

Private Pilot Flight Instruction Syllabus

FAA Requirements (short summary) :

For the private Pilot's license the FAA requires a minimum of 40 hours of flight time, of which at least 20 hours must be dual instruction time and 10 hours must be solo flight work. There must be a minimum of 3 hours night flight including a night cross-country (dual), and a long solo cross country flight of at least 100nm with landings at two (or more) other airports, one of which is at least 50nm from the home airport. Note that 3 hours of flight instruction in preparation for the check ride must have taken place within the 60 days prior to the check ride.

Pre-Solo Instruction:

- Introduction to the aircraft, flight controls, instruments, and systems
- Engine operation, ground operations, taxiing, airport procedures, runway and taxiway markings
- Take off, basic flight maneuvers, straight and level, coordinated turns, climbs, descents, combined maneuvers
- Ground reference maneuvers: turns around a point, S-turns across a road, figure-8s around two points
- Slow flight with and with out flaps, power off and power on stalls, recognition of stall onset and stall recovery
- Radio communications, controlled and un-controlled airports
- Traffic pattern practice, approaches, go-arounds
- Emergency procedures
- Normal landings, cross wind landings, slips to a landing
- short and soft field take off's

Solo Flight

- Supervised traffic pattern first solo flight
- Flight to nearby airports
- solo air work (ground reference maneuvers, slow flight etc.)

Post-Solo Dual Instruction

- Advanced Maneuvers: short field and soft field take off's and landings
- Cross country flying: planning the flight, navigation aids, filing a flight plan, pilotage and dead-reckoning, en-route radio communications
- Simulated Instrument flight (hood)
- Emergency procedures (engine out practice)
- Night flight

Solo Work

- Take off and landings, basic and advanced
- Flight to nearby airports
- Cross country flight
- Long solo cross country flight
- flight maneuvers in preparation for the private pilot test

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Lesson 1: Introductory Flight

Dual, 1 Hour

- Objective:** Familiarize the student with the basic aerodynamics of flight, aircraft ground operations, the pre-flight inspection, ground control of the aircraft, level flight, shallow and medium turns, and basic airport traffic procedures
- Elements:** Demonstrate basic aircraft operations from pre-flight to landing for the student.
- Equipment:** Visual Aids for basic aerodynamics, aircraft
- Instructor's Actions:**
- Explain the use of checklists and perform a pre-flight of the aircraft explaining each item on the checklist
 - Explain engine controls, Demonstrate starting the engine, explain the use of the rudder pedals and toe/heel brakes, use of asymmetric braking during taxi, and general ground operations procedures while taxiing
 - Perform engine run up, set flight instruments, explain basic function of primary flight instruments
 - Demonstrate a normal take off, depart the traffic pattern and trim the aircraft for level flight, demonstrate the usage and coordination of flight controls for maintaining level flight and turning.
 - Explain "visual scan"
 - Return to the traffic pattern, perform normal landing
- Student's Actions:**
- Observe the instructor's actions during pre-flight, engine run-up and take off procedures
 - level flight, left and right turns
 - Observe instructor's actions returning to the airfield and landing
 - ask questions
- Completion Standards:** Student acquires basic familiarity for aircraft aerodynamics, ground and air operations of the aircraft and basic airport procedures
- Post-Flight Review:** Review control-usage and coordination
- Student Assignment:** Acquire text books, either commercial (ASA, Jeppesen) or the FAA "Airplane Flying Handbook" and the "Pilot's Handbook of Aeronautical Knowledge", optional, "Stick & Rudder" by Wolfgang Langewiesche. Start reading the "Principles of Flight" section.

