 – 4.10

# GROUND LESSON 19
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of the hazards to flight (not previously covered.)

ACADEMIC CONTENT
- ☐ Collision avoidance
  - Visual scanning
  - Clearing turns
  - Blind spots
  - Aircraft lights
  - Traffic service
- ☐ Right-of-way rules
- ☐ Safe operating altitudes
- ☐ Transfer of aircraft control
- ☐ Stall and spin review

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 4A
- Gleim Study Units 3.7; 4.8 (91.111, 91.113, 91.119, 91.209)

# GROUND LESSON 20
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of the skills required for VFR cross country navigation.

ACADEMIC CONTENT
- ☐ Pilotage vs. Dead Reckoning (DR)
- ☐ Magnetic vs. true north
  - Isogonic lines on a chart
  - Converting true to magnetic course or heading
  - Compass deviation
- ☐ Course considerations
  - Altitude
  - Airspace
  - Distance
  - Winds
  - Fuel stops
  - Time zone
- ☐ Wind effects
  - Drift
  - Ground speed
  - Wind triangle
  - Ground reference maneuvers
  - Landings
- ☐ E6B basics
  - Ground speed
  - Wind correction
- ☐ Diversion

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 9A & 9B
- Gleim Study Units 11.3, 11.5 – 11.13

# GROUND LESSON 21
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of the skills required to plan a VFR cross country flight.

ACADEMIC CONTENT
- ☐ Route choice
  - Distance between fuel stops
  - Airspace and obstructions
  - VFR cruising altitudes
  - Wind considerations
  - Checkpoint selection
- ☐ Plotting courses (true and magnetic)
- ☐ Calculating wind drift and ground speed
  - Winds aloft forecast
  - Performance cruise chart for TAS
  - E6B usage
- ☐ VFR fuel requirements
- ☐ Flight plan forms
- ☐ Flight plan filing and activation
- ☐ Lost procedures

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 11A &11B
- Airman's Information Manual 5-1-1 to 5-1-9
- Gleim Study Units 11.1 – 11.7

# GROUND LESSON 22
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of the skills required to plan a VFR cross country flight.

ACADEMIC CONTENT
- ☐ Review cross country planning
- ☐ Plan a sample cross country flight in class
- ☐ Other considerations
  - Aircraft performance
  - Weight and balance
  - NOTAMs
  - TFRs
  - Weather
- ☐ Preflight actions
  - Alternatives if flight cannot be completed
  - Alternatives if flight is delayed

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 11A &11B
- Airman's Information Manual 5-1-1 to 5-1-9
- Gleim Study Units 11.1 – 11.7

# GROUND LESSON 23
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of radio and satellite navigation aids.

ACADEMIC CONTENT
- ☐ VOR
  - System operation
  - Position interpretation
  - Tracking
- ☐ ADF
- ☐ GPS

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 9B, 9C, & 9D
- Gleim Study Units 10.1 – 10.4

# GROUND LESSON 24
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will be prepared to pass the Stage Two Exam.

ACADEMIC CONTENT
- ☐ Preview all the material covered in lessons 15 through 23
- ☐ Cover specific questions from students
- ☐ Sample Gleim questions

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor.

REQUIRED READING/STUDY
All reading from lessons 15-23

# GROUND LESSON 25
# 1.5 HOURS

LESSON OBJECTIVE
This lesson assesses the student's comprehension of material introduced in Stage Two.

ACADEMIC CONTENT
Stage Two Exam

COMPLETION STANDARDS
The stage will be completed when the student satisfactorily passes the Stage Two Exam with a score of 70% or better.

REQUIRED READING/STUDY
N/A

# PRIVATE PILOT GROUND SCHOOL

## STAGE THREE (7.5 HOURS)

## Lessons 26 - 30

**STAGE THREE OBJECTIVES:** The student will be instructed in human factors, aeronautical decision making, and flight physiology.

**STAGE THREE COMPLETION STANDARDS:** The stage will be completed when the student satisfactorily passes the Stage Three Exam (Final Exam) with a score of 70% or better.

# GROUND LESSON 26
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of human factors and aeronautical decision making.

ACADEMIC CONTENT
- ☐ Introduction to Aeronautical Decision Making (ADM)
  - CRM
  - SPRM
  - Risk Management
- ☐ Hazardous attitudes and antidotes
- ☐ I'M SAFE
- ☐ Human error
- ☐ The decision-making process

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 1C & 10B
- Gleim Study Units 6.6

# GROUND LESSON 27
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will gain an understanding of physiological factors in aviation.

ACADEMIC CONTENT
- ☐ Vision
  - Limitations
  - Night adaptation
  - Visual illusions
- ☐ Spatial disorientation
- ☐ Hypoxia
  - Oxygen requirements
  - Alcohol effects
- ☐ Carbon monoxide
- ☐ Fatigue

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 10A
- Gleim Study Units 6.1 – 6.5

# GROUND LESSON 28
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will be able to apply critical thinking and ADM to a real-world scenario.

ACADEMIC CONTENT
- ☐ In class exercise
  - Real-world case study
  - Example: JFK Jr. crash
- ☐ Apply risk management and ADM principles

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor, and/or through a written quiz.

REQUIRED READING/STUDY
- Jeppesen Guided Flight Discovery: Private Pilot 10B
- Gleim Study Units 6.6

# GROUND LESSON 29
# 1.5 HOURS

LESSON OBJECTIVE
At the completion of this lesson students will be prepared to pass the Stage Three Exam.

ACADEMIC CONTENT
- ☐ Preview all the material covered in all previous lessons
- ☐ Cover specific questions from students
- ☐ Sample Gleim questions

COMPLETION STANDARDS
Student understanding of the material will be demonstrated through oral quizzing by the instructor.

REQUIRED READING/STUDY
All reading from all lessons

# GROUND LESSON 30
# 1.5 HOURS

LESSON OBJECTIVE
This lesson assesses the student's comprehension of all material covered in the Private Pilot Ground School.

ACADEMIC CONTENT
Stage Three Exam (Final Exam)

COMPLETION STANDARDS
The stage will be completed when the student satisfactorily passes the Stage Three Exam (Final Exam) with a score of 70% or better.

REQUIRED READING/STUDY
N/A

# SECTION FIVE

# Flight Training

# PRIVATE PILOT FLIGHT TRAINING
# LESSON LAYOUT

## STAGE ONE (18.1 HOURS)

| LESSON | TOTAL (ASEL) | DUAL (ASEL) | SOLO (ASEL) | DUAL X/C | SOLO X/C | NIGHT | INST (SIM/ACTL) | SIM | PRE/POST |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | | 2.0 |
| 2 | | | | | | | | | 2.0 |
| 3 | 1.1 | 1.1 | | | | | | | 0.9 |
| 4 | 1.5 | 1.5 | | | | | | | 0.5 |
| 5 | 1.5 | 1.5 | | | | | | | 0.5 |
| 6 | 1.5 | 1.5 | | | | | | | 0.5 |
| 7 | | | | | | | | | 2.0 |
| 8 | 1.5 | 1.5 | | | | | | | 0.5 |
| 9 | 1.5 | 1.5 | | | | | | | 0.5 |
| 10 | 1.5 | 1.5 | | | | | | | 0.5 |
| 11 | | | | | | | | | 2.0 |
| 12 | | | | | | | | 1.0 | |
| 13 | 1.5 | 1.5 | | | | | | | 0.5 |
| 14 | 1.5 | 1.5 | | | | | | | 0.5 |
| 15 | 1.5 | 1.5 | | | | | | | 0.5 |
| 16 | 0.5 | | 0.5 | | | | | | |
| 17 | 1.5 | 1.5 | | | | | | | 0.5 |
| 18 | | | | | | | | | 2.5 |
| 19 | 1.5 | 1.5 | | | | | | | 1.0 |
| Stage 1 Totals | 18.1 | 17.6 | 0.5 | | | | | 1.0 | 17.4 |

*Note: Lesson hours (dual, pre/post, etc.) are approximations. Instructors may attempt to meet these times for each lesson to maximize efficiency and student learning.*

# STAGE TWO (26.8 HOURS)

| LESSON | TOTAL (ASEL) | DUAL (ASEL) | SOLO (ASEL) | DUAL X/C | SOLO X/C | NIGHT | INST (SIM/ACTL) | SIM | PRE/POST |
|---|---|---|---|---|---|---|---|---|---|
| 20 | | | | | | | | | 2.0 |
| 21 | 1.5 | 1.5 | | | | | 0.4 | | 0.5 |
| 22 | 1.5 | 1.5 | | | | | 0.4 | | 0.5 |
| 23 | 1.5 | | 1.5 | | | | | | |
| 24 | | | | | | | | | 2.5 |
| 25 | 1.7 | 1.7 | | 1.7 | | | 0.3 | | 1.0 |
| 26 | 1.5 | | 1.5 | | | | | | |
| 27 | 2.5 | 2.5 | | 2.5 | | | 0.3 | | 1.0 |
| 28 | 3.0 | 3.0 | | 3.0 | | 3.0 | 0.4 | | 1.0 |
| 29 | 3.3 | | 3.3 | | 3.3 | | | | 1.0 |
| 30 | 2.2 | | 2.2 | | 2.2 | | | | 1.0 |
| 31 | 1.5 | 1.5 | | | | | 0.3 | | 0.3 |
| 32 | 1.5 | | 1.5 | | | | | | |
| 33 | 1.7 | 1.7 | | | | | 0.3 | | 0.3 |
| 34 | 1.7 | 1.7 | | | | | 0.3 | | 0.3 |
| 35 | | | | | | | | | 2.5 |
| 36 | 1.7 | 1.7 | | | | | 0.3 | | 2.0 |
| Stage 2 Totals | 26.8 | 16.8 | 10 | 7.2 | 5.5 | 3.0 | 3.0 | | 15.9 |
| Totals | 44.9 | 34.4 | 10.5 | 7.2 | 5.5 | 3.0 | 3.0 | 1.0 | 33.3 |

*Note: Lesson hours (dual, pre/post, etc.) are approximations. Instructors may attempt to meet these times for each lesson to maximize efficiency and student learning.*

*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 B.*

# 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

# PRIVATE PILOT FLIGHT TRAINING

## STAGE ONE (18.1 HOURS)

## Lessons 1 - 19

**STAGE ONE OBJECTIVES:** The student will be instructed in the basic flying procedures and skills necessary to operate an aircraft solo in today's modern airspace system and in a technologically advanced aircraft.

**STAGE ONE COMPLETION STANDARDS:** The stage will be completed when the student satisfactorily passes the Stage One check and is able to conduct solo flights safely.

# LESSON 1: PRE/POST GROUND 2.0 HOURS

LESSON OBJECTIVE

The objective is to ensure the student is properly enrolled, and to acquaint the student with the training course outline and flight school operating procedures. Each element is to be briefly discussed and introduced to the student to familiarize him/her with the subject matter.

GROUND TRAINING

**Enrollment – ensure the student:**

- ☐ Is taking, or has taken, Private Pilot Ground School
- ☐ Possesses a 1st, 2nd, or 3rd class medical
- ☐ Has TSA approval (if applicable)
- ☐ Has read and signed the flight lab Terms of Agreement (if applicable)
- ☐ Is furnished with…
  - a signed enrollment certificate
  - a copy of this TCO
  - a copy of the FOM
  - Show where these are stored electronically
- ☐ Has applied for a student pilot certificate in IACRA

**How to Succeed in Pilot Training**

- ☐ Show up prepared!
  - Study
  - Chair fly
- ☐ Fly often – at least 3 times/week
- ☐ Communicate with your CFI
- ☐ Keep perfect records (go over how to fill out a logbook)

**Safety Procedures and Practices Manual (Flight Operations Manual (FOM))**

- ☐ Purpose of the manual
  - Augments FARs (Can be more restrictive; not less)
  - Airlines use them
  - Treat as regulatory
- ☐ Go over the rules (dress code; no show; taxi procedures; weather mins; etc.)
- ☐ Safety Management System: how/when to file a report

**Training Course Outline (TCO)**

- ☐ Facilities, resources, and personnel
- ☐ Lesson progression and topics
- ☐ Lesson layout
- ☐ Stage 1 and 2 objectives and completion standards
- ☐ Flight time and Pre/Post ground time requirements

**Federal Aviation Regulations (FAR)**

- ☐ How to read the FARs
  - Division into Parts, Subparts, etc.
  - Primary and sub-paragraphs
  - Purpose of Part 1, 61, 91, 141, etc.
- ☐ 61.3 Requirements for Certificates, Ratings, and Authorizations
- ☐ 61.23 Medical Certificates: Requirement and Duration
- ☐ 61.51 Pilot Logbooks
- ☐ 61.56 Flight Review
- ☐ 61.57 Recent Flight Experience for PIC
- ☐ 61.87 Solo Requirements for Student Pilots
- ☐ 61.89 General Solo Limitations

COMPLETION STANDARDS

By the end of this lesson the student will be enrolled and ready to begin flight training. Also, through oral quizzing the student shall demonstrate a basic understanding of the Safety Procedures and Practices Manual (a.k.a. FOM), the TCO, and the FARs. Further, the student will demonstrate knowledge of how to study and succeed in this flight training program.

REQUIRED READING/STUDY

(None)

# LESSON 2: PRE/POST GROUND 2.0 HOURS

LESSON OBJECTIVE

The objective is to introduce the P and A of the PAVE risk management acronym by discussing I'M SAFE and aircraft preflight procedures. Additionally, the student will review basic aerodynamic principles that will apply to the first flight lesson.

GROUND TRAINING

**Risk Management**

- ☐ PAVE – the 4 risk elements
- ☐ Making the go/no-go decision

**Aeromedical Overview**

- ☐ I'M SAFE
- ☐ Middle ear and sinus problems
- ☐ Motion sickness
- ☐ Carbon monoxide poisoning
- ☐ Stress and fatigue
- ☐ Effects of alcohol and drugs

**Aerodynamics**

- ☐ Angle of Attack (AOA) and how a wing creates lift
- ☐ 4 Forces acting on the airplane
- ☐ Axis of rotation (roll, pitch, yaw)
- ☐ Trim (how to trim off pressure)
- ☐ Flight controls
  - Elevator/Stabilator controls speed and/or altitude
  - Rudder for coordination
  - Ailerons to bank/turn
  - Power controls speed and/or altitude
- ☐ Left turning tendencies
- ☐ Dynamic and Static stability

**Instrumentation**

- ☐ Pitot/static instruments
  - "6-pack" (Description/Operation)
  - "Glass" (PFD/MFD; AHRS/ADC)
- ☐ Gyroscopic instruments
  - "6-pack" (Description/Operation)
  - "Glass" (PFD/MFD; AHRS/ADC)

**Preflight Preparation and Procedures**

- ☐ How to complete dispatch paperwork
- ☐ Certificates and documents (AROW)
- ☐ Operating limitations to include placards and STC's
- ☐ Airworthiness requirements (inspections, AD's etc.)
- ☐ How to verify maintenance inspections (A-AVIATE)
- ☐ FAR 91.9, 91.203 & 91.205
- ☐ POH Sections 2, 3, & 4
- ☐ Conduct a thorough preflight inspection
  - Use an airplane if available
  - Use the Preflight Power Point if no airplane available
  - Follow along with the checklist

COMPLETION STANDARDS

The student will be able to demonstrate basic preflight requirements, to include a self-assessment (I'M SAFE) and a proper airplane inspection. Additionally, through oral quizzing the student will demonstrate basic knowledge of aerodynamic principles.

REQUIRED READING/STUDY

- Federal Aviation Regulations (FARs) – 91.9, 91.203 and 205
- Airplane Flying Handbook (AFH) FAA-H-8083-3C - Ch 1 thru 2
- Aircraft Pilot Operating Handbook sections 1, 2 & 4
- North Star Aviation Inc. Preflight Power Point Presentation
- FAA Private Pilot – Airplane Airman Certification Standards (ACS) Area of Operation I. Task B (Airworthiness Requirements)

# LESSON 3: FLIGHT
# 1.1 HOURS DUAL
# 0.9 HOURS PRE/POST

LESSON OBJECTIVE

The student will be introduced to all normal checklist procedures—preflight through post flight. In the flight phase the student will be introduced to the fundamentals of basic aircraft control and pilotage navigation (the GPS/VOR may ***not*** be used.)

GROUND TRAINING

**Preflight Preparation**

- ☐ Pilot Certificates and documents
- ☐ FAR 91.103
  - Check weather
  - Check NOTAMs
  - Check TFRs
  - Calculate T/O & Landing performance
  - Calculate Weight & Balance
- ☐ I'M SAFE
- ☐ Practice area selection

**Safety Related Operations and Procedures**

- ☐ Crew Resource Management
- ☐ Positive exchange of flight controls
- ☐ Visual scanning/collision avoidance
- ☐ Pre-maneuver checklist and clearing turns
- ☐ Runway incursion avoidance

**Preflight Briefing**

- ☐ Takeoff procedures
- ☐ V-Speeds
- ☐ Pitch/Power relationship for airspeed and altitude control
- ☐ Coordinated turns

FLIGHT TRAINING

**Preflight Procedures**

- ☐ Preflight inspection
- ☐ Aircraft servicing: oil and fuel
- ☐ Cockpit management
- ☐ Checklist usage

**Start, Taxi, Run-up**

- ☐ Engine start and warm-up
- ☐ Taxi briefing
- ☐ Taxi procedures
  - Use of rudder pedals
  - Use of brakes
  - Positioning flight controls
- ☐ Aircraft Run-up

**Normal/Crosswind Takeoff and Landing**

- ☐ Pre-takeoff briefing
- ☐ Before takeoff checklist
- ☐ CFI-demonstrated takeoff
- ☐ Climb at $V_y$: emphasize the horizon
- ☐ CFI-demonstrated pattern and landing
- ☐ Radio Communications - CFI

**Pilotage Navigation *(No GPS/VOR!)***

- ☐ Navigate to/from the practice area via landmarks
- ☐ Estimate distance

**Basic & Performance Maneuvers**

- ☐ Straight-and-level flight at various airspeeds: emphasize the horizon
- ☐ Use of pitch trim
- ☐ Power settings for key airspeeds
- ☐ Climbs and descents from St. & Lvl.
- ☐ Turns up to 30° bank
- ☐ Dynamic and static stability demo
- ☐ Rudder and aileron coordination maneuvers

**Post Flight Procedures**

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

COMPLETION STANDARDS

The lesson will be complete when the student is introduced to all procedures, briefings, takeoffs, landings, and maneuvers mentioned in this lesson while completing the first flight in the PA28.

REQUIRED READING/STUDY

- POH Sections 2 & 4
- AFH Ch 3 and 4
- FAR 91.103
- AIM 5-1-3 (NOTAMs)
- ACS I. Task A (Pilot Qualifications)

# LESSON 4: FLIGHT
# 1.5 HOURS DUAL
# 0.5 HOURS PRE/POST

LESSON OBJECTIVE

The student will build upon the previous lesson with continued practice of preflight procedures and checklist usage. Basic control skills are further developed with the introduction of steep turns. The CFI performs landings at a minimum through Lesson 6 so the student can develop a proper sight picture. Pilotage navigation (i.e. no GPS/VOR) continues to be an emphasis.

GROUND TRAINING: Review

**Preflight Preparation**

- ☐ Pilot certificates and documents
- ☐ FAR 91.103 (weather, NOTAMS, wt. & balance, etc.)
- ☐ I'M SAFE
- ☐ Practice area selection

GROUND TRAINING

**Normal/Crosswind Takeoff**

- ☐ Centerline control via rudder
- ☐ Ailerons into the wind; gradually reduce
- ☐ V-speeds (Rotate and Climb)

**Radio Communication**

- ☐ Begin/end all calls with the airport name
- ☐ Who, where, what, etc.
- ☐ Example radio calls: "Mankato Traffic, Minnstate 67, Left Base …"

**Steep Turns**

- ☐ Load factor: why more "pull" is needed to hold altitude
- ☐ Induced drag: why more power is needed to hold airspeed
- ☐ Coordinated turns
- ☐ Outside (horizon) reference
- ☐ ACS standards

FLIGHT TRAINING: Review

**Pre/Post flight Procedures**

- ☐ Checklist usage
- ☐ Preflight inspection
- ☐ Cockpit management
- ☐ Parking and securing the aircraft
- ☐ Post flight inspection

**Safety Related Operations and Procedures**

- ☐ Crew Resource Management
- ☐ Positive Exchange of the Flight Controls
- ☐ Visual Scanning/Collision Avoidance
- ☐ Pre-maneuver Checklist and Clearing Turns
- ☐ Runway Incursion Avoidance

**Start, Taxi, Run-up**

- ☐ Engine start and warm-up
- ☐ Taxi briefing
- ☐ Taxi procedures (rudder pedals, brakes, and flight controls for wind.)
- ☐ Aircraft Run-up

**Normal/Crosswind Takeoff and Landing**

- ☐ Pre-takeoff briefing
- ☐ Before takeoff checklist
- ☐ Student takeoff with CFI assistance
- ☐ CFI-demonstrated pattern and landing
- ☐ Radio Communications – Student

**Pilotage Navigation *(No GPS/VOR!)***

- ☐ Navigate to/from the practice area via landmarks
- ☐ Remain in the area via landmarks
- ☐ Estimate distance

**Basic & Performance Maneuvers**

- ☐ Use of pitch trim
- ☐ Power settings for key airspeeds
- ☐ Climbs and descents from S & L
- ☐ Rudder and aileron coordination maneuvers

FLIGHT TRAINING

**Steep Turns**

- ☐ Line up on a N-S or E-W road
- ☐ Add power and elevator thru 30° bank
- ☐ 45° bank left and right horizon picture
- ☐ Roll out on the same road

COMPLETION STANDARDS

With assistance the student will be able to perform preflight operations, and he/she will show progression with basic control. He/she will also begin to demonstrate situational awareness by navigating to/from the practice area using pilotage only with CFI assistance.

REQUIRED READING/STUDY

- AFH Ch 10 "steep turns."
- AIM 4-2-1 & 4-2-2

# LESSON 5: FLIGHT
# 1.5 HOURS DUAL
# 0.5 HOURS PRE/POST

LESSON OBJECTIVE

The student will build upon the previous lessons with continued practice of preflight procedures and checklist usage. Basic control skills are further developed with the introduction of slow flight and glides. The CFI performs landings at a minimum through Lesson 6 so the student can develop a proper sight picture. Pilotage navigation (i.e. no GPS/VOR) continues to be an emphasis.

GROUND TRAINING: Review

**Preflight Preparation**

- ☐ Pilot Certificates and documents
- ☐ FAR 91.103 (weather, NOTAMS, wt. & balance, etc.)
- ☐ I'M SAFE
- ☐ Practice area selection

**Normal/Crosswind Takeoff**

- ☐ Centerline control via rudder
- ☐ Ailerons into the wind; gradually reduce
- ☐ V-speeds (rotate and climb)

**Radio Communication**

- ☐ Begin/end all calls with the airport name
- ☐ Who, where, what, etc.

GROUND TRAINING

**Slow Flight**

- ☐ Pitch/power relationship
  - Pitch for speed
  - Power for altitude
- ☐ Target speeds and configurations
- ☐ Aerodynamic stall
- ☐ ACS standards

**Glides**

- ☐ Purpose
- ☐ Glide ratios
- ☐ Trim settings

FLIGHT TRAINING: Review

**Pre/Post flight Procedures**

- ☐ Checklist usage
- ☐ Preflight inspection
- ☐ Cockpit management
- ☐ Parking and securing the aircraft
- ☐ Post flight inspection

**Start, Taxi, Run-up**

- ☐ Engine start and warm-up
- ☐ Taxi briefing
- ☐ Taxi procedures (rudder pedals, brakes, and flight controls for wind.)
- ☐ Aircraft run-up

**Normal/Crosswind Takeoff and Landing**

- ☐ Pre-takeoff briefing
- ☐ Before takeoff checklist
- ☐ Student takeoff with CFI assistance
- ☐ CFI-demonstrated pattern and landing
- ☐ Radio communications – student

**Pilotage Navigation *(No GPS/VOR!)***

- ☐ Navigate to/from the practice area via landmarks
- ☐ Remain in the area via landmarks
- ☐ Estimate distance

FLIGHT TRAINING

**Slow Flight**

- ☐ Clean and with various flaps
  - Note AOA changes
  - Monitor airspeed (white arc)
- ☐ Emphasize pitch for speed & power for altitude
- ☐ Level flight, turns, climbs, descents
- ☐ Recover while holding altitude

**Glides**

- ☐ Power idle and various low settings
- ☐ Trim for hands-off speed control
  - Normal descent
  - Vg Glide (power idle)
- ☐ Glide straight ahead and turning
- ☐ Level off at a predetermined altitude

COMPLETION STANDARDS

With limited assistance the student will be able to perform preflight operations, and he/she will show progression with basic control by maintaining altitude ±300 feet, heading ±30°. He/she will practice situational awareness by navigating to/from the practice area using pilotage.

REQUIRED READING/STUDY

- AFH Ch 3 "Glides" and Ch 5 "Slow Flight"
- ACS V. Task A (Steep Turns)
- ACS VII. Task A (Slow Flight)

# LESSON 6: FLIGHT
# 1.5 HOURS DUAL
# 0.5 HOURS PRE/POST

LESSON OBJECTIVE

This is a review lesson to hone basic skills, steep turns, and slow flight. The CFI continues to perform the landing so the student can develop a proper sight picture. Pilotage navigation (i.e. no GPS/VOR) remains an emphasis.

GROUND TRAINING: Review

**Aircraft Airworthiness**

- ☐ Airworthiness requirements (inspections, AD's etc.)
- ☐ Required maintenance inspections (A-AVIATE)
- ☐ FAR 91.203 & 205

GROUND TRAINING

**Pilotage Navigation**

- ☐ Identify landmarks on the practice area map
- ☐ Discuss how to remain in the area
  - Use landmarks
  - Use the wind (fly upwind most often)
  - Always make turns
- ☐ Discuss landmarks to find the airport

FLIGHT TRAINING: Review

**Pre/Post flight Procedures**

- ☐ Checklist usage
- ☐ Preflight inspection
- ☐ Cockpit management
- ☐ Parking and securing the aircraft
- ☐ Post flight inspection

**Start, Taxi, Run-up**

- ☐ Engine start and warm-up
- ☐ Taxi briefing
- ☐ Taxi procedures (rudder pedals, brakes, and flight controls for wind.)
- ☐ Aircraft run-up

**Normal/Crosswind Takeoff and Landing**

- ☐ Pre-takeoff briefing
- ☐ Before takeoff checklist
- ☐ Student takeoff with CFI assistance
- ☐ CFI-demonstrated pattern and landing
- ☐ Radio communications – student

**Pilotage Navigation *(No GPS/VOR!)***

- ☐ Navigate to/from the practice area via landmarks
- ☐ Remain in the area via landmarks
- ☐ Estimate distance
- ☐ Find the airport with no CFI assistance

**Slow Flight**

- ☐ Clean and with various flaps
  - Note AOA changes
  - Monitor airspeed (white arc)
- ☐ Emphasize pitch for speed & power for altitude
- ☐ Level flight, turns, climbs, descents
- ☐ Recover while holding altitude

**Steep Turns**

- ☐ Line up on a N-S or E-W road
- ☐ Add power and elevator thru 30° bank
- ☐ 45° bank left and right horizon picture
- ☐ Roll out on the same road

COMPLETION STANDARDS

The student will be able to perform preflight operations, and he/she will maintain altitude ±300 feet, heading ±30° through all maneuvers. He/she will practice situational awareness by navigating to/from the practice area using pilotage.

REQUIRED READING/STUDY

- Pilot's Handbook of Aeronautical Knowledge (PHAK) Ch 9
- ACS V. Task A (Steep Turns)
- ACS VII. Task A (Slow Flight)

# LESSON 7: PRE/POST GROUND 2.0 HOURS

LESSON OBJECTIVE
This ground lesson prepares the student to handle emergency situations such as aerodynamic stalls, systems and equipment malfunctions, and situations requiring emergency descents. It also introduces ground reference maneuvers.

GROUND TRAINING

**Stalls**

- ☐ Definition of Angle of Attack (relative wind to chord line)
- ☐ Definition of a stall
  - Critical AOA is exceeded
  - Not directly related to airspeed (e.g. accelerated stall)
- ☐ Dangers of stalling (especially when maneuvering low to the ground)
- ☐ Stall recognition
  - Warning horn (some aircraft)
  - "Mushy" controls
  - Buffet
  - Nose drop (natural recovery)
- ☐ Stall recovery ("Relax-Max-Roll")
  - Lower AOA (i.e. drop the nose)
  - Level the wings (emphasize rudder for this vs. ailerons)
  - Max power
  - Secondary stalls
- ☐ Stall practice
  - Why practice?
  - Power off (approach and landing) stalls
  - Power on (takeoff and departure) stalls
  - ACS standards

**Spins**

- ☐ Definition (uncoordinated stall)
  - Insipient phase
  - Developed phase
- ☐ Dangers of spinning (especially when maneuvering low to the ground)
- ☐ Spin recognition
- ☐ Spin recovery
  - PARE (general)
  - POH specific (PA28-181)
  - Dive recovery
  - Must recover BEFORE spin begins when low!

**Systems/Equipment Malfunctions**

- ☐ Review emergency checklists
- ☐ Discuss memory items
  - Fire during start
  - Takeoff abort
  - Fire/Engine failure in flight
  - Emergency descent
- ☐ Emergency scenarios; "What would you do if?"
  - Rough engine
  - Engine failure in flight
  - Alternator failure
  - Radio failure
  - Flight control failure

**Federal Aviation Regulations**

- ☐ 91.3 PIC emergency authority
- ☐ 830.1 Emergency reporting

**Ground Reference Maneuvers**

- ☐ Purpose
- ☐ Analyzing the wind
- ☐ How to track a road (i.e. crab)
- ☐ Required maneuvers
  - Rectangle pattern
  - Turn-about-a-point
  - S-turn
- ☐ ACS standards

COMPLETION STANDARDS
The student will gain an understanding of, and respect for, the dangers of stalls and spins. The student will be able to verbalize the proper recognition and recovery procedures for both. He/she will begin to show Aeronautical Decision Making (ADM) skills for a given scenario.

REQUIRED READING/STUDY

- AFH Ch 5 and 7 (thru S-turn)
- PHAK Ch 2 & 5
- POH Section 3
- NSA Archer Emergency Checklist
- FAR (NTSB) 830
- Administer the FOM open book test

# LESSON 8: FLIGHT
# 1.5 HOURS DUAL
# 0.5 HOURS PRE/POST

LESSON OBJECTIVE

This lesson introduces power on and power off stalls to prepare the student for safe aircraft operation prior to solo. The student will begin to perform the landing with CFI assistance. Pilotage navigation (i.e. no GPS/VOR) remains an emphasis.

GROUND TRAINING: Review

**Stalls/Spins**

- ☐ Stall recognition
- ☐ Stall recovery
- ☐ How to set up the maneuvers for training
- ☐ Spin recognition and recovery
  - Uncoordinated stall
  - Airplane begins to turn
  - Recovery-POH specific (PA28-181)

**Systems/Equipment Malfunctions**

- ☐ Engine fire during start
- ☐ Rough engine during run-up
  - Magneto check doesn't pass
  - Discuss clearing procedure

FLIGHT TRAINING: Review

**Start, Taxi, Run-up**

- ☐ Engine start and warm-up
  - Simulate a fire
  - Identify emergency equipment
- ☐ Taxi briefing
- ☐ Taxi procedures (rudder pedals, brakes, and flight controls for wind.)
- ☐ Aircraft Run-up
  - Simulate a rough mag check
  - Practice clearing procedure

**Normal/Crosswind Takeoff and Landing**

- ☐ Student takeoff
- ☐ Student pattern and landing with CFI assistance
- ☐ Radio communications

**Steep Turns**

- ☐ OPTIONAL: Steep turns if time allows

**Pilotage Navigation *(No GPS/VOR!)***

- ☐ Navigate to/from the practice area via landmarks
- ☐ Remain in the area via landmarks
- ☐ Estimate distance
- ☐ Find the airport with no CFI assistance

**Slow Flight**

- ☐ Clean and with various flaps
  - Note AOA changes
  - Monitor airspeed (white arc)
- ☐ Emphasize pitch for speed & power for altitude
- ☐ Level flight, turns, climbs, descents

FLIGHT TRAINING

**Power Off Stall**

- ☐ Various flap configurations
- ☐ Recover on first indication
- ☐ Recover at the buffet
- ☐ Recover from a full stall
- ☐ Demo secondary stall during recovery

**Power On Stall**

- ☐ Various takeoff/go-around flap configurations
- ☐ Recover on first indication
- ☐ Recover at the buffet
- ☐ Recover from a full stall
- ☐ Demo secondary stall during recovery

**Spin Awareness (Do Not Spin!)**

- ☐ Enter a turning power off stall
- ☐ Emphasize rudder use on recovery to level wings

COMPLETION STANDARDS

The student will be able to recite stall/spin recognition and recovery procedures and apply that knowledge to stall setup and recovery in the airplane with CFI assistance. He/she will maintain altitude ±300 feet, heading ±30° through all maneuvers. The student will continue to demonstrate situational awareness by navigating to/from the practice area, and remain within the practice area, using pilotage only and with little CFI assistance. The student will perform the landing with CFI assistance.

REQUIRED READING/STUDY

- AFH Ch 5
- ACS VII. Task B, C, and D (Stalls/Spins)

# LESSON 9: FLIGHT
# 1.5 HOURS DUAL
# 0.5 HOURS PRE/POST

LESSON OBJECTIVE

The student will further develop power on/off stall setup and recovery procedures. Ground reference maneuvers are introduced as a precursor to traffic patterns. Additionally, the student will gain skills in handling emergencies through the introduction of system/equipment malfunctions in flight. The student will continue to perform the landing with CFI assistance. Pilotage navigation (i.e. no GPS/VOR) remains an emphasis.