Lesson 2: Basic Aircraft Control

Dual, 1 Hour Local

Objective: Familiarize the student with basic aircraft control, stability and control, weight and balance, positive and negative stability. Introduce basic radio communications, airport ground taxiway markings. Basic flight procedures, level flight, medium turns, climbs, descents, use of pitch and power

Elements: Ground: explanation of controls, weight and balance, stability and control. Flight: medium banked turns, control coordination, climbs, descents, climb and descending turns

Equipment: Ground aids for weight & balance, stability & control. Aircraft

Instructor's Actions:

- Assist student with pre-flight and ground operations
- Perform normal take off and radio calls
- demonstrate pitch-power airspeed-altitude dependencies
- demonstrate medium banked turns, rolling out on a heading
- demonstrate climbs and descents

Student's Actions:

- Pre-flight the aircraft and start engine with instructor's assistance
- practice taxiing, use of differential braking
- trimming the aircraft for level flight, maintaining a heading
- execute clearing turns,
- medium banked left and right turns, 180° and 360°
- climbing and descending flight, changes in power and airspeed
- Post-Landing taxi to tie-down area

Completion Standards: Student understands need for coordinated aileron and rudder in turns, the use of pitch and power for controlling altitude and airspeed in cruise, climbing and descending flight. Student can use rudder pedals and brakes for taxiing the aircraft

Post-Flight Review: Review of pitch-power airspeed altitude relationships

Student's Assignment: Reading: relationship between angle of attack and lift, induced and parasitic drag, left-turning factors of an aircraft: torque, spiraling slipstream, P-factor, Forces acting on an airplane in slow flight. Elements of a take off worksheet. Radio Communications worksheet.

Lesson 3: Normal Take off and Slow Flight

Dual, 1 Hour Local

- Objective:** Teach normal take off technique, airspeeds to fly and need for right-rudder. Introduce flight at minimum controllable airspeed, emphasize difference in control feel and control usage at slow speeds. Straight Ahead Stalls.
- Elements:** Normal take off. Slow flight with and without flaps
- Equipment:** Visual aids for teaching angle of attack and stall. Aircraft.
- Instructor's Actions:**
- Assist student with pre-flight and ground operations
 - Talk student through normal take off
 - Demonstrate transition to slow flight, difference in control usage, lack of effect of the ailerons, and use of rudder for bank control
 - Demonstrate a basic straight ahead stall and recovery
- Student's Actions:**
- Pre-flight inspection of the aircraft
 - start up and taxi operations, radio calls while on the ground
 - take off and climb out
 - cruise to practice area
 - clearing turns
 - slow flight, straight ahead, turns left and right
 - straight ahead stalls and stall recovery
 - resume cruise speed and return to airport
- Completion Standards:** Student corrects for torque on take off, climbs out on runway heading with good airspeed control. Student recognizes differences between control usage in cruise flight and slow flight and importance of rudder in slow flight
- Post-Flight Review:** Angle of attack, airspeed, cross-coordination, why slips are good and skids are bad, stall recognition
- Student's Assignment:** Stability and Control as designed into an airplane: longitudinal, directional and lateral stability, dihedral, sweep and yaw, effects of weight and balance on pitch stability. Aircraft systems: fuel system and engine controls, carburetor heat.

Lesson 4: Additional Flight Maneuvers and slow flight

Dual, 1 Hour Local

- Objective:** Increase student's ability with straight and level flight, medium bank turns, climbing and descending turns, transition to slow flight, flight at minimum controllable airspeeds, stall recognition, skidding-stall spin recognition, and spin avoidance, stall recovery.
- Elements:** Take off, clearing turns, medium banked turns, climbs, descents, climbing and descending turns, slow flight, stalls, stall recovery
- Equipment:** Stability and control visual aids. Aircraft
- Instructor's Actions:**
- Assist student with pre-flight and ground operations
 - assist with take off
 - demonstration of controls in slow flight
 - normal landing
- Student's Actions:**
- Startup, taxi, radio communications
 - normal take off
 - climb and cruise to practice area
 - clearing turns
 - medium banked turns
 - climbing and descending turns
 - transition to slow flight
 - turns in slow flight
 - stall recognition, spin recognition and avoidance
 - return to airport
- Completion Standards:** Student recognizes danger of skidding at low airspeeds, recognizes onset of stall and executes smooth stall recovery.
- Post-Flight Review:** Cross controlled stalls - skids vs. slips.
- Student's Assignment:** Aircraft instrument systems; pitot static, and gyroscope instruments (PHAK) Aircraft load factor and relationship to stalling speed, accelerated stalls. (AFH)

Lesson 5: Accelerated Stalls, Ground Reference Maneuvers**Dual, 1 Hour Local**

Objective: Review basic air work, improve skill flying a specific airspeed on take off, Relationship of stalling speed to load factor and load factor to bank angle in coordinated turns. Learn to account for wind drift when maneuvering with reference to the ground.