GROUND TRAINING: Review

**Systems/Equipment Malfunctions**

- ☐ Review emergency checklists
- ☐ Discuss memory items
  - Fire during start
  - Fire/Engine failure in flight
  - Takeoff abort
- ☐ Emergency scenarios; “What would you do if?”
  - Rough engine
  - Engine failure in flight
  - Alternator failure
  - Radio failure
- ☐ Emergency Descents
  - When required
  - Safe airspeeds
  - Bank angle

FLIGHT TRAINING: Review

**Normal/Crosswind Takeoff and Landing**

- ☐ Student takeoff
- ☐ Student pattern and landing with CFI assistance
- ☐ Radio communications

**Pilotage Navigation *(No GPS/VOR!)***

- ☐ Navigate to/from the practice area via landmarks
- ☐ Remain in the area via landmarks
- ☐ Find the airport with no CFI assistance

**Steep Turns**

- ☐ OPTIONAL: Steep turns if time allows

**Slow Flight**

- ☐ OPTIONAL: Slow flight if time allows

**Power Off Stall**

- ☐ Various flap configurations
- ☐ Straight and/or turning
- ☐ Recover on first indication, buffet, or full stall

**Power On Stall**

- ☐ Various takeoff/go-around flap configurations
- ☐ Straight and/or turning
- ☐ Recover on first indication, buffet, or full stall

FLIGHT TRAINING

**Emergency Descent**

- ☐ Scenario: smoke/fumes in the cabin
- ☐ Execute an emergency descent to 1000’ AGL
  - Idle power
  - Accelerate to $V_{no}$
  - Max Bank - 45°

**Ground Reference Maneuvers**

- ☐ Track a road with a crosswind using crab
- ☐ Rectangular pattern
- ☐ Turn-about-a-point
- ☐ S-turn

COMPLETION STANDARDS

The student will be able to setup and recover from stalls with some CFI assistance. He/she will maintain altitude ±300 feet, heading ±30° through all maneuvers. During an emergency descent the student will recognize airspeed limitations and be able to fly near $V_{no}$. He/she will continue to demonstrate situational awareness and pilotage skills by analyzing winds during ground reference maneuvers and while navigating to/from, and remaining within, the practice area. The student will continue to perform the landing with CFI assistance.

REQUIRED READING/STUDY

- ACS V. Task B (Ground Ref. Mnvrs)
- ACS IX. Task A (Emergency Descent)

# LESSON 10: FLIGHT
# 1.5 HOURS DUAL
# 0.5 HOURS PRE/POST

LESSON OBJECTIVE

This review flight will hone the student's stall recognition and recovery skills. Another system/equipment malfunction scenario is introduced, leading to an emergency descent. The number and type of ground reference maneuvers are at the CFI's discretion, but turns-about-a-point and/or s-turns will be emphasized (rectangular patterns receive more attention when practicing traffic patterns.) The student will continue to perform the landing with some CFI assistance. Pilotage navigation (i.e. no GPS/VOR) remains an emphasis.

GROUND TRAINING

**Safety of Flight**

- ☐ Collision avoidance
- ☐ Wind shear avoidance
- ☐ Wake turbulence avoidance

FLIGHT TRAINING: Review

**Normal/Crosswind Takeoff and Landing**

- ☐ Student takeoff
- ☐ Student pattern and landing with CFI assistance
- ☐ Radio communications

**Pilotage Navigation *(No GPS/VOR!)***

- ☐ Navigate to/from the practice area via landmarks
- ☐ Remain in the area via landmarks
- ☐ Find the airport with no CFI assistance

**Steep Turns**

- ☐ OPTIONAL: Steep turns if time allows

**Slow Flight**

- ☐ OPTIONAL: Slow flight if time allows

**Power Off Stall**

- ☐ Various flap configurations
- ☐ Straight and/or turning
- ☐ Recover on first indication, buffet, or full stall

**Power On Stall**

- ☐ Various takeoff/go-around flap configurations
- ☐ Straight and/or turning
- ☐ Recover on first indication, buffet, or full stall

**Emergency Descent**

- ☐ Scenario: engine fire
- ☐ Execute an emergency descent to 1000' AGL
  - Idle power
  - Accelerate to $V_{no}$
  - Max Bank - 45°

**Ground Reference Maneuvers**

- ☐ Track a road with a crosswind using slip (in preparation for crosswind landings)
- ☐ Ground reference maneuver: Choose 1 or more:
  - Turn-about-a-point
  - S-Turn
- ☐ OPTIONAL: Rectangular Pattern

COMPLETION STANDARDS

The student will be able to setup and recover from stalls with little CFI assistance. He/she will maintain altitude ±300 feet, heading ±30° through all maneuvers. During an emergency descent the student will recognize airspeed limitations and be able to fly near $V_{no}$. He/she will continue to demonstrate situational awareness and pilotage skills by analyzing winds during ground reference maneuvers and while navigating to/from and remaining within the practice area. The Student will continue to perform the landing with CFI assistance.

REQUIRED READING/STUDY

- AFH Ch 1 "Collision avoidance"
- PHAK Ch 12 "Low-level wind shear"
- AIM Ch 7, Section 4 (Wake Turbulence)
- ACS V. Task B (Ground Ref. Mnvrs)
- ACS IX. Task A (Emergency Descent)

# LESSON 11: PRE/POST GROUND 2.0 HOURS

LESSON OBJECTIVE
This ground lesson will prepare the student for solo flight by covering traffic patterns, normal/crosswind landings, forward slips to landings, and go-arounds. Emergency procedures are further emphasized, including the emergency approach and landing both on and off the airport. By this point the student will be able to navigate to/from the local area via pilotage; therefore, GPS and radio (VOR) navigation procedures are introduced. At the completion of this lesson the student will have taken the FOM open book test and it will have been corrected to 100%.

GROUND TRAINING: Review

**Systems/Equipment Malfunctions**

- ☐ Review emergency checklists
- ☐ Discuss memory items
  - Fire during start
  - Fire/Engine failure in flight
  - Takeoff Abort
- ☐ ADM in emergencies
- ☐ Emergency scenarios; “What would you do if?”
  - Low oil pressure
  - Engine fire in flight
  - Alternator failure
  - Smoke/fumes in cockpit
  - Flight control failure

GROUND TRAINING

**Emergency Equipment**

- ☐ Use of the fire extinguisher
- ☐ ELT
  - Location
  - Operation
  - Maintenance requirements
- ☐ Emergency radio communications
  - 121.5
  - Declaring emergency/mayday
- ☐ Recommended emergency/survival gear

**Emergency Approach and Landing**

- ☐ Trim for best glide
- ☐ Troubleshoot a failed engine
  - Checklist if time
  - Memory items
- ☐ Locate a suitable landing spot
- ☐ Energy management/wind analysis
- ☐ Setting up a landing pattern

**Traffic Patterns**

- ☐ Traffic pattern legs
- ☐ How to enter (local and other airports)
- ☐ Radio calls
- ☐ Airspeeds and configurations on downwind, base, and final
- ☐ Adjusting for wind
- ☐ Visual references

**Normal/Crosswind Landing**

- ☐ A stable approach is most important
- ☐ Focus down the runway in the flare
- ☐ Level off above the runway, and hold it
- ☐ Maintain centerline
- ☐ Touch on the mains first

**Forward Slip**

- ☐ When to use (i.e. to deplete energy)
- ☐ How to fly (i.e. cross-controlled)
- ☐ Differentiate from side slip used for crosswind landing

**Go-Around**

- ☐ When to initiate
- ☐ How to fly (5Cs: Cram, Climb, Clean, Cool, Call)
- ☐ Go-around from a bounce, balloon, porpoise, etc.
- ☐ Offset if required for traffic

**GPS and VOR Navigation**

- ☐ Programming the GPS for direct-to flight
- ☐ Using the VOR to fly to/from a station
  - Tune and identify the station
  - Center the CDI with a To/From
  - Apply wind corrections

**FOM Open Book Test: Correct to 100%**

- ☐ FOM Open Book Test

COMPLETION STANDARDS
The student will be able to apply basic ADM to a given emergency scenario, using the checklist and/or emergency responses. This includes being able to recite the memory items in an engine failure situation. The student will know the legs of a traffic pattern and the radio calls, airspeeds, and configurations associated with each, and he/she will be able to recite the 5Cs used in a go-around. The FOM Open Book Test will also be graded and corrected to 100% by the end of this lesson.

REQUIRED READING/STUDY

- POH Section 5 “Takeoff/Landing”
- AIM Section 4-3-3 (Traffic Pattern)
- AFH Ch 8 & 9
- PHAK Ch 16 “VOR” & “GPS”
- Administer the Pre Solo Open Book Test

# LESSON 12: SIMULATOR
# 1.0 HOURS DUAL

LESSON OBJECTIVE

This emergency procedures simulator session is used to reinforce previous emergency lessons in preparation for solo flight. It is intended as a *procedures* training session so that the student can practice applying various checklists to various situations (i.e. basic aircraft control skills are not evaluated.)

SIMULATOR TRAINING

**Systems/Equipment Malfunctions**

- ☐ Engine fire during start
- ☐ Rough engine during mag check
- ☐ Takeoff abort
- ☐ Engine fail after takeoff
- ☐ Engine fail in flight (at altitude)
  - Power restored
  - Power not restored (followed by a power off landing)
- ☐ Engine fire in flight
- ☐ Emergency descent
- ☐ Smoke/fumes in the cockpit
  - Electrical fire
  - Other sources (e.g. ipad)
- ☐ Loss of oil pressure
- ☐ Loss of fuel pressure
- ☐ High oil temperature
- ☐ Rough engine in flight
- ☐ Alternator failure

**Spin Training**

- ☐ Practice spins from various entry situations (turn motion off)
- ☐ POH specific recovery (PA28-181)

COMPLETION STANDARDS

The student will be able to apply basic ADM to a given emergency scenario, using the checklist and/or emergency responses. This includes being able to recite the memory items in an engine failure situation. The student will know the POH specific recovery (PA28-181) and apply it during a spin.

REQUIRED READING/STUDY

- AFH Ch 18
- ACS IX. Task B, C, D (Emergency Operations)

# LESSON 13: FLIGHT
# 1.5 HOURS DUAL
# 0.5 HOURS PRE/POST

LESSON OBJECTIVE

The student will begin to practice multiple traffic patterns, landings, and go-arounds in preparation for solo flight. A satellite airport may be used to avoid congested patterns. This lesson begins with multiple patterns that result in go-arounds to solidify procedures, and then it moves on to landings. An emergency approach and landing off airport is also emphasized. GPS and VOR navigation are used, along with pilotage, to/from the airport(s). At the completion of this lesson, the student will be sent home with the Pre solo open book test.

GROUND TRAINING: Review

**GPS and VOR Navigation**

- ☐ Programming the GPS for direct-to flight
- ☐ Using the VOR to fly to/from a station
  - Tune and identify the station
  - Center the CDI with a To/From
  - Apply wind corrections

**Traffic Patterns**

- ☐ Traffic pattern legs
- ☐ How to enter (local and other airports)
- ☐ Radio calls/Clearing for traffic
- ☐ Airspeeds and configurations on downwind, base, and final
- ☐ Adjusting for wind
- ☐ Visual references

**Normal/Crosswind Landing**

- ☐ A stabilized approach is most important
- ☐ Focus down the runway in the flare
- ☐ Level off above the runway and hold it!
- ☐ Maintain centerline
- ☐ Touch on the mains first

GROUND TRAINING

**Airport Selection/Review**

- ☐ Select a satellite airport for training
  - Check NOTAMs & TFRs
  - Check METAR/TAFs
  - Check runway lengths
- ☐ Review the route to/from the airport
- ☐ Review Chart Supplement (a.k.a. A/FD)
  - Frequencies
  - Pattern altitudes

FLIGHT TRAINING

**Navigation**

- ☐ Program the GPS for direct-to flight
  - Set the CDI to GPS
  - Use map mode for SA only
  - Note distance, g/s, track, etc.
- ☐ Set VOR for direct-to flight
  - Tune/Identify station
  - Center CDI with “TO”

**Traffic Patterns**

- ☐ Enter per AIM or local procedures
- ☐ Fly multiple patterns to go-arounds
  - Work on ground track, airspeed, and configuration
  - Practice radio calls
  - Apply the 5Cs for go-arounds

**Normal/Crosswind Takeoffs and Landings**

- ☐ Fly a stabilized approach on speed
- ☐ Begin round-out at the correct height
- ☐ Hold the aircraft off the runway as it slows in idle power
  - Adjust back pressure to keep from ballooning or sinking
  - Focus down the runway
  - Wait for the mains to touch
- ☐ Full stop taxi back, stop and go, or touch and go at CFI’s discretion

**Emergency Approach and Landing (departing or returning flight)**

- ☐ Simulated engine failure en-route
- ☐ Trim for Vg
- ☐ Select a landing field (watch for towers)
- ☐ Troubleshoot (checklist/memory items)
- ☐ Manage energy/adjust for winds
- ☐ Configure when appropriate for landing
- ☐ Apply forward slip if required
- ☐ Go around no lower than 500’ AGL

COMPLETION STANDARDS

The student may demonstrate preflight planning skills by reviewing information for another airport, and he/she will be able to navigate with CFI assistance using GPS/VOR. In the pattern he/she will make all radio calls and name all legs correctly. He/she will show progression with basic control by maintaining altitude ±200 feet, heading ±20° through all maneuvers. The Pre Solo Open Book Test will be sent home with the student.

REQUIRED READING/STUDY

- AFH Ch 8
- ACS IV. Task A & B (Takeoff/Landing)

# LESSON 14: FLIGHT
# 1.5 HOURS DUAL
# 0.5 HOURS PRE/POST

LESSON OBJECTIVE
This lesson continues the practice of repetitive patterns and landings, including an on-airport emergency approach and landing. A satellite airport may be used to avoid congested patterns. In-flight maneuvers can be performed at CFI discretion if time allows. GPS and VOR navigation are used along with pilotage to/from the airport(s).

GROUND TRAINING: Review

**Normal/Crosswind Landing**
- ☐ A stabilized approach is most important
- ☐ Focus down the runway in the flare
- ☐ Level off above the runway and hold it!
- ☐ Maintain centerline
- ☐ Touch on the mains first

**Emergency Approach & Landing**
- ☐ On airport – minimize troubleshooting
- ☐ Don't stray too far
  - Consider the winds
  - Use the whole runway
- ☐ Trim for Vg and hold that until flaring
- ☐ Manage energy
  - Configure with flaps/drag when safe
  - Wait on final flaps until necessary
  - Apply forward slip to increase drag

**Airport Selection/Review**
- ☐ Select a satellite airport for training
  - Check NOTAMS & TFRs
  - Check METAR/TAFs
  - Check runway lengths
- ☐ Review the route to/from the airport
- ☐ Review Chart Supplement (a.k.a. A/FD)
  - Frequencies
  - Pattern altitudes

FLIGHT TRAINING: Review

**Navigation**
- ☐ Program the GPS for direct-to flight
- ☐ Set VOR for direct-to flight
  - Tune/Identify station
  - Center CDI with "TO"

**Traffic Patterns**
- ☐ Enter per AIM or local procedures
- ☐ Fly multiple low approaches
  - Work on ground track, airspeed, and configuration
  - Practice radio calls
  - Apply the 5Cs for go-arounds
- ☐ Go-Around

**Normal/Crosswind Takeoffs and Landings**
- ☐ Fly a stabilized approach on speed
- ☐ Forward slip to reduce energy
- ☐ Begin round-out at the correct height
- ☐ Hold the aircraft off the runway as it slows in idle power
  - Adjust back pressure to keep from ballooning or sinking
  - Focus down the runway
  - Wait for the mains to touch
- ☐ Maintain centerline
- ☐ Full stop taxi back, stop and go, or touch and go at CFI's discretion

**Emergency Approach and Landing (on airport)**
- ☐ Simulated engine failure on downwind
- ☐ Trim for Vg
- ☐ Manage energy/adjust for winds
- ☐ Configure when appropriate for landing
- ☐ Apply forward slip if required

**Steep Turns**
- ☐ OPTIONAL: Steep turns if time allows

**Slow Flight**
- ☐ OPTIONAL: Slow flight if time allows

**Power on/off stalls**
- ☐ OPTIONAL: Power on/off stalls if time

COMPLETION STANDARDS
The student may demonstrate preflight planning skills by reviewing information for another airport, and he/she will be able to navigate with little CFI assistance using GPS/VOR. The student will fly patterns while applying appropriate wind corrections and maintaining ground track. Landings may not result in porpoising or ballooning, and if they do, the student will call the go-around. He/she will show progression with basic control by maintaining altitude ±200 feet, heading ±20° through all maneuvers.

REQUIRED READING/STUDY
- The Pre Solo Closed book test will be administered

# LESSON 15: FLIGHT
# 1.5 HOURS DUAL
# 0.5 HOURS PRE/POST

LESSON OBJECTIVE

This is the final lesson before solo. It will be repeated as necessary until the CFI is confident in the student's abilities to fly safe patterns and landings. When the student is ready for solo this lesson is combined with Lesson 16. The local pattern or a satellite airport may be used (record the return leg as dual on Lesson 15.) The emphasis is on patterns and landings; all other maneuvers are at the CFI's discretion.

GROUND TRAINING: Review

**Pre Solo Tests: Correct to 100% (required before flight)**

- ☐ Pre Solo Open Book Test
- ☐ Pre Solo Closed Book Test

**Go Around**

- ☐ When to execute
  - Bounced landing
  - High balloon or porpoise
  - Traffic on the runway
  - Something's not right
- ☐ The 5C's
  - Cram (max power)
  - Climb (away from the ground)
  - Clean (raise flaps slowly)
  - Cool (i.e. take a breath)
  - Call (let others know)

FLIGHT TRAINING: Review

**Navigation**

- ☐ OPTIONAL: Program the GPS for direct-to flight
- ☐ OPTIONAL: Use VOR navigation for the return flight

**Traffic Patterns**

- ☐ Enter per AIM or local procedures
- ☐ Low approach to go-around
  - Work on ground track, airspeed, and configuration
  - Practice radio calls

**Normal/Crosswind Takeoffs**

- ☐ Pre-departure radio call: check for traffic
- ☐ Maintain centerline
- ☐ Rotate at $V_r$ and climb at $V_y$
- ☐ Apply ailerons into the wind (crosswind); gradually reduce
- ☐ Crab into the wind after liftoff (crosswind) to hold centerline

**Normal/Crosswind Landings**

- ☐ Fly a stabilized approach on speed
- ☐ Forward slip to reduce energy
- ☐ Begin round-out at the correct height
- ☐ Hold the aircraft off the runway as it slows in idle power
  - Adjust back pressure to keep from ballooning or sinking
  - Focus down the runway
  - Wait for the mains to touch
- ☐ Maintain centerline
- ☐ Align the aircraft with the runway (crosswind)
- ☐ Increase aileron into the wind (crosswind)
- ☐ Full stop taxi back, stop and go, or touch and go at CFI's discretion

**Emergency Approach and Landing (on/off airport)**

- ☐ OPTIONAL: Emergency approach and landing if time allows

**Steep Turns**

- ☐ OPTIONAL: Steep turns if time allows

**Slow Flight**

- ☐ OPTIONAL: Slow flight if time allows

**Power on/off stalls**

- ☐ OPTIONAL: Power on/off stalls if time

COMPLETION STANDARDS

This lesson is complete when the student is able to demonstrate safe patterns and landings consistently. The CFI must also be confident in the student's ability to handle emergencies while in the traffic pattern, including immediate recovery from an impending stall. With the above assurances, the CFI will endorse the student for solo flight. The pre solo closed book tests must also be completed and corrected to 100%.

REQUIRED READING/STUDY

- ACS III. Task B (Traffic Patterns)

# LESSON 16: FLIGHT
# 0.5 HOURS SOLO

LESSON OBJECTIVE

This lesson can be combined with Lesson 15. The student will fly his/her first solo in the traffic pattern following successful completion of multiple landings in Lesson 15*. The landing(s) will be performed under direct supervision of the CFI**, with as many go-arounds as required. The student will use the correct call sign per the FOM so that other pilots can identify him/her (e.g. “Minnstate 67 solo”.)

**Note: A student pilot certificate is required before solo.*

***Note: Logbook endorsement required. Reference FAR 61.87 (n) & (p)*

FLIGHT TRAINING: Review

**Traffic Patterns**

- ☐ Make all radio calls, and clear for traffic
- ☐ Checklist usage
- ☐ Normal/crosswind takeoffs
- ☐ Normal/crosswind landings
- ☐ OPTIONAL: Go around if required
- ☐ ***Full stop, taxi back all landings***

COMPLETION STANDARDS

This lesson is complete when the student has flown solo.

REQUIRED READING/STUDY

- ACS III. Task B (Traffic Patterns)
- ACS IV. Task A & B (Takeoff/Landing)
- ACS IV. Task M (Forward Slip to Landing)
- ACS IV. Task N (Go-Around/Rejected Landing)

# LESSON 17: FLIGHT
# 1.5 HOURS DUAL
# 0.5 HOURS PRE/POST

LESSON OBJECTIVE

This lesson is used to prepare the student for his/her Stage One check. The student will practice all maneuvers learned up to this point, repeating those that need extra work. This is an instructional flight; however, the CFI will exercise discretion in determining when to teach vs. when to evaluate (i.e. prepare the student to be evaluated on Lesson 19.)

GROUND TRAINING: Review

**Preflight Preparation**

- ☐ Pilot certificates and documents
- ☐ FAR 91.103 (weather, NOTAMS, wt. & balance, etc.)
- ☐ I'M SAFE
- ☐ Practice area selection

**Aircraft Airworthiness**

- ☐ Airworthiness requirements (inspections, AD's etc.)
- ☐ Required maintenance inspections (A-AVIATE)
- ☐ FAR 91.203 & 205
- ☐ Inspect aircraft maintenance logs

FLIGHT TRAINING: Review

**Navigation**

- ☐ Pilotage to and within the practice area
- ☐ VOR or GPS navigation to the airport

**Normal/Crosswind Takeoffs and Landings**

- ☐ Normal/crosswind takeoff and climb
- ☐ Traffic pattern entry
- ☐ Traffic patterns
- ☐ Normal/crosswind landings
- ☐ Radio communication
- ☐ Forward slip to landing
- ☐ Go-around/rejected landing
- ☐ Full stop taxi back, stop and go, or touch and go at CFI's discretion

**Practice Area Maneuvers**

- ☐ Steep turn
- ☐ Slow flight
- ☐ Power off stall (turning or straight)
- ☐ Power on stall (turning or straight)
- ☐ Spin awareness

**Emergency Procedures**

- ☐ System/equipment malfunction
- ☐ Emergency descent
- ☐ Emergency approach and landing (off airport)
- ☐ Emergency approach and landing (on airport)

**Ground Reference Maneuvers**

- ☐ Turn-about-a-point or S-turn
- ☐ OPTIONAL: rectangular pattern

COMPLETION STANDARDS

The student will be able to perform all maneuvers without CFI assistance. He/she will show progression with basic control by maintaining altitude ±200 feet, heading ±20° through all maneuvers.

REQUIRED READING/STUDY

- All material previously covered, with an emphasis on the ACS Areas of Operations and Tasks.

# LESSON 18: PRE/POST GROUND 2.5 HOURS

LESSON OBJECTIVE
This ground lesson is used to prepare the student for the oral portion of his/her Stage One check, and to ensure his/her training records are in order.

GROUND TRAINING: Review

**Risk Management**
- ☐ PAVE
- ☐ Making the go/no-go decision

**FARs**
- ☐ 61.3 Requirements for certificates, ratings, and authorizations
- ☐ 61.23 Medical certificates: requirement and duration
- ☐ 61.51 Pilot logbooks
- ☐ 61.56 Flight review
- ☐ 61.57 Recent flight experience for PIC
- ☐ 61.87 Solo requirements for student pilots
- ☐ 61.89 General solo limitations
- ☐ 91.3 PIC emergency authority
- ☐ 830.1 Emergency reporting

**Aeromedical Overview**
- ☐ I'M SAFE
- ☐ Middle ear and sinus problems
- ☐ Motion sickness
- ☐ Carbon monoxide poisoning
- ☐ Stress and fatigue
- ☐ Effects of alcohol and drugs

**Aerodynamics**
- ☐ Angle of Attack (AOA)
- ☐ 4 Forces acting on the airplane
- ☐ Axes of rotation (roll, pitch, yaw)
- ☐ Left turning tendencies
- ☐ Dynamic and static stability
- ☐ Definition of a stall
  - Stall recognition
  - Stall recovery
- ☐ Definition of a spin
- ☐ Spin recovery POH specific (PA28-181)

**Preflight Preparation and Procedures**
- ☐ Pilot certificates and documents
- ☐ FAR 91.103 (weather, NOTAMS, wt. & balance, etc.)
- ☐ Airplane certificates and documents (AROW)
- ☐ Maintenance inspections (A-AVIATE)
- ☐ FAR 91.203 & 205

**Systems/Equipment Malfunctions**
- ☐ Review emergency checklists
- ☐ Discuss memory items
  - Fire during start
  - Fire/Engine failure in flight
  - Takeoff Abort
- ☐ Emergency scenarios; "What would you do if?"

**Emergency Equipment**
- ☐ Use of the fire extinguisher
- ☐ ELT (location, operation, maintenance requirements)

GROUND TRAINING

**Records Audit (Student must be present)**
- ☐ Complete the *Private Pilot Stage One Auditing Checklist* and correct all errors.
- ☐ Certify completion with a remark on this lesson's gradesheet (example below):

  *"I have audited all lessons for TCO compliance using North Star Aviation's Private Pilot Stage One Auditing Checklist."*

COMPLETION STANDARDS
Through oral quizzing the student will demonstrate a basic understanding of safe aircraft operating principles, including FAR's, aeromedical considerations, aerodynamics, preflight planning and inspection requirements, and emergency procedures. This lesson is not complete until the record audit is accomplished and all errors are corrected.

REQUIRED READING/STUDY
- All material previously covered, with an emphasis on the ACS Areas of Operations and Tasks.

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# LESSON 19: STAGE ONE CHECK
# 1.5 HOURS DUAL
# 1.0 HOURS PRE/POST

LESSON OBJECTIVE

The Chief/Assistant Chief Instructor or an approved Stage Check Pilot will evaluate the student's knowledge and proficiency in the items listed below to determine if he/she is able to operate the aircraft safely in the local environment, and to determine if he/she is ready to begin Stage Two.

GROUND TRAINING: Review

**General Knowledge**

- ☐ FARs (See Lesson 2 for references)
- ☐ Aeromedical considerations
- ☐ Aerodynamics (including stalls/spins)
- ☐ Aircraft systems
- ☐ Basic weather

**Preflight Preparation**

- ☐ Pilot certificates and documents
- ☐ FAR 91.103 (weather, NOTAMS, wt. & balance, etc.)
- ☐ I'M SAFE
- ☐ Practice area selection

**Aircraft Airworthiness**

- ☐ Airworthiness requirements (inspections, AD's etc.)
- ☐ Required maintenance inspections (A-AVIATE)
- ☐ FAR 91.203 & 205
- ☐ Inspect aircraft maintenance logs

**Systems/Equipment Malfunctions**

- ☐ Emergency checklists
- ☐ Memory items
- ☐ Emergency scenarios; "What would you do if?"

**Emergency Equipment**

- ☐ Use of the fire extinguisher
- ☐ ELT (location, operation, maintenance requirements)

FLIGHT TRAINING: Review

**Navigation**

- ☐ Pilotage to, and within, the practice area
- ☐ VOR or GPS navigation to the airport

**Normal/Crosswind Takeoffs and Landings**

- ☐ Normal/crosswind takeoff and climb
- ☐ Traffic pattern entry
- ☐ Traffic patterns
- ☐ Normal/crosswind landings
- ☐ Radio communication
- ☐ Forward slip to landing
- ☐ Go-around/rejected landing
- ☐ Full stop taxi back, stop and go, or touch and go at CFI's discretion

**Practice Area Maneuvers**

- ☐ Steep turn
- ☐ Slow flight
- ☐ Power off stall (turning or straight)
- ☐ Power on stall (turning or straight)
- ☐ Spin awareness

**Emergency Procedures**

- ☐ System/equipment malfunction
- ☐ Emergency descent
- ☐ Emergency approach and landing (off airport)
- ☐ Emergency approach and landing (on airport)

**Ground Reference Maneuvers**

- ☐ Turn-about-a-point or S-turn
- ☐ OPTIONAL: rectangular pattern

COMPLETION STANDARDS

The student will demonstrate a basic understanding of the primary risk elements (PAVE), and the ability to perform safe solo flights. The student will maintain altitude ±200 feet, heading ±20°, and airspeed ±15kts through all maneuvers and in the traffic pattern. Stall recovery will be initiated when the full stall has been reached. Landings will be within the first third of the available runway, and if the landing results in a bounce the student will promptly execute a go around. The forward slip will be performed while maintaining control of the aircraft until a normal glide path is reached.

REQUIRED READING/STUDY

- All material previously covered, with an emphasis on the ACS Areas of Operations and Tasks.

# PRIVATE PILOT FLIGHT TRAINING

## STAGE TWO (26.8 HOURS)

## Lessons 20 - 36

**STAGE TWO OBJECTIVES:** In this stage the student will build upon what he/she learned in Stage One by learning how to operate the aircraft safely in the National Airspace System (NAS). This includes dual day and night cross country flights, solo day cross country flights, air traffic control communications, and takeoffs and landings from short or soft runways. The student will also learn how to fly solely by reference to instruments. Stage One lessons, such as area maneuvers and emergency procedures, will continue to be refined in preparation for the end of course stage check and Private Pilot checkride.

**STAGE TWO COMPLETION STANDARDS:** The stage will be completed when the student demonstrates through written, oral, and practical testing that he/she meets or exceeds Private Pilot Single Engine Land Airman Certification Standards (ACS). The student's flight time in various categories, as indicated in his/her training records, must meet or exceed those set forth in FAR Part 141 Appendix B.

Students are expected to complete the FAA Private Pilot knowledge test prior to the end of course stage check. A logbook endorsement from the student's instructor is required before taking this written test.

# LESSON 20: PRE/POST GROUND 2.0 HOURS

LESSON OBJECTIVE

This ground lesson introduces the student to short and soft field takeoff and landing procedures. It also prepares the student for instrument flying by discussing instrumentation, basic control by reference to instruments, and the dangers of flying VFR into IMC, with an emphasis on Spatial Disorientation.

GROUND TRAINING

**Short Field Takeoff**

- ☐ Checklist review
- ☐ V-Speeds and configuration
- ☐ How to perform
- ☐ Dangers/common errors
- ☐ ACS standards

**Short Field Landing**

- ☐ Checklist Review
- ☐ V-Speeds and configuration
- ☐ How to perform
- ☐ Apply max brakes if required (simulated)
- ☐ Dangers/common errors
- ☐ ACS standards

**Soft Field Takeoff**

- ☐ Checklist review
- ☐ V-Speeds and configuration
- ☐ How to perform
- ☐ Dangers/common errors
- ☐ ACS standards

**Soft Field Landing**

- ☐ Checklist review
- ☐ V-Speeds and configuration
- ☐ How to perform
- ☐ Dangers/common errors
- ☐ ACS standards

**Flight by Reference to Instruments**

- ☐ Pitot/static instruments
  - "6-pack" (description/operation)
  - "Glass" (PFD/MFD; AHRS/ADC)
- ☐ Gyroscopic instruments
  - "6-pack" (description/operation)
  - "Glass" (PFD/MFD; AHRS/ADC)
- ☐ Control/performance method
- ☐ Primary/supporting method
- ☐ Standard/half standard rate turns
- ☐ Timed turns
- ☐ Emphasize trim and power settings

**Hazards of Instrument Flying**

- ☐ CFIT (Controlled Flight Into Terrain)
- ☐ Limitations to visibility
- ☐ Spatial disorientation
- ☐ Illusions leading to Spatial "D"
- ☐ Unusual attitude recovery
- ☐ Runway illusions
- ☐ Aeromedical factors affecting instrument flight

**VFR into IMC**

- ☐ Emergency situation for a non-instrument rated pilot
- ☐ Make a 180 degree turn
  - Stay trimmed; hold altitude and speed
  - Note initial heading
  - Standard/half standard rate turn
- ☐ Seek help on 121.5 if required
- ☐ Find VFR weather and land

COMPLETION STANDARDS

The student will be able to state when short or soft field procedures are required and how to apply them. The student will also demonstrate understanding of the primary flight instruments, including the difference between pitot/static and gyroscopic instruments (glass and traditional.) Additionally, the student will understand how and why flight by reference to instruments is performed, including the hazards.

REQUIRED READING/STUDY

- AFH Ch 5 (Human Factors)
- AFH Ch 6 and 9 "Short/Soft field only"
- PHAK Ch 8
- ACS IV. Tasks C, D, E, and F (Short/Soft Takeoff/Landing)
- ACS VIII. (Basic Instrument Maneuvers)

# LESSON 21: FLIGHT
# 1.5 HOURS DUAL
# 0.4 INSTRUMENT
# 0.5 HOURS PRE/POST

LESSON OBJECTIVE

This lesson introduces the student to short/soft field procedures and to flight by reference to instruments only. Short/soft field practice may be accomplished at a satellite airport to reduce congestion. Other in-flight maneuvers may be practiced at the CFI's discretion.