Elements: Accelerated stalls recognition and recovery from 45° banked turn. Turns about a point, S-turns across a road

Equipment: White board, Aircraft

Instructor's Actions:

- Observe pre-flight and take off maneuvers
- Explain methods of determining wind direction and strength while flying
- demonstrate a turn around a point
- Explain basic emergency procedures: Airspeed, Best Landing Site and Checklist (ABC)
- Simulated Engine out emergency

Student's Actions:

- Pre-flight and ground operations
- Perform a short field take off climbing at V_x until clear the obstacle and then climbing at V_y until first pattern turn at 500 ft
- Slow flight turns and stall recognition
- Recognize the effect of wind drift on the aircraft's flight path relative to the ground and correct for the wind drift.
- Turns about a point
- S-Turns across a road

Completion Standards: Student recognizes and corrects for wind drift when maneuvering with reference to the ground, understands difference between ground speed and airspeed

Post-Flight Review: Ground speed and airspeed illusions, potential hazards when flying an approach with a strong wind

Student's Assignment: Emergency Procedures (AFH, AFM), ground reference maneuvers (AFH) for turns about point, S-turns and figure-8s. Aircraft Systems: magnetic compass quirks and errors.

Lesson 6: Ground Reference Maneuvers, IFR flight

Dual, 1 Hour Local

- Objective:** Review and continue practice of maneuvering with reference to the ground, Short period of controlling the aircraft solely by reference to the flight instruments.
- Elements:** Ground reference Maneuvers: turns around a point, S-turns across a road, figure-8s. Flight with view limiting device
- Equipment:** White board, Aircraft, view limiting device (hood, foggles etc.)
- Instructor's Actions:**
- Review preparation for ground reference maneuvers, entry to the maneuver, demonstrate figure 8's
 - Explain flight by reference only to aircraft instruments
 - traffic pattern and landing.
- Student's Actions:**
- Pre-flight, taxi, run-up, radio communications and take off (normal, cross wind or short field as appropriate)
 - Fly to practice area, clearing turns
 - pick appropriate ground reference points for turns about a point
 - S-turns across a road
 - Figure 8 around 2 points
 - Rectangular "landing pattern"
 - Left and right Landing patterns with descents, simulated radio calls finished with a go-around procedure
 - Return to the airport and enter the traffic pattern
 - Fly pattern until turning final
- Completion Standards:** Student recognizes and corrects for wind drift while maintaining altitude and a good visual scan. Student flies simulated landing patterns with good awareness of distance from "runway" and altitude during the maneuver.
- Post-Flight Review:** Review of traffic patterns and landing approach
- Student's Assignment:** Radio Procedures (Elements worksheet), Reading a sectional for Airspace markings. Aircraft Systems: the engine and fuel system (PHAK, AFM). Traffic Patterns and the landing go-around.

Lesson 7: Traffic Patterns, Landing Approaches, Instrument Flight

Dual, 1 Hour Local

- Objective:** Introduce student to flight solely by reference to the instruments, Increase student skill and comfort with flying a regular traffic pattern down to near runway level but without an actual landing.
- Elements:** Flight with a view limiting device (hood, foggles etc.). Traffic patterns with approaches to a go-around
- Equipment:** Aircraft, view limiting device (hood, foggles etc.)
- Instructor's Actions:**
- Explain the basics of flight without outside references, the importance of instrument scan and which instruments are primary for level and turning flight
 - Demonstrates the need to to put complete reliance on the flight instruments instead of kinesthetics once outside references are lost
 - Demonstrate a landing pattern down to a low approach to the runway
- Student's Actions:**
- Normal pre-flight, taxi, take off and cruise to practice location
 - flight solely by reference to the instruments, straight and level and turns
 - return to the traffic pattern
 - traffic pattern work down to a low approach over the runway
- Completion Standards:** Student recognizes the need for complete reliance on the flight instruments when there is no outside horizon reference. Student demonstrates good awareness of traffic, and traffic patterns, distance to fly from the runway, maintains sufficient airspeed on final and recognizes when the approach is too high or too low.
- Post-Flight Review:** Review how quickly the inner ear can become disoriented in flight without reference to horizon or instruments and therefore the need to rely on instruments when in low visibility situations. Discuss the landing patterns, speeds, distances and timing of turns.
- Student's Assignment:** Aviation Weather Sources; AFSS, DUATS, etc. Minimum visibility and cloud clearance requirements for the various airspace types. Obtaining a 3rd class medical if student has not already done so.