Lesson Requirements:

- 2 landings, incorporating one slip to land

FLIGHT TRAINING: review

**Navigation**

- ☐ Pilotage to the practice area
- ☐ VOR or GPS navigation to the local airport
- ☐ OPTIONAL: GPS Navigation to a satellite airport

**Steep Turns**

- ☐ OPTIONAL: Steep turns if time allows

**Slow Flight**

- ☐ OPTIONAL: Slow flight if time allows

**Power On/Off Stalls**

- ☐ OPTIONAL: Power on/off stalls if time

FLIGHT TRAINING

**Takeoffs, Landings, and Go-Arounds**

- ☐ Short field takeoff
- ☐ Max performance climb ($V_x$)
- ☐ Short field landing
- ☐ Soft field takeoff
- ☐ Soft field landing
- ☐ Forward slip to landing
- ☐ Go-around/rejected landing

**Flight by Reference to Instruments**

- ☐ Straight and level
- ☐ Changing airspeeds while holding altitude
- ☐ Standard/half-standard rate turns
- ☐ Turns to headings
- ☐ Constant speed climbs and descents
- ☐ 180-degree timed turn
- ☐ Unusual attitude recoveries
- ☐ Track a VOR or GPS course
- ☐ Radio communication (e.g. simulated emergency calls)

COMPLETION STANDARDS

The student will begin to safely control the aircraft solely by reference to instruments, by maintaining altitude ±300 feet, heading ±30°, and airspeed ±20kts. Additionally, the student will demonstrate understanding of the purpose and procedures for performing short and soft field takeoffs and landings. Navigation To/From the practice area/Satellite airport will be done without CFI assistance. Traffic patterns will be flown by maintaining altitude ±150 feet, and airspeed ±15kts. The student will maintain situational awareness while flying in the pattern, the listed landing techniques will be introduced. If optional maneuvers are performed, they will maintain altitude ±150', heading ±15˚, and airspeed ±15 kts. If performed, stalls will be recovered at the full stall.

REQUIRED READING/STUDY

- AFH Ch 5 (Human Factors)
- AFH Ch 5 and 8 "Short/Soft field only"
- PHAK Ch 17
- ACS IV.Tasks C, D, E, and F (Short/Soft Takeoff/Landing)
- ACS VIII. (Basic Instrument Maneuvers)

# LESSON 22: FLIGHT
# 1.5 HOURS DUAL
# 0.4 INSTRUMENT
# 0.5 HOURS PRE/POST

LESSON OBJECTIVE
This lesson repeats the previous lesson, providing the student more practice with instrument flight and short/soft field procedures. Short/soft field practice may be done at a satellite airport to reduce congestion.

Lesson Requirements:
- 2 landings, incorporating one slip to land

FLIGHT TRAINING: review

**Navigation**
- ☐ Pilotage to the practice area
- ☐ VOR or GPS navigation to the local airport
- ☐ OPTIONAL: GPS navigation to a satellite airport

**Steep Turns**
- ☐ OPTIONAL: Steep turns if time allows

**Slow Flight**
- ☐ OPTIONAL: Slow flight if time allows

**Power On/Off Stalls**
- ☐ OPTIONAL: Power on/off stalls if time allows

**Takeoffs, Landings, and Go-Arounds**
- ☐ Short field takeoff
- ☐ Max performance climb ($V_x$)
- ☐ Short field landing
- ☐ Soft field takeoff
- ☐ Soft field landing
- ☐ Forward slip to landing
- ☐ Go-around/rejected landing

**Flight by Reference to Instruments**
- ☐ Straight and level
- ☐ Changing airspeeds while holding altitude
- ☐ Standard/half standard rate turns
- ☐ Turns to headings
- ☐ Constant speed climbs and descents
- ☐ 180-degree timed turn
- ☐ Unusual attitude recoveries
- ☐ Track a VOR or GPS course
- ☐ Radio communication (e.g. simulated emergency calls)

COMPLETION STANDARDS
The student will begin to safely control the aircraft solely by reference to instruments by maintaining altitude ±300 feet, heading ±30°, and airspeed ±20kts. Additionally, the student will demonstrate understanding of the purpose and procedures for performing short and soft field takeoffs and landings. Navigation To/From the practice area/Satellite airport will be done without CFI assistance. Traffic patterns will be flown by maintaining altitude ±150 feet, and airspeed ±15kts. The student will maintain situational awareness while flying in the pattern, the listed landing techniques will be reviewed. If optional maneuvers are performed, they will maintain altitude ±150', heading ±15˚, and airspeed ±15 kts. If performed, stalls will be recovered at the full stall.

REQUIRED READING/STUDY
- AFH Ch 5 (Human Factors)
- AFH Ch 5 and 8 "Short/Soft field only"
- PHAK Ch 8
- ACS IV. Tasks C, D, E, and F (Short/Soft Takeoff/Landing)
- ACS VIII. (Basic Instrument Maneuvers)

# LESSON 23: FLIGHT
# 1.5 HOURS SOLO

LESSON OBJECTIVE
This solo flight is designed to build confidence for the student by allowing him/her to fly to the practice area for maneuver training.

**Note: Logbook endorsement required (check for 90-day currency). Ref. FAR 61.87 (n) & (p)*

Lesson Requirements:

- 2 landings, incorporating one slip to land

FLIGHT TRAINING: review

**Navigation**

- ☐ Pilotage to and within the practice area
- ☐ VOR or GPS navigation to the local airport

**Area Maneuvers**

- ☐ Steep turns
- ☐ Slow flight
- ☐ Power on/off stalls

**Takeoffs, Landings, and Go-Arounds**

- ☐ Short field takeoff
- ☐ Max performance climb ($V_x$)
- ☐ Short field landing
- ☐ Soft field takeoff
- ☐ Soft field landing
- ☐ Forward slip to landing
- ☐ Go-around/rejected landing
- ☐ ***Full stop, taxi back all landings***

COMPLETION STANDARDS
This lesson is complete when the student has performed all required landings and maneuvers.

REQUIRED READING/STUDY
(None)

# LESSON 24: PRE/POST GROUND 2.5 HOURS

LESSON OBJECTIVE

This ground lesson begins the cross-country phase of training. The student will learn how to plan a cross country flight and how to apply pilotage and dead reckoning (DR) navigation principles to the flight. Night flying is also discussed in preparation for that phase of training.

GROUND TRAINING

**Flight Planning**

- ☐ VFR Sectional chart (legend, symbols, etc.)
- ☐ Route review
  - Airspace (rules and equipment)
  - Obstructions
  - Minimum safe altitudes
  - Checkpoints
- ☐ Destination
  - Chart supplement (a.k.a. A/FD) review
  - Runway lengths and directions
  - Communications
  - Services
  - NOTAMs
- ☐ Find true and magnetic course
- ☐ Altitude selection
  - FAR 91.159: VFR altitudes
  - Winds aloft: how to find
- ☐ Find True Airspeed
  - POH performance charts
  - Find fuel burn; rpm; etc.
- ☐ Find true/mag headings and groundspeed
  - E6B “Spin the winds”
  - Variation vs. deviation
- ☐ Plot all distances
- ☐ Determine estimated time en-route
- ☐ Determine Wt. & Bal. and fuel burn

**Risk Management**

- ☐ Emphasize the V and E in PAVE
- ☐ How PAVE applies to a X/C flight

**Filing a Flight Plan**

- ☐ FAR 91.153: required information
- ☐ Purpose (search and rescue)
- ☐ FAR 91.151: fuel requirements VFR
- ☐ How/where to file
- ☐ How/where to close the flight plan

**Weather**

- ☐ Sources of weather information
- ☐ Departure, en-route, and arrival forecast
- ☐ METAR, TAF, FA, PIREP, winds aloft
- ☐ Charts (Prog; Radar Summary; etc.)

**ATC Communication**

- ☐ Check in with ATIS information
- ☐ Who, where, what
- ☐ Follow all instructions
  - “Unable” if you can’t
  - Request alternative
- ☐ ATC light gun signals
- ☐ VFR flight following

**Pilotage and DR: How to Fly**

- ☐ Single Pilot Resource Management
- ☐ Find obvious landmarks along the way
- ☐ Adjust course/heading for winds
- ☐ Ground speed checks; update times
- ☐ Lost procedures

**Diversion**

- ☐ Scenarios: when to divert
- ☐ How to find the closest airport
- ☐ How to set up for a landing
  - AWOS
  - Entering the traffic pattern

**Night Flying**

- ☐ Functions and parts of the eye
- ☐ Night illusions
- ☐ Night adaptation
- ☐ Aircraft lighting
- ☐ Airport lighting
- ☐ Personal lighting equipment

COMPLETION STANDARDS

At the completion of this lesson the student will be able to plan a VFR cross country flight, and he/she will be able to explain how to obtain all the required information per FAR 91.103. The student will prepare for the next lesson (25) by completing a cross country flight plan assigned by the CFI.

REQUIRED READING/STUDY

- FAR 91.151 thru 159, 91.209, 61.57(b)
- AFH Ch 10 and 11
- PHAK Ch 2, 12 thru 16
- ACS I. Tasks C, D, E,
- ACS VI. (Navigation)
- ACS XI. (Night Operations)

# LESSON 25: FLIGHT
# 1.7 HOURS DUAL X/C
# 0.3 INSTRUMENT
# 1.0 HOURS PRE/POST

LESSON OBJECTIVE

The student will plan a VFR cross country flight to one or more destinations, assigned by the CFI, that are at least 50NM apart*. This lesson will introduce the student to pilotage and dead reckoning skills as they apply to long distance navigation. To gain confidence in these skills use of the GPS and VOR will be minimized. (Exception: employ all available resources when necessary for safety and/or practicing Single Pilot Resource Management (SPRM))

**Note: Recommended routes: KMKT to KRWF; KMKT to KMWM; KMKT to KAUM*

**Note: Airport identifiers for route and distance (nm) between points needs to be in lesson comments*

Lesson Requirements:

- 2 landings

GROUND TRAINING: review

**Flight Planning**

- ☐ Review the student's flight plan log
- ☐ Have the student explain how he/she derived various numbers on the log

**Filing a Flight Plan**

- ☐ Review the student's flight plan form
- ☐ Have the student file the flight plan with Flight Service

**FAR 91.103**

- ☐ Check departure, en-route, and destination weather
- ☐ Check NOTAMs and TFRs
- ☐ Calculate weight and balance
- ☐ Calculate takeoff and landing performance

FLIGHT TRAINING: review

**Takeoffs, Landings, and Go-Arounds**

- ☐ OPTIONAL: Normal/crosswind takeoff and landing
- ☐ Short field takeoff
- ☐ Max performance climb ($V_x$)
- ☐ Short field landing
- ☐ Soft field takeoff
- ☐ Soft field landing
- ☐ OPTIONAL: Forward slip to landing
- ☐ OPTIONAL: Go-around/rejected landing

**Flight by Reference to Instruments**

- ☐ Straight and level, climbs, descents, turns to headings
- ☐ Recovery from unusual attitudes

FLIGHT TRAINING

**Cross Country Navigation**

- ☐ Activate and close the VFR flight plan
- ☐ Navigate via pilotage and DR to each point (no GPS)
- ☐ Set power per the performance chart (rpm and mixture)
- ☐ Perform groundspeed checks, update times, fuel use, etc.
- ☐ Update heading for winds
- ☐ Obtain weather information
- ☐ Checklist procedures
- ☐ Traffic pattern entry
- ☐ Lost procedures (fly or discuss)
- ☐ Diversion (fly or discuss)
    - Identify the nearest airport
    - Obtain current weather
    - Explain how to enter the pattern
- ☐ OPTIONAL: VFR flight following

COMPLETION STANDARDS

This lesson is complete when the student lands at a destination airport assigned by the instructor and shows ability to complete a pre-flight briefing, navigate via their flight plan, and employ SPRM throughout the flight. Altitude will be maintained ±150', heading ±15°. Short field landing will be performed within +250'/-50'.

REQUIRED READING/STUDY

- FAR 91.151 thru 159
- PHAK Ch 2, 12 thru 16
- ACS I. Tasks C, D, E
- ACS II. Task B (Flight Deck Management)
- ACS VI. (Navigation)

# LESSON 26: FLIGHT
# 1.5 HOURS SOLO

LESSON OBJECTIVE
This solo flight is designed to further build confidence for the student by allowing him/her to fly to the practice area for maneuver training, and to a satellite airport for patterns and landings*.

**Note: Logbook endorsement required for solo flight to another airport. Ref. FAR 61.93 (b)*

**Note: Logbook endorsement required (check for 90-day currency). Ref. FAR 61.87 (n) & (p)*

Lesson Requirements:
- 3 landings, incorporating one slip to land

FLIGHT TRAINING: review

**Navigation**
- ☐ Pilotage to and within the practice area
- ☐ GPS navigation to the satellite airport
- ☐ VOR or GPS navigation to the home airport

**Area Maneuvers**
- ☐ Steep turns
- ☐ Slow flight
- ☐ Power on/off stalls
- ☐ Ground reference maneuvers (turn-about-a-point and/or S-turn)

**Takeoffs, Landings, and Go-Arounds**
- ☐ Normal/crosswind takeoff and landing
- ☐ Short field takeoff
- ☐ Max performance climb ($V_x$)
- ☐ Short field landing
- ☐ Soft field takeoff
- ☐ Soft field landing
- ☐ Forward slip to landing
- ☐ Go-around/rejected landing
- ☐ ***Full stop, taxi back all landings***

COMPLETION STANDARDS
This lesson is complete when the student has performed all required landings and maneuvers.

REQUIRED READING/STUDY
(None)

# LESSON 27: FLIGHT
# 2.5 HOURS DUAL X/C
# 0.3 INSTRUMENT
# 1.0 HOURS PRE/POST

LESSON OBJECTIVE

This second cross country lesson introduces the student to Air Traffic Control (i.e. tower) communications while conducting patterns and landings*. The student will plan a VFR cross country flight assigned by the CFI to at least one destination with an active control tower* that is at least 50NM away. A second destination 50NM from the first and 50NM from the home airport is encouraged. This lesson will reinforce the student's pilotage and dead reckoning skills in preparation for solo cross country flights. To gain confidence in these skills use of the GPS and VOR will be minimized. (Exception: employ all available resources when necessary for safety and/or practicing Single Pilot Resource Management (SPRM))

**Note: N/A if operating from a towered airport*

**Note: Airport identifiers for route and distance (nm) between points needs to be in lesson comments*

Lesson Requirements:

- 3 landings, incorporating one slip to land

GROUND TRAINING: review

**Flight Planning**

- ☐ Review the student's flight plan log
- ☐ Have the student explain how he/she derived various numbers on the log

**Filing a Flight Plan**

- ☐ Review the student's flight plan form
- ☐ Have the student file the flight plan with Flight Service

**FAR 91.103**

- ☐ Check departure, en-route, and destination weather
- ☐ Check NOTAMs and TFRs
- ☐ Calculate weight and balance
- ☐ Calculate takeoff and landing performance

FLIGHT TRAINING: review

**Takeoffs, Landings, and Go-Arounds**

- ☐ Towered airport traffic patterns
- ☐ Normal/crosswind takeoff and landing
- ☐ Short field takeoff
- ☐ Max performance climb ($V_x$)
- ☐ Short field landing
- ☐ Soft field takeoff
- ☐ Soft field landing
- ☐ Forward slip to landing
- ☐ Go-around/rejected landing

**Flight by Reference to Instruments**

- ☐ Straight and level, climbs, descents, turns to headings
- ☐ Recovery from unusual attitudes

**Cross Country Navigation**

- ☐ Activate and close the VFR flight plan
- ☐ Navigate via pilotage and DR to each point (no GPS)
- ☐ Set power per the performance chart (rpm and mixture)
- ☐ Perform groundspeed checks, update times, fuel use, etc.
- ☐ Update heading for winds
- ☐ Obtain weather information
- ☐ Checklist procedures
- ☐ Traffic pattern entry
- ☐ Lost procedures (fly or discuss)
- ☐ Diversion
  - Identify the nearest airport
  - Obtain current weather
  - Enter the pattern
- ☐ VFR flight following

FLIGHT TRAINING

- ☐ Tower communication
- ☐ OPTIONAL: Practice light gun signals

COMPLETION STANDARDS

This lesson is complete when the student lands at a destination airport assigned by the instructor and shows ability to complete a pre-flight briefing, navigate via their flight plan, and employ SPRM throughout the flight. Altitude will be maintained ±150', heading ±15°. Short field landing will be performed within +250'/-50'.

REQUIRED READING/STUDY

- AIM 4-3-2 (Airport Control Tower)
- FAR 91.151 thru 159
- PHAK Ch 2, 12 thru 16
- ACS I. Tasks C, D, E,
- ACS II. Task B (Flight Deck Management)
- ACS VI. (Navigation)
- FAA Written Exam (Gleim)
- Administer Private Pilot Open Book Final Test

# LESSON 28: FLIGHT
# 3.0 HOURS DUAL X/C
# 3.0 HOURS NIGHT
# 0.4 INSTRUMENT
# 1.0 HOURS PRE/POST

LESSON OBJECTIVE
This cross country lesson introduces the challenges of night flying and meets FAR 141 Appendix B night requirements*. The student will plan a night VFR cross country flight to at least one destination. Additional destinations, including towered airports, are encouraged. This lesson will employ all available navigation resources (VOR, GPS, Pilotage, DR, etc.). At the completion of this lesson the Private Pilot Open Book Final Test will be sent home with the student.

**Note: Per FAR 141 Appendix B total cross country distance must be greater than 100NM, total night time must be at least 3.0 hours, and total patterns and landings to a full stop must be at least 10.* ***This lesson may be repeated until the 3.0 hour and 10 pattern and landing requirements are met.***

Lesson Requirements:

- 10 nighttime landings

**Note: Airport identifiers for route and distance (nm) between points need to be in lesson comments*

GROUND TRAINING: review

**Flight Planning**

- ☐ Review the student's flight plan log
- ☐ Have the student explain how he/she derived various numbers on the log

**Filing a Flight Plan**

- ☐ Review the student's flight plan form
- ☐ Have the student file the flight plan with Flight Service

**FAR 91.103**

- ☐ Check departure, en-route, and destination weather
- ☐ Check NOTAMs and TFRs
- ☐ Calculate weight and balance
- ☐ Calculate T/O & Ldg. performance

**Night Flying**

- ☐ Night illusions
- ☐ Night adaptation
- ☐ Aircraft lighting
- ☐ Airport lighting
- ☐ Personal lighting equipment

FLIGHT TRAINING: review

**Flight by Reference to Instruments**

- ☐ Basic control (climbs, turns, descents)
- ☐ VOR or GPS navigation
- ☐ Unusual attitude recovery

**Cross Country Navigation**

- ☐ Activate and close the VFR flight plan
- ☐ Navigate using all resources to each point
- ☐ Set power per the performance chart (rpm and mixture)
- ☐ Perform groundspeed checks, update times, fuel use, etc.
- ☐ Update heading for winds
- ☐ Obtain weather information
- ☐ Checklist procedures
- ☐ Traffic pattern entry
- ☐ Lost procedures (fly or discuss)
- ☐ Diversion (fly or discuss)
- ☐ OPTIONAL: VFR flight following

**Takeoffs, Landings, and Go-Arounds**

- ☐ Normal/crosswind takeoff and landing
- ☐ Short or soft field takeoff and landing
- ☐ Go-around/rejected landing

FLIGHT TRAINING

**Night Training**

- ☐ Traffic patterns to full-stop landings at night (10 req'd to complete the lesson*)
- ☐ Night preflight (checking lights)
- ☐ Setting cockpit lighting
- ☐ Blind cockpit check (pre-departure)
  - Student closes his/her eyes
  - CFI names switches, knobs, etc.
  - Student touches each while "blind"

**Emergency Procedures (Discuss in flight)**

- ☐ Electrical malfunctions
- ☐ Lost communication
- ☐ Engine failure at night

COMPLETION STANDARDS

***This lesson is not complete until all FAR 141 Appendix B night requirements are met*. Repeat as necessary.*** The student will be able to plan the flight accurately. In flight the student will be able to find and identify each destination airport using all available resources (GPS, VOR, Pilotage, DR, Airport Lighting), and he/she will enter a normal traffic pattern and perform safe night landings. The Private Pilot Open Book Final Test will be sent home with the student to be graded on the next lesson. Altitude will be maintained ±150', heading ±15°. Short field landing will be performed within +250'/-50'.

REQUIRED READING/STUDY

- AIM 2-1-1 thru 2-1-11
- FAR 91.151 thru 159, 91.209, 61.57(b)
- AFH Ch 11 (Night Operations)
- PHAK Ch 2, 12 thru 16
- ACS XI. (Night Operations)
- FAA Written Exam (Gleim)

# LESSON 29: FLIGHT
# 3.3 HOURS SOLO X/C
# 1.0 HOURS PRE/POST

LESSON OBJECTIVE

The student will apply lessons learned on the previous cross country dual flight(s) to perform a solo cross country flight that meets FAR 141 Appendix B solo cross country requirements*. The student will plan a VFR cross country flight, assigned by the CFI, to at least three different points of landing, with at least one segment greater than 50NM. The final point of landing will be the home airport. One airport will have an active control tower**. The student may employ all available navigation resources (VOR, GPS, Pilotage, DR, etc.); however, for training and checkride preparation he/she will concentrate on pilotage and dead reckoning navigation.

**Note: Per FAR 141 Appendix B para. 5(a)(1), total distance must be at least 100NM (one segment greater than 50NM) with landings at three or more points.*

***Note: Per FAR 141 Appendix B para. 5(a)(2), the student must perform 3 solo patterns and landings at a tower-controlled airport.*

****Note: Logbook endorsements required. Reference FAR 61.93 (c) and (d)*

**Note: Airport identifiers for route and distance (nm) between points needs to be in lesson comments*

Lesson Requirements:

- 3 landings

GROUND TRAINING: review***

**Private Pilot Open Book Test: Correct to 100% (required before flight)**

- ☐ Private Pilot Open Book Test

**Flight Planning**

- ☐ Review the student's flight plan log
- ☐ Have the student explain how he/she derived various numbers on the log

**Filing a Flight Plan**

- ☐ Review the student's flight plan form
- ☐ Have the student file the flight plan with Flight Service

**FAR 91.103**

- ☐ Check departure, en-route, and destination weather
- ☐ Check NOTAMs and TFRs
- ☐ Calculate weight and balance
- ☐ Calculate T/O & Ldg. performance

FLIGHT TRAINING: review

**Cross Country Navigation**

- ☐ Activate and close the VFR flight plan
- ☐ Navigate using all resources to each point (emphasize pilotage and DR)
- ☐ Set power per the performance chart
- ☐ Perform groundspeed checks, update times, fuel use, etc.
- ☐ Update heading for winds
- ☐ Obtain weather information
- ☐ Checklist procedures
- ☐ Traffic pattern entry
- ☐ OPTIONAL: VFR flight following

**Takeoffs, Landings, and Go-Arounds**

- ☐ Normal/crosswind takeoff and landing
- ☐ Short field takeoff and landing
- ☐ Soft field takeoff and landing
- ☐ Go-around/rejected landing
- ☐ ***Full stop, taxi back all landings***
- ☐ OPTIONAL: Pattern and landing at a tower-controlled airport (3 required between this lesson and lesson 30.)**

COMPLETION STANDARDS

The student will be able to plan the flight accurately. In flight the student will be able to find and identify each destination airport using all available resources (GPS, VOR, Pilotage, DR), and he/she will enter a normal traffic pattern and perform safe landings.

REQUIRED READING/STUDY

- FAR 91.151 thru 159
- PHAK Ch 2, 12 thru 16
- ACS I. Tasks C, D, E
- ACS II. Task B (Flight Deck Management)
- ACS VI. (Navigation)
- FAA Written Exam (Gleim)

# LESSON 30: FLIGHT
# 2.2 HOURS SOLO X/C
# 1.0 HOURS PRE/POST

LESSON OBJECTIVE

This second solo cross country flight augments the first, enhancing the student's confidence in his/her ability to fly and navigate solo in the national airspace system (NAS). It is also used to complete FAR 141 Appendix B solo cross country requirements not accomplished in Lesson 29. The student will plan a VFR cross country flight to at least one destination, assigned by the CFI, that is greater than 50NM away. (Two destinations, one with a control tower, are required if 141 Appendix B para. 5(a)(1) & (2) requirements* were not met on Lesson 29.) The student may employ all available navigation resources (VOR, GPS, Pilotage, DR, etc.); however, for training and checkride preparation, he/she will concentrate on pilotage and dead reckoning navigation.

**Note: Per FAR 141 Appendix B para. 5(a)(1), total distance must be at least 100NM (one segment greater than 50NM) with landings at three or more points.*

**Note: Per FAR 141 Appendix B para. 5(a)(2), the student must perform 3 solo patterns and landings at a tower-controlled airport.*

***Note: Logbook endorsements required. Reference FAR 61.93 (c) and (d),*

**Note: Airport identifiers for route and distance (nm) between points needs to be in lesson comments*

Lesson Requirements:

- 3 landings

GROUND TRAINING: review**

**Private Pilot Closed Book Test: Correct to 100% (required before flight)**

- ☐ Private Pilot Open Book Test

**Flight Planning**

- ☐ Review the student's flight plan log
- ☐ Have the student explain how he/she derived various numbers on the log

**Filing a Flight Plan**

- ☐ Review the student's flight plan form
- ☐ Have the student file the flight plan with Flight Service

**FAR 91.103**

- ☐ Check departure, en-route, and destination weather
- ☐ Check NOTAMs and TFRs
- ☐ Calculate weight and balance
- ☐ Calculate T/O & Ldg. performance

FLIGHT TRAINING: review

**Cross Country Navigation**

- ☐ Activate and close the VFR flight plan
- ☐ Navigate using all resources to each point (emphasize pilotage and DR)
- ☐ Set power per the performance chart
- ☐ Perform groundspeed checks, update times, fuel use, etc.
- ☐ Update heading for winds
- ☐ Obtain weather information
- ☐ Checklist procedures
- ☐ Traffic pattern entry
- ☐ OPTIONAL: VFR Flight Following

**Takeoffs, Landings, and Go-Arounds**

- ☐ Normal/crosswind takeoff and landing
- ☐ Short field takeoff and landing
- ☐ Soft field takeoff and landing
- ☐ Go-around/rejected landing
- ☐ ***Full stop, taxi back all landings***
- ☐ OPTIONAL: 3 patterns and landings at a tower-controlled airport* (Required if not accomplished on Lesson 29.)

COMPLETION STANDARDS

The student will be able to plan the flight accurately. In flight the student will be able to find and identify each destination airport using all available resources (GPS, VOR, Pilotage, DR), and he/she will enter a normal traffic pattern and perform safe landings. This lesson is not complete unless all requirements of FAR 141 Appendix B para. 5(a)(1) & (2) have been accomplished between Lessons 29 and 30. The student may be endorsed to take the FAA Private knowledge exam.

REQUIRED READING/STUDY

- FAR 91.151 thru 159
- PHAK Ch 2, 12 thru 16
- ACS I. Tasks C, D, E
- ACS II. Task B (Flight Deck Management)
- ACS VI. (Navigation)

# LESSON 31: FLIGHT
# 1.5 HOURS DUAL
# 0.3 INSTRUMENT
# 0.3 HOURS PRE/POST

LESSON OBJECTIVE

Prior to conducting this lesson, the student will have passed the FAA Private Pilot Written Exam. This lesson reviews and emphasizes area training maneuvers, takeoffs, patterns, landings, and emergency procedures in preparation for the end of course stage check and the Private Pilot checkride. The CFI will closely evaluate the preflight inspection to ensure attention to detail and no degradation of skill. Method of navigation is optional; choose what is most challenging to the student.

Lesson Requirements:

- 3 landings

GROUND TRAINING: review

**Preflight Preparation**

- ☐ Pilot certificates and documents
- ☐ FAR 91.103 (weather, NOTAMS, wt. & balance, takeoff/landing performance.)
- ☐ I'M SAFE
- ☐ Practice area selection

FLIGHT TRAINING: review

**Pre/Post flight Procedures**

- ☐ Checklist usage
- ☐ Preflight inspection (CFI evaluates)
- ☐ Cockpit management
- ☐ Parking and securing the aircraft
- ☐ Post flight inspection

**Safety Related Operations and Procedures**

- ☐ Single Pilot Resource Management
- ☐ Positive exchange of the flight controls
- ☐ Visual scanning/collision avoidance
- ☐ Pre-maneuver check & clearing turns
- ☐ Runway incursion avoidance

**Takeoffs, Landings, and Go-Arounds**

- ☐ Normal/crosswind takeoff and landing (ACS)
- ☐ Short field takeoff and landing (within 250ft)
- ☐ Soft field takeoff and landing
- ☐ OPTIONAL: Go-around/rejected landing
- ☐ OPTIONAL: Forward slip to landing

**Navigation (CFI Discretion)**

- ☐ OPTIONAL: Pilotage to/from and within the practice area
- ☐ OPTIONAL: VOR navigation to/from the practice area/airport
- ☐ OPTIONAL: GPS navigation to/from the practice area/airport

**Area Maneuvers**

- ☐ Steep turn (±200 feet, airspeed ±20kts, bank ±10°)
- ☐ Slow flight (±200ft, ±20° heading, +10/-0kts)
- ☐ Power off stall (full stall) (±20° heading)
- ☐ Power on stall (full stall) (±20° heading)
- ☐ Ground reference maneuvers (choose at least one)
  - Turn-about-a-point
  - S-Turn
  - Rectangular pattern

**Flight by Reference to Instruments**

- ☐ Straight and level, turns, climbs, descents
- ☐ Track a course (VOR or GPS)
- ☐ Unusual attitude recoveries

**Emergency Procedures**

- ☐ Engine failure after takeoff (simulated; discuss in flight)
- ☐ Engine failure in the traffic pattern (simulated)
- ☐ Emergency approach and landing (on airport)
- ☐ System/equipment malfunction
  - CFI discretion
  - Pick one or more; discuss in flight
  - Checklist procedures
- ☐ Emergency descent
- ☐ Emergency approach and landing (off airport)

COMPLETION STANDARDS

This lesson is complete when the student has performed all required landings and maneuvers to the standards noted in ( ), when applicable.

REQUIRED READING/STUDY

- All previous material

# LESSON 32: FLIGHT
# 1.5 HOURS SOLO

LESSON OBJECTIVE
The objective of this solo flight is to provide the student with more opportunity to practice and to build confidence. Patterns and landings may be performed at a satellite airport*.

**Note: Logbook endorsement required for solo flight to another airport. Ref. FAR 61.93 (b)*

Lesson Requirements:

- 3 landings

FLIGHT TRAINING: review

**Navigation**

- ☐ Pilotage to, and within, the practice area
- ☐ OPTIONAL: GPS navigation to the satellite airport
- ☐ OPTIONAL: VOR/GPS navigation to the home airport

**Area Maneuvers**

- ☐ Steep turns
- ☐ Slow flight
- ☐ Power on/off stalls
- ☐ Ground reference maneuvers (turn-about-a-point and/or s-turn)

**Takeoffs, Landings, and Go-Arounds**

- ☐ Normal/crosswind takeoff and landing
- ☐ Short field takeoff
- ☐ Max performance climb ($V_x$)
- ☐ Short field landing
- ☐ Soft field takeoff
- ☐ Soft field landing
- ☐ Forward slip to landing
- ☐ Go-around/rejected landing
- ☐ ***Full stop, taxi back all landings***

COMPLETION STANDARDS
This lesson is complete when the student has performed all required landings and maneuvers.

REQUIRED READING/STUDY

- All previous material

# LESSON 33: FLIGHT
# 1.7 HOURS DUAL
# 0.3 INSTRUMENT
# 0.3 HOURS PRE/POST

LESSON OBJECTIVE
This lesson closely mimics the end of course stage check and the Private Pilot checkride. It is an instructional lesson; however, the CFI will exercise discretion in determining when to teach vs. when to evaluate. Repeat any maneuvers that require extra practice. The flight begins with a cross country leg that is interrupted by a diversion scenario. The CFI will choose the destination and evaluate the student's planning.

Lesson Requirements:
- 3 landings, incorporating one slip to land

GROUND TRAINING: review
**Preflight Preparation**
- ☐ Pilot certificates and documents
- ☐ Aircraft maintenance logs
- ☐ FAR 91.103 (weather, NOTAMS, wt. & balance, takeoff/landing performance.)
- ☐ I'M SAFE
- ☐ Practice area selection

**Flight Planning**
- ☐ Review the student's flight plan log
- ☐ Have the student explain how he/she derived various numbers on the log
- ☐ Review the student's flight plan form

FLIGHT TRAINING: review
**Pre/Post flight Procedures**
- ☐ Checklist usage
- ☐ Preflight inspection (CFI evaluates)
- ☐ Cockpit management
- ☐ Parking and securing the aircraft
- ☐ Post flight inspection

**Cross Country Navigation**
- ☐ Activate the VFR flight plan (simulated)
- ☐ Use pilotage and DR to find each point
- ☐ Set power per the performance chart
- ☐ Perform groundspeed checks, update times, fuel use, etc.
- ☐ Update heading for winds
- ☐ Checklist procedures
- ☐ Lost procedures (fly or discuss)
- ☐ Divert to another airport
  - Identify the nearest airport
  - Obtain current weather
  - Enter the pattern

**Takeoffs, Landings, and Go-Arounds**
- ☐ Normal/crosswind takeoff and landing (ACS)
- ☐ Short field takeoff and landing (within 250ft)
- ☐ Soft field takeoff and landing
- ☐ Go-around/rejected landing
- ☐ Forward slip to landing

**Area Maneuvers**
- ☐ Steep turn (±150 feet, airspeed ±15kts, bank ±10°)
- ☐ Slow flight (±150ft, ±15° heading, +10/-0kts)
- ☐ Power off stall (full stall) (±15° heading)
- ☐ Power on stall (full stall) (±15° heading)
- ☐ Spin awareness
- ☐ Ground reference maneuvers (choose at least one)
  - Turn-about-a-point
  - S-Turn
  - Rectangular pattern

**Flight by Reference to Instruments**
- ☐ Straight and level, turns, climbs, descents
- ☐ Track a course (VOR or GPS)
- ☐ Unusual attitude recoveries

**Emergency Procedures**
- ☐ System/Equipment malfunction
  - CFI discretion
  - Pick one or more; discuss in flight
  - Checklist procedures
- ☐ Emergency descent
- ☐ Emergency approach and landing (off airport)

COMPLETION STANDARDS
This lesson is complete when the student has performed all required landings and maneuvers to the standards noted in ( ), when applicable.