Lesson 8: Traffic Patterns, Slow Flight Review

Dual, 1 Hour Local

- Objective:** Increase student confidence and build good habits to be applied to traffic pattern operations. Review slow flight and discuss applications to the landing flare phase of flight
- Elements:** Simulated traffic patterns at higher altitude, slow flight with flaps
- Equipment:** Aircraft
- Instructor's Actions:**
- Demonstrate transition from landing approach to straight and level slow-flight, relationship to landing flare
 - landing at end of flight.
- Student's Actions:**
- Pre-flight, take off, cruise to practice area,
 - set up simulated traffic patterns, establish airspeeds, set flaps
 - terminate first few approaches with a go-around
 - terminate last few approaches with transition to slow flight
- Completion Standards:** Student flies a repeatable "traffic pattern", demonstrates knowledge of speeds to use during the legs of the pattern, usage of flaps, the go-around procedure and transition to slow flight from approach
- Post-Flight Review:** Standard traffic pattern and transition to landing flare in preparation for flying a landing pattern down to ground effect
- Student's Assignment:** Types of traffic patterns, how to enter the pattern, using the sectional, and an AFD to determine information about an airport, airport markings, windsocks, wind T, indication of the direction of the traffic pattern.

Lesson 9: Landing Approaches, IFR Flight

Dual, 1 Hour Local

Objective: Transition student to flying landing approaches to the actual runway, establish good habits for traffic pattern procedures, size of traffic pattern, speeds to fly etc. Improve student's ability to control the airplane solely by reference to the flight instruments

Elements: Landing patterns to a low approach over the runway, simulated instrument flight, forward slips on approach.

Equipment: Aircraft, hood

Instructor's Actions:

- Demonstrate a standard traffic pattern terminated with a low approach to the runway and flight in ground effect
- Demonstrate the use of a slip on approach to increase descent rate
- Demonstrate control usage to keep the aircraft on centerline - ailerons control slip angle, rudder to keep the nose pointing forward.
- follow student through on the controls for their low approaches
- break midway through flight for IFR work
- combined student-instructor landing at end of lesson

Student's Actions:

- Follow instructor on the controls through the low approach
- recognize ground effect, visual cues for height above runway, and direction of flight with respect to the runway
- control of aircraft under simulated IFR conditions

Completion Standards: Student executes a standard traffic pattern, approaches the runway at the proper approach speed, transitions to a level flight within ground effect and then adds enough power to stay in the ground effect. Student demonstrates ability to control aircraft under simulated IFR conditions

Post-Flight Review: Effect of flaps and approach speed on float distance

Student's Assignment: AFH Ch 8, "Faulty approaches and Landings"

Assignment: Aircraft Performance - take off and landing distances (POH)

Note: This lesson will be repeated as considered necessary by the instructor until the student feels comfortable flying an approach to ground effect, shows good control of the aircraft while in ground effect and can make a smooth go-around.

Lesson 10: Normal & Crosswind Take Offs and Landings

Dual, 1 Hour Local

Objective: Student learns improves the precision and repeatability of flying landing patterns to a low approach and landing and learns to correct for crosswind drift as necessary.

Elements: Landing patterns as appropriate for the airport

Equipment: Aircraft

Instructor's Actions:

- Demonstrate forward slips to landing
- Demonstrate crosswind correction technique

Student's Actions:

- Demonstrate knowledge of the standard landing pattern, speeds to fly, use of flaps and slips, and making the decision to execute a go-around
- compensate for cross wind with slips into the wind, thereby maintaining a flight track down the runway centerline.
- Student learns to recognize visual cues as to how far the aircraft is over the runway and to coordinate the landing flare so that touch down occurs at minimal sink rate
- student maintains control of the aircraft through the complete landing flare, after touch down and while re-configuring the aircraft for take off during a touch-and-go

Completion Standards: Student shows positive control of the aircraft during all phases of flight from take off to landing. Student recognizes the effects of cross winds and corrects for them properly.

Post-Flight Review: Review - Preparation for pre-solo written test

Student's Assignment: Pre-Solo written worksheet
AFH - crosswind take offs and landings.

Note: This lesson will be repeated by the instructor as many times as necessary until the student fully meets the objectives and is ready for solo flight.

Lesson 11: Solo Flight**Dual, 1/2 Hour Local
Solo, 1/2 Hour Local****Objective:** Student completes 3 solo take offs and landings**Elements:** Take offs and landings**Equipment:** Aircraft

Instructor's Actions:

- Administer pre-solo written test
- correct test and discuss wrong answers with student
- fly with student for several landing patterns without needing to touch the controls
- Endorse student's log book and student certificate for solo flight.

Student's Actions:

- Demonstrate knowledge required by FAR §61.87
- Demonstrate competence in all areas of aircraft handling from pre-flight to post flight
- Demonstrate good judgment in the landing pattern, proper compensation for cross winds, proper speeds and solid landing technique
- repeat previous item without the instructor for 3 take offs and landings

Completion Standards: Student flies 3 solo take offs and landings**Post-Flight Review:** Overview of the rest of the training required for the private pilot's license**Student's** Celebrate!**Assignment:** Reading a sectional chart**Note:** This lesson syllabus will most likely be repeated for the next lesson

Lesson 12: Solo Local cross-country flight**Solo, 1+ Hour Local cross country**

Objective: Student becomes more comfortable with solo flight in the aircraft including flight to a nearby airport and landings at that airport

Elements: Solo flight to a nearby airport. Take offs and landings, slow flight

Equipment: Aircraft

Instructor's Actions:

- Quiz student on flight to the nearby airport - navigation, radio calls etc.
- Discuss flight plan including having the student practice slow flight between the airports

Student's Actions:

- Fly to a nearby airport, practice take offs and landings
- practice slow flight between airports
- return to home airport and make a normal landing

Completion Standards: Student leaves and enters traffic patterns at home airport and nearby airport and performs landings at each. Student practices slow flight between airports.

Post-Flight Review: Any student questions

Student's Assignment: Navigation: using the VOR (AFH Ch 11)
Instrument flight: AFH Ch 9
performance maneuvers: short field and soft field take offs and landings (AFH Ch 7)

Lesson 13: Short & Soft Field Take offs and Landings, Using the VOR, Instrument Flight

Dual, 1 Hour Local

- Objective:** Introduce high performance take off and landings. Introduce use of the VOR, tracking to and from radials, in VFR conditions and simulated instrument conditions.
- Elements:** Short/soft field take off, tune, ident and track a VOR, with and without a view limiting device, short/soft field landing
- Equipment:** Aircraft, hood
- Instructor's Actions:**
- Explain the components and reasons for a short/soft field take off
 - Demonstrate a soft-field take off
 - Explain the usage of the VOR, demonstrate tracking a radial, and identifying the station
 - serve as check pilot while student executes instrument flight
 - Simulated engine out emergence at some point during the flight
 - Demonstrate a short field landing
 - Talk student through a short/soft field take off and landing.
- Student's Actions:**
- Observe the instructor's demonstration of a soft field take off
 - Tune and ident a local VOR
 - Track to the VOR, notice the increasing sensitivity when close to the VOR, and the "zone of confusion" overhead the VOR before station passage.
 - Track outbound on the same or different radial under simulated instrument conditions.
 - Observe the instructor's demonstration of a short field landing
 - Perform a short or soft field take off
 - Perform a short or soft field landing (instructor's discretion)
- Completion Standards:** Student understands the elements and applications of a short field or soft field take off and landing. For short field TO/Landing student maintains V_x/V_a within +5,-0 kts. For soft field TO/Landing, Student takes off and stays in ground effect until reaching V_x , on landing, student lands with minimum descent rate in nose high attitude and keeps back pressure through the ground roll. For VOR work, the Student understands the information that a VOR is presenting and the necessary steps to track a VOR radial. Student demonstrates coordinated control of the aircraft solely by reference to the instruments including tracking the VOR.
- Post-Flight Review:** Review importance of V_x vs. V_y , VOR radial tracking, and flight under instrument conditions.
- Student's Assignment:** Navigation: Instructor assigns a cross country flight. Student finds distance, course, radio and visual aids to navigation enroute, minimum altitudes to fly for terrain clearance, airspace restrictions, radio frequencies required enroute and information on the destination airport. Information required for a flight plan. (PHoAK chapter 8)

Lesson 14: Local Solo Air Work**Solo, 1 Hour Local**

Objective: Increase student's solo flight confidence , and preparation for the private pilot practical test

Elements: Slow flight, power off and power on imminent stalls, ground reference maneuvers

Equipment: Aircraft, hood

Instructor's Actions: • Brief student on the desired flight plan for practice of air work in the local area. Review the PTS Standards for air work

Student's Actions: • Normal take off and flight out to practice area
• clear practice area
• slow flight with PTS standards: [**PTS STANDARDS**]
• imminent stalls and recovery - power on and power off
• ground reference maneuvers: turns about a point, and S-turns across a road to PTS standards
• return to the pattern, make 3 normal landings.

Completion Standards: Student performs solo air work in preparation for the private pilot test and attempts to stay within PTS standards

Post-Flight Review: Answer any questions the student has on the previous navigation assignment, plan to make the cross country trip on the next flight lesson. Review aviation weather and how to obtain weather information.

Student's Assignment: Calculate aircraft Weight & Balance and performance for the cross country flight. POH and PHoAK Chapter 4.

Lesson 15: Dual Cross Country Flight

Dual, 2 Hours Cross-Country

Objective: Student learns to plan a cross country flight including aircraft performance, chart reading, obtaining weather and information about the destination airport as well as airspace and radio communications enroute. The flight will familiarize student with navigation by pilotage, dead reckoning and radio aids to navigation. Student learns to read a sectional chart and recognize visual land marks from the air, keep track of progress, and compensate for wind drift.

Elements: Flight to an airport at least 50 nm away

Equipment: Aircraft, appropriate navigational charts and books, hood/foggles

Instructor's Actions:

- Review and critique the student's preflight planning and weather information
- monitor the flight and quiz student on location, wind drift etc.
- Serve as check pilot with student flying under the hood
- simulated engine out emergency procedures

Student's Actions:

- Plan a cross country flight to airport of the instructor's choosing
- Obtain current weather information before the flight
- execute the cross country flight demonstrating pilotage, dead reckoning, and, where appropriate, the usage of radio navigation aids
- Fly part of one leg solely by reference to instruments at the discretion of the instructor
- following the instrument flight, re-locate the aircraft by using ground land marks

Completion Standards: Student demonstrates thorough pre-flight planning for a cross country flight including all information required by FAR §91.103. Student demonstrates the ability to determine aircraft location from landmarks on the sectional, to fly a steady heading, to compensate for drift, and to use radio navigation aids where applicable. Student maintains an awareness of aircraft position at all times and maintains communications appropriate to the airspace.

Post-Flight Review: Navigation critique

Student's Assignment: Aviation weather (AC 00-6A and /or PhoAK Ch 5)

Lesson 16: Local solo air-work practice, take offs and landings**Solo, 1 Hour Local**

- Objective:** Improve student's confidence and proficiency in solo flight
- Elements:** Short field take offs, slow flight, stalls, steep turns, normal and short field landings
- Equipment:** Aircraft
- Instructor's Actions:** • Brief student on desired flight maneuvers and PTS requirements for those maneuvers.
- Student's Actions:** • Practice maneuvers dictated by instructor and attempt to meet or exceed PTS requirements
- Completion Standards:** Student improves proficiency at short field take offs and landings, steep turns and slow flight
- Post-Flight Review:** Any student questions
- Student's Assignment:** Night flying operations - AFH Chapter 10

Lesson 17: Local Night Flight

Dual, 1 Hour Local

- Objective:** Familiarize the student with night aircraft operations, airport lighting, reduced visual cues at night, and illusions caused by runway lighting
- Elements:** Traffic pattern work at night
- Equipment:** Aircraft, flashlight. Spare flashlight
- Instructor's Actions:**
- Explain the required lights for night operations
 - Explain common runway lighting configurations and illusions created by runway lights (plane of the runway being elevated to plane of the lights)
 - Note that use of the landing /taxi lights while on the ground may drain the electrical system of some aircraft, and may overheat some lights (especially wing lights without propwash)
 - Adjust cockpit lights to provide adequate lighting but not reduce night vision.
 - Explain the increased pilot work load due to reduced visual reference cues. Emphasize the importance of frequently checking heading, altimeter and VSI during take off in order to detect turns and make sure the aircraft is climbing.
 - Watch and correct the student during the pattern work
 - Demonstrate PCL if available
- Student's Actions:**
- Note the reduced visual cues and increased reliance on instruments at night
 - perform take offs and landing to a full stop
- Completion Standards:** Student executes take offs and landings to a full stop and builds confidence in flying with the reduced visual cues at night.
- Post-Flight Review:** Discuss the differences between day and night visual flight
- Student's Assignment:** Plan a solo cross country to airport of the instructor's choice.

Lesson 18: Instrument flight practice, maximum performance take offs and landings

Dual, 1 Hour Local

- Objective:** Increase the student's proficiency at controlling the aircraft solely by reference to flight instruments including recognition and recovery from unusual attitudes. Short and soft field take offs and landings
- Elements:** Short/Soft field take off, instrument flight, short/soft field landings
- Equipment:** Aircraft, hood, flight manual
- Instructor's Actions:**
- Demonstrate a maximum performance short field take off
 - Quiz student on the difference between a short field and a soft field take off
 - Ask student to demonstrate each type of take off
 - Quiz student on short and soft field landings
 - Serve as check pilot while student is under the hood. Give student "vectors" while under the hood to simulate ATC instructions
 - Demonstrate short / soft field landing as necessary
- Student's Actions:**
- Explains short and soft field take offs and landings
 - Demonstrates short field and soft field take offs
 - Follows instructor's vectors while performing flight by reference to instruments
 - Explains short and soft field landings
 - Understands the importance of air speed control on final approach for each type of landing
 - Demonstrates multiple short field and soft field landings.
- Completion Standards:** Student understands elements of short and soft field take off's and landings and can explain the difference between them. Student demonstrates proper technique and airspeed control for short and soft field take off's and landings. Student demonstrates good control of the aircraft for flight with reference to the instruments and follows instructors instructions while under the hood
- Post-Flight Review:** Situations in which student will need to use a short / soft field technique. Importance of V_x and V_y on take off, and proper airspeed control on final approach for landing.
- Student's Assignment:** Plan a cross country flight to an airport of the instructor's choice for a day time solo cross country flight.

Lesson 19: Solo Cross Country

Solo, 1.5 Hours

- Objective:** Student will fly solo to another airport at least 50nm from the airport of departure, perform at least one full stop landing, and return
- Elements:** Cross country flight planning, navigation planning, performance calculations for the aircraft to be used, airport information from AFD or equivalent, and full weather information, filing a VFR flight plan
- Equipment:** Aircraft, flight manual, charts etc. for navigation
- Instructor's Actions:**
- Review the student's flight planning
 - Endorse student's log book for the cross country
- Student's Actions:**
- Plan a cross country to an airport chosen by the instructor
 - Calculate aircraft performance for the flight including required runway lengths, for aircraft weight, fuel requirements etc.
 - Obtain full weather briefing and file a VFR flight plan
 - Fly the cross country flight, execute at least one full stop landing at the destination airport
 - return to the home airport
 - close flight plan!
- Completion Standards:** Student shows good preparation for the cross country flight. Student obtains a full weather briefing for the route of flight and files a VFR flight plan. Student navigates to the destination airport and returns
- Post-Flight Review:** Have student discuss flight, answer any student questions
- Student's Assignment:** Relax, have a home brew.

Lesson 20: Solo flight to a nearby airport**Solo, 1.5 hours**

- Objective:** Student practices leaving the airport traffic pattern, practices slow flight and ground-reference maneuvers enroute, performs the correct entry to the traffic pattern at another airport, performs multiple landings and returns to the home airport.
- Elements:** Traffic pattern procedures