REQUIRED READING/STUDY
- ACS I. Task F, G, H (Performance/Limitations, Systems, Human Factors)
- Plan a cross country to one destination assigned by the CFI

# LESSON 34: FLIGHT
# 1.7 HOURS DUAL
# 0.3 INSTRUMENT
# 0.3 HOURS PRE/POST

LESSON OBJECTIVE

This lesson closely mimics the end of course stage check and the Private Pilot checkride. Consideration will be given to using a senior CFI to evaluate the student's proficiency. Repeat any maneuvers that require extra practice. The flight begins with a cross country leg that is interrupted by a diversion scenario. The CFI will choose the destination and evaluate the student's planning.

Lesson Requirements:

- 3 landings, incorporating one slip to land

GROUND TRAINING: review

**Preflight Preparation**

- ☐ Pilot certificates and documents
- ☐ Aircraft maintenance logs
- ☐ FAR 91.103 (weather, NOTAMS, wt. & balance, takeoff/landing performance.)
- ☐ I'M SAFE
- ☐ Practice area selection

**Flight Planning**

- ☐ Review the student's flight plan log
- ☐ Have the student explain how he/she derived various numbers on the log
- ☐ Review the student's flight plan form

FLIGHT TRAINING: review

**Pre/Post flight Procedures**

- ☐ Checklist usage
- ☐ Preflight inspection (CFI evaluates)
- ☐ Cockpit management
- ☐ Parking and securing the aircraft
- ☐ Post flight inspection

**Cross Country Navigation**

- ☐ Activate the VFR flight plan (simulated)
- ☐ Use pilotage and DR to find each point
- ☐ Set power per the performance chart
- ☐ Perform groundspeed checks, update times, fuel use, etc.
- ☐ Update heading for winds
- ☐ Checklist procedures
- ☐ Lost procedures (fly or discuss)
- ☐ Divert to another airport
    - Identify the nearest airport
    - Obtain current weather
    - Enter the pattern

**Takeoffs, Landings, and Go-Arounds**

- ☐ Normal/crosswind takeoff and landing
- ☐ Short field takeoff and landing
- ☐ Soft field takeoff and landing
- ☐ Go-around/rejected landing
- ☐ Forward Slip to Landing

**Area Maneuvers**

- ☐ Steep turn
- ☐ Slow flight
- ☐ Power off stall (full stall)
- ☐ Power on stall (full stall)
- ☐ Spin awareness
- ☐ Ground reference maneuvers (choose at least one)
    - Turn-about-a-point
    - S-Turn
    - Rectangular course

**Flight by Reference to Instruments**

- ☐ Straight and level, turns, climbs, descents
- ☐ Track a course (VOR or GPS)
- ☐ Unusual attitude recoveries

**Emergency Procedures**

- ☐ System/equipment malfunction
    - CFI discretion
    - Pick one or more; discuss in flight
    - Checklist procedures
- ☐ Emergency descent
- ☐ Emergency approach and landing (off airport)

COMPLETION STANDARDS

The student's knowledge and proficiency in all areas of operation will meet ACS standards. Additionally, the student will demonstrate sound Aeronautical Decision Making (ADM), Single Pilot Resource Management (SPRM), visual scanning/collision avoidance techniques, and other safety related procedures throughout the flight.

REQUIRED READING/STUDY

- All material previously covered, with an emphasis on the ACS Areas of Operations and Tasks.
- Plan a cross country to one destination assigned by the CFI

# LESSON 35: PRE/POST GROUND 2.5 HOURS

LESSON OBJECTIVE
This lesson may immediately precede Lesson 34 (complete the audit afterwards.) It prepares the student for the oral portion of his/her Stage Two check and ensures the training records are certifiable for graduation. Refer to the Private Pilot ACS for a detailed list of knowledge and risk management elements (at least one of each will be assessed from every task.)

GROUND TRAINING: Review*

**Preflight Preparation**
- ☐ Pilot qualifications
- ☐ Airworthiness requirements
- ☐ Weather information
- ☐ Cross country flight planning
- ☐ National Airspace System (NAS)
- ☐ Performance and limitations
- ☐ Operation of systems
- ☐ Human factors

**Preflight Procedures**
- ☐ Preflight assessment (including pilot self-assessment)
- ☐ Cockpit management
- ☐ Engine starting
- ☐ Taxiing
- ☐ Before takeoff check

**Airport Operations**
- ☐ Communications and light gun signals
- ☐ Traffic patterns

**Takeoffs, Landings, and Go-Arounds**
- ☐ Normal takeoff and climb
- ☐ Normal approach and landing
- ☐ Soft field takeoff and climb
- ☐ Soft field approach and landing
- ☐ Short field takeoff/max perform climb
- ☐ Short field approach and landing
- ☐ Forward slip to a landing
- ☐ Go-around/rejected landing

**Performance Maneuvers**
- ☐ Steep turns
- ☐ Ground reference maneuvers

**Navigation**
- ☐ Pilotage and DR
- ☐ Navigation systems and radar services
- ☐ Diversion
- ☐ Lost procedures

**Slow Flight and Stalls**
- ☐ Maneuvering during slow flight
- ☐ Power off stalls
- ☐ Power on stalls
- ☐ Spin awareness

**Basic Instrument Maneuvers**
- ☐ Straight and level flight
- ☐ Constant airspeed climb/descent
- ☐ Turns to headings
- ☐ Recovery from unusual attitudes
- ☐ Radio comm./nav. systems/radar

**Emergency Operations**
- ☐ Emergency descent
- ☐ Emergency approach and landing
- ☐ Systems and equipment malfunction
- ☐ Emergency equipment/survival gear

**Night Operations**
- ☐ Night preparation

**Postflight Procedures**
- ☐ After landing, parking, securing

**Note: Review missed subjects from the FAA written exam. Endorse per FAR 61.39.*

GROUND TRAINING

**Records Audit (Student must be present)**
- ☐ Complete the *Private Pilot Stage Two Auditing Checklist* and correct all errors.
- ☐ Certify completion with a remark on this lesson's gradesheet (example below):

  *"I have audited all lessons for TCO compliance using North Star Aviation's Private Pilot Stage Two Auditing Checklist."*

COMPLETION STANDARDS
Through oral quizzing the student will demonstrate the knowledge required to operate safely as a Private Pilot (single engine land) in the National Airspace System. This lesson is not complete until the record audit is accomplished and all errors are corrected.

REQUIRED READING/STUDY
- All material previously covered, with an emphasis on the ACS.
- Plan a cross country to one destination assigned by the CFI

## LESSON 36: STAGE TWO CHECK
## 1.7 HOURS DUAL
## 0.3 INSTRUMENT*
## 2.0 HOURS PRE/POST

REQUIRED READING/STUDY

- All material previously covered, with an emphasis on the ACS areas of Operations and Tasks

LESSON OBJECTIVE

The Chief/Assistant Chief Instructor or an approved Stage Check Pilot will evaluate the student's knowledge and proficiency in all items required for a Private Pilot, Single Engine Land certificate. The check pilot, after assigning the student a X/C flight, will prepare a plan of action that mimics a Private Pilot checkride, emphasizing knowledge areas that were missed on the FAA written test. Refer to the Private Pilot ACS for a detailed list of knowledge and risk management elements (at least one of each will be assessed from every task.)

Lesson Requirements:

- 3 landings, incorporating one slip to land

GROUND TRAINING: review*

**Note: At least one knowledge and risk management element will be assessed for each task in the Private Pilot ACS*

### ACS Areas of Operation

- ☐ Preflight preparation (AoO I)
- ☐ Preflight procedures (AoO II)
- ☐ Airport operations (AoO III)
- ☐ Takeoffs, landings and go-arounds (AoO IV)
- ☐ Performance maneuvers and Ground Reference Maneuvers (AoO V)
- ☐ Navigation (AoO VI)
- ☐ Slow flight and stall (AoO VII)
- ☐ Basic instrument maneuvers (AoO VIII)
- ☐ Emergency operations (AoO IX)
- ☐ Night operations (AoO XI)
- ☐ Postflight procedures (AoO XII)

FLIGHT TRAINING: review**

***Note: Ensure the student has logged 3.0 hours instrument by the end of the flight.*

**Preflight Procedures (AoO II)**

- ☐ Preflight assessment
- ☐ Flight Deck Management
- ☐ Engine starting
- ☐ Taxiing
- ☐ Before takeoff check

**Airport Operations (AoO III)**

- ☐ Communications, light signals, and runway lighting systems
- ☐ Traffic patterns

**Takeoffs, Landings, and Go-Arounds (AoO IV)**

- ☐ Normal takeoff and climb
- ☐ Normal approach and Landing
- ☐ Soft Field Takeoff and Climb
- ☐ Soft Field Approach and Landing
- ☐ Short Field Takeoff and Maximum Performance Climb
- ☐ Short Field Approach and Landing
- ☐ Forward Slip to a Landing
- ☐ Go-around/rejected landing

**Performance Maneuvers and Ground Ref. (AoO V)**

- ☐ Steep turns
- ☐ Ground reference maneuvers

**Navigation (AoO VI)**

- ☐ Pilotage and Dead Reckoning
- ☐ Navigation systems and radar services
- ☐ Diversion
- ☐ Lost procedures

**Slow Flight and Stalls (AoO VII)**

- ☐ Maneuvering during slow flight
- ☐ Power off stall
- ☐ Power on stall
- ☐ Spin awareness

**Basic Instrument Maneuvers (AoO VIII)**

- ☐ Straight and level flight
- ☐ Constant airspeed climbs
- ☐ Constant airspeed descents
- ☐ Turns to headings
- ☐ Recovery from unusual flight attitudes
- ☐ Radio comm./nav. systems/radar

**Emergency Operations (AoO IX)**

- ☐ Emergency descent
- ☐ Emergency approach and landing (simulated)
- ☐ System/Equipment malfunction
- ☐ Emergency equipment/survival gear

**Postflight Procedures (AoO XII)**

- ☐ After landing, parking, and securing

COMPLETION STANDARDS

The student must meet Private Pilot ACS standards in the areas of operation listed above.

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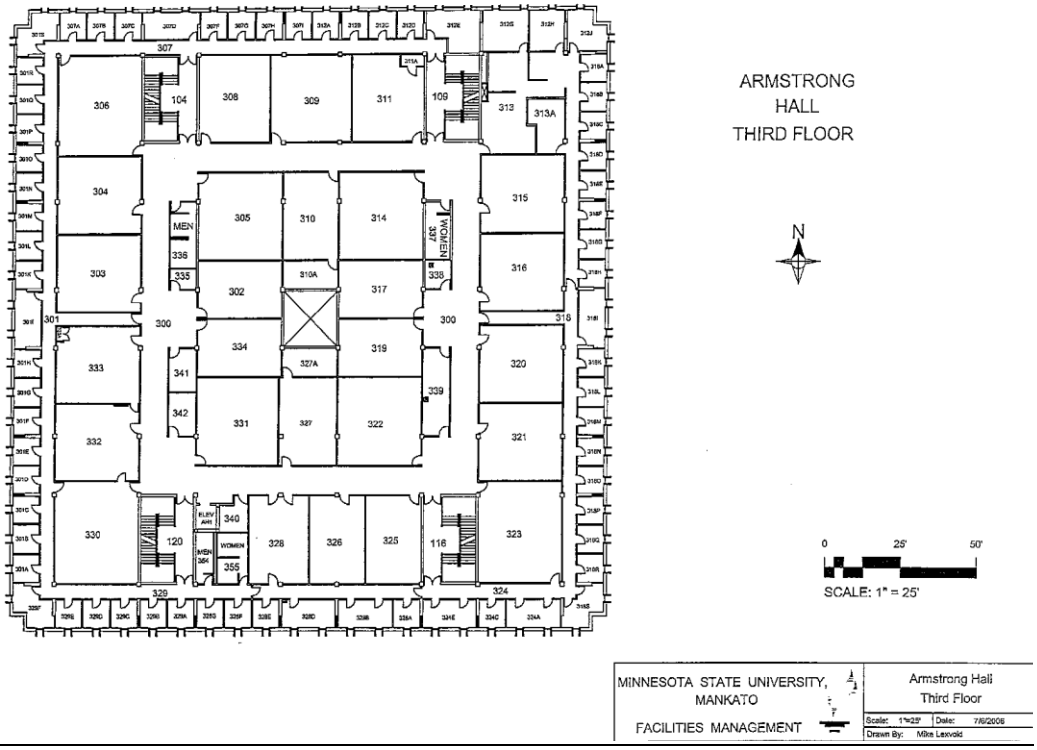
# APPENDIX A
# Ground Instruction Facilities

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.

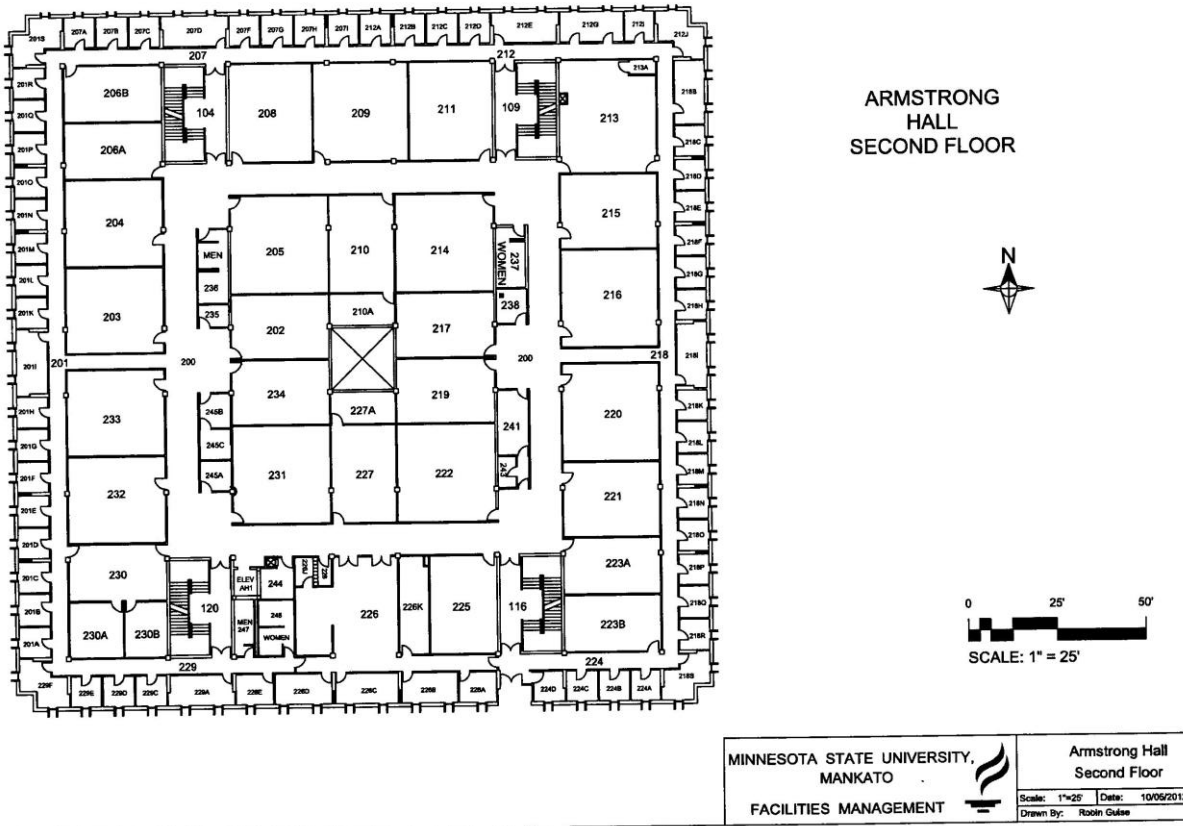
**MNSU Armstrong Hall Room Capacity and Square Footage**

| 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 | | | |

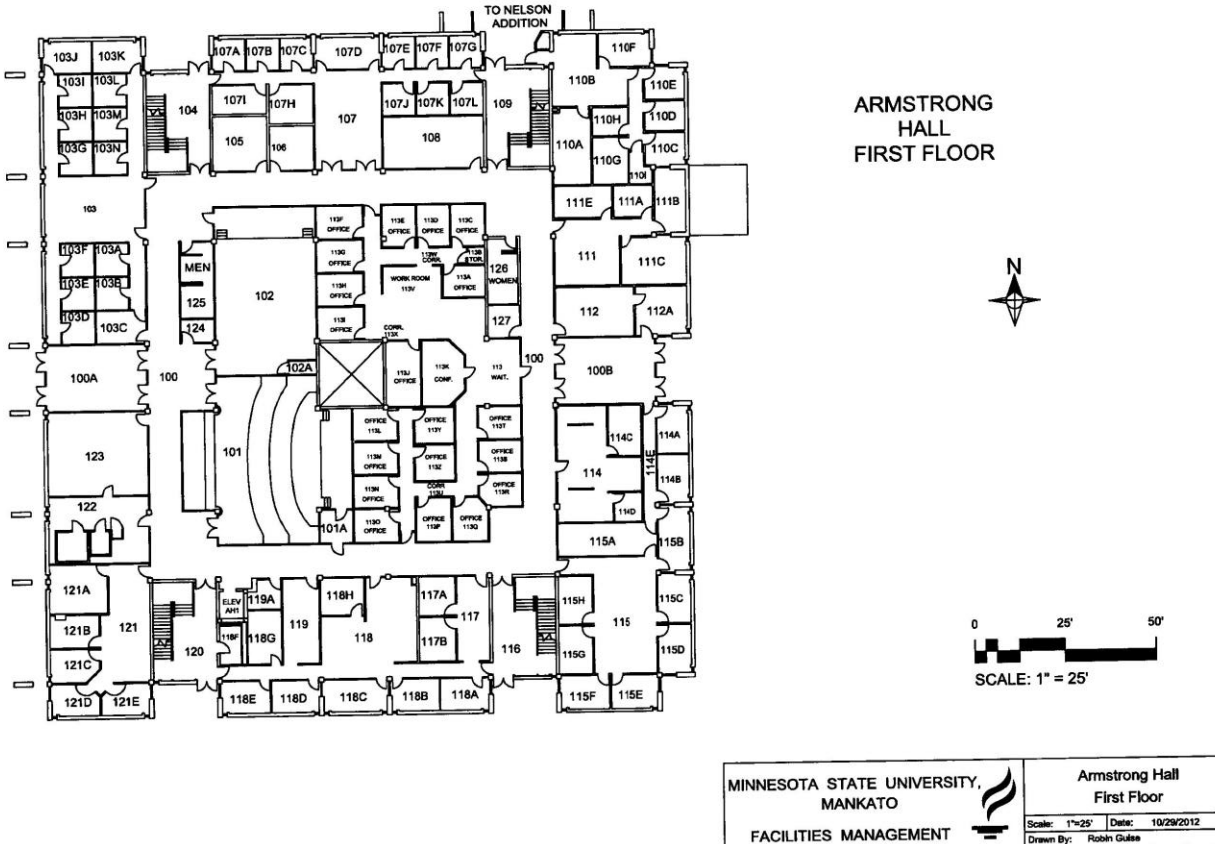
## MNSU Armstrong Hall Room Third Floor



## MNSU Armstrong Hall Room Second Floor



## MNSU Armstrong Hall Room First Floor



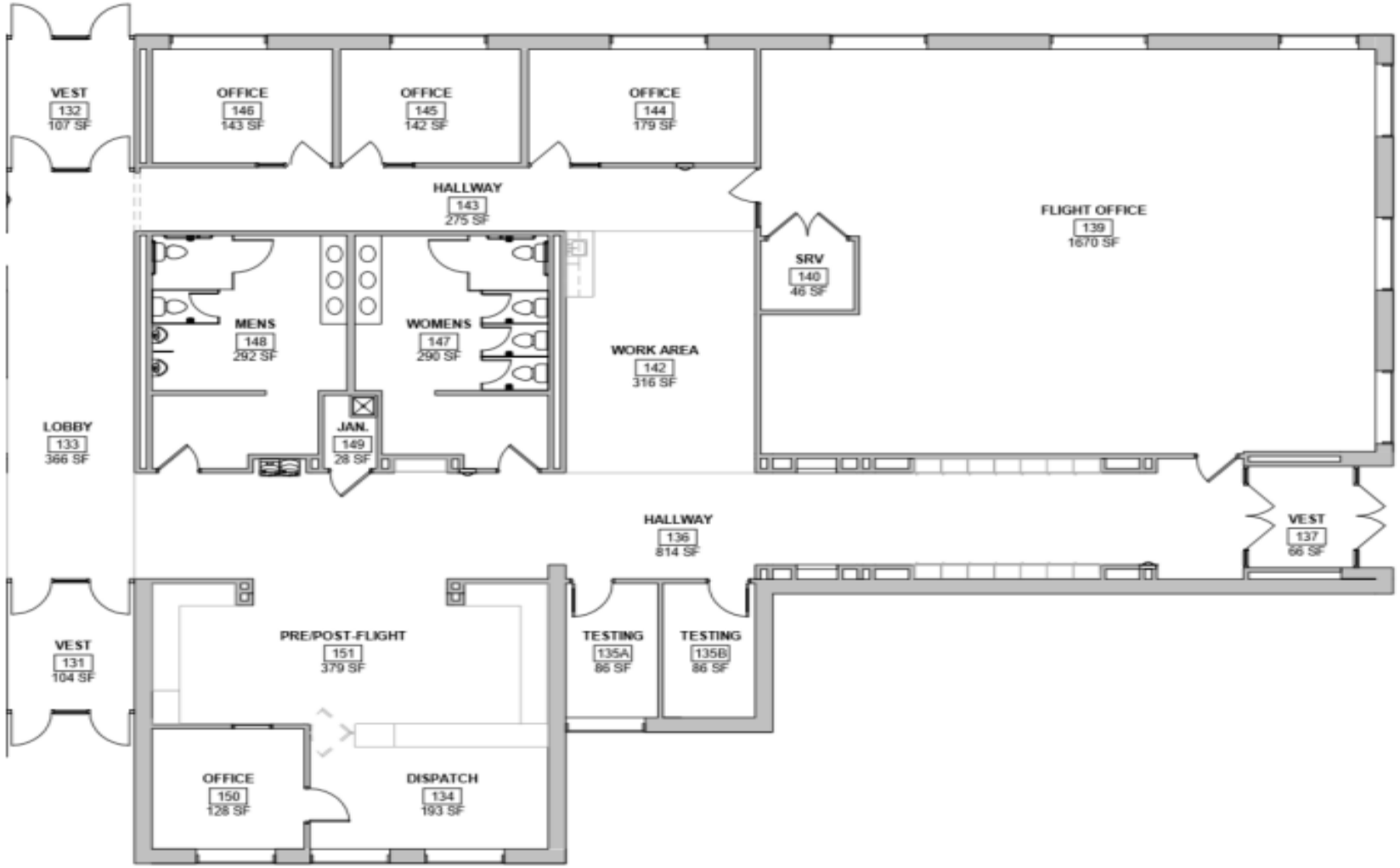
# APPENDIX B
# Airport Facilities

## Airport Terminal (North)

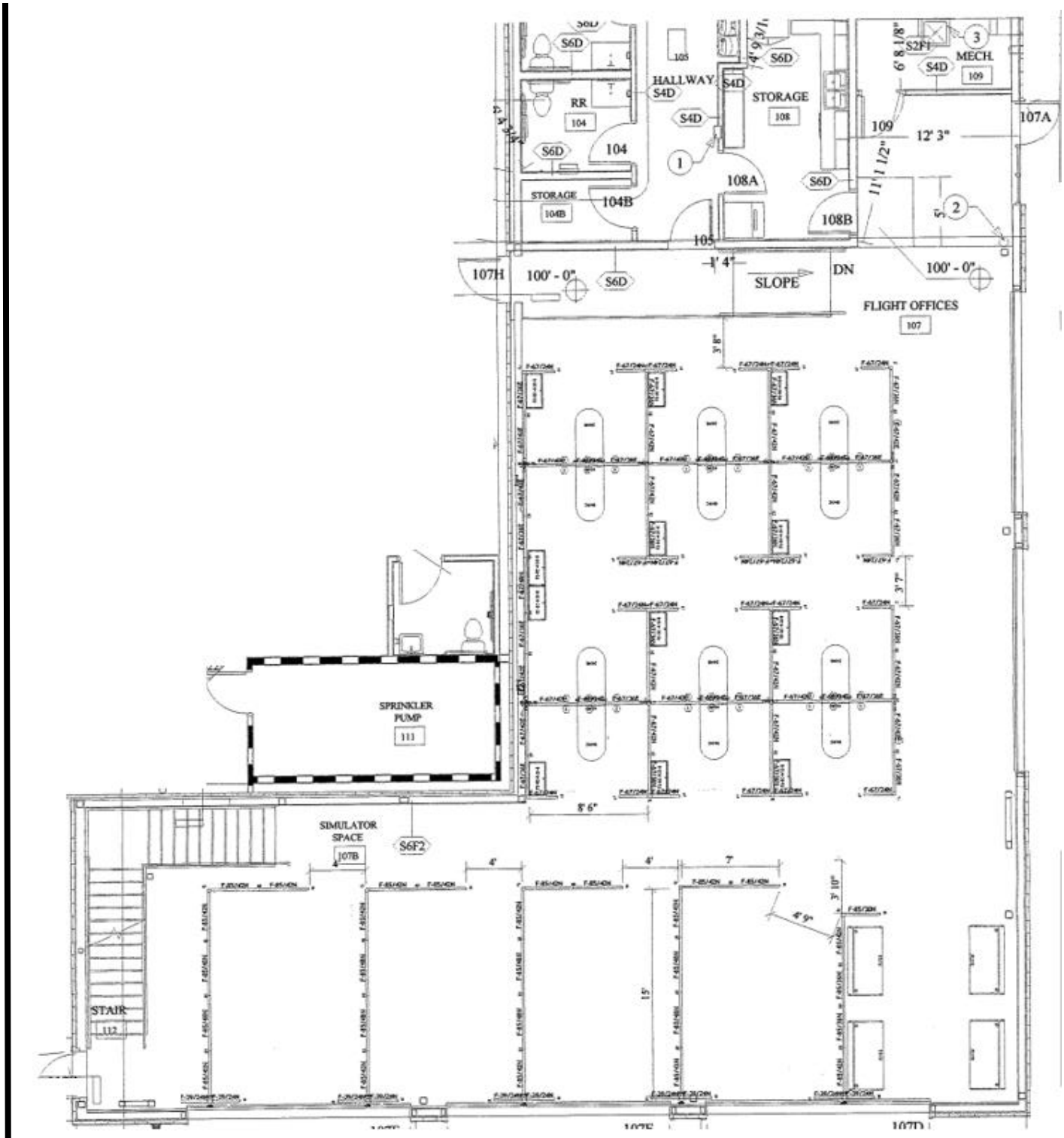
FBO Offices, Conference Rooms, Student Waiting Area

## Airport Terminal (South)

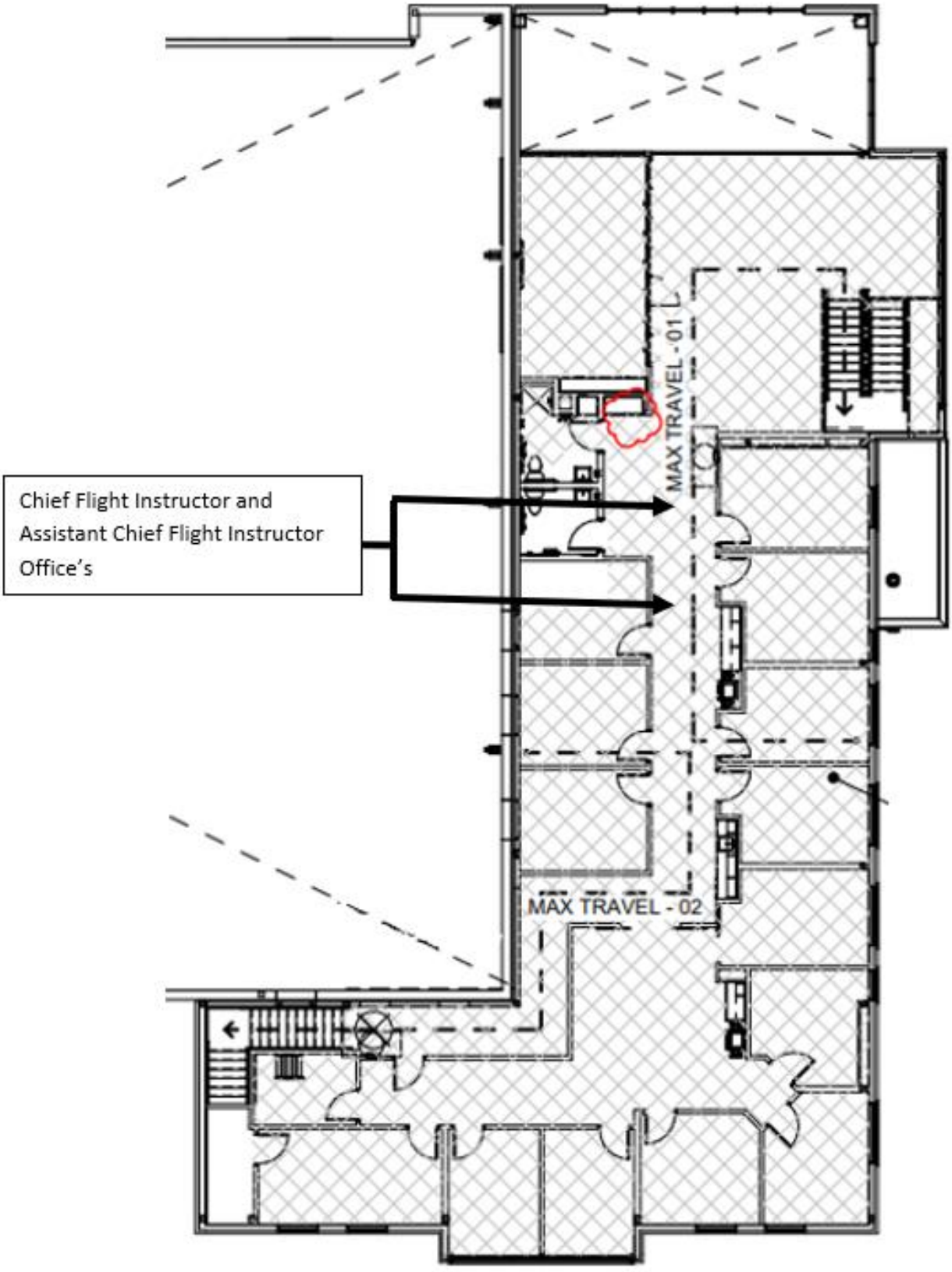
Flight Training Room, Chief/Asst. Chief Offices, Dispatch Area, Preflight Preparation Areas, Checkride Rooms



**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 C

## Simulator Letter 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 D
# 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)
- Private Pilot Practical Test Oral Study Guide instructor version with answers & explanations by June Bonesteel
- Everything Explained for Professional Pilots by Richie Lengel
- Aircraft Systems for Pilots by Dale De Remer, Phd
- ASA Private Pilot Oral Exam Guide
- Jeppesen Guided Flight Discovery Private Pilot Book
- Jeppesen GFD Private Pilot Video Series on DVD
- Jeppesen Private Pilot CD-ROM (for a power point presentation)
- Gleim Private Pilot Written Test Bank
- FAA Private Pilot Practical Airmen Certification Standards
- North Star Aviation, Inc. Private Pilot ASEL Power Point Standardized Flight Training Presentation – Archer III PA-28-181
- North Star Aviation, Inc. Standard Operating Procedures - Piper Aircraft Archer III PA-28-181
- North Star Aviation, Inc. Preflight Power Point Presentation on the Piper Aircraft Archer III PA-28-181
- North Star Aviation, Inc. Checklist for the Piper Aircraft Archer III PA-28-181
- 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-8083-25A: Pilot’s Handbook of Aeronautical Knowledge
- FAA-H-8083-1A: Aircraft Weight and Balance Handbook
- FAA-H-8083-3: Airplane Flying Handbook
- FAA-H 8083-6: Advanced Avionics Handbook
- FAA-H-8083-15: Instrument Flying Handbook
- FAA-H-8083-19: Plane Sense
- AC 00-6: Aviation Weather
- AC 00-45G: Aviation Weather Services
- AC 60-22: Aeronautical Decision Makin

- AC 61-65: Certification - Pilots and Flight Instructors
- AC 61-67: Stall and Spin Awareness Training
- AC 61-84: Role of Preflight
- AC 90-23E: Aircraft Wake Turbulence
- AC 90-48C: Pilot's Role in Collision Avoidance
- AC 90-66A: 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 91-51A: Effect of Icing on Aircraft Control and Airplane Deice and Anti-ice Systems
- AC 91-67: Minimum Equipment for General Aviation Operations under FAR Part 91
- AC 120-51: Crew Resource Management Training
- AC 00-54: Pilots Windshear Guide
- AC 00-24B: 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 E
## 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 |
| 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 |

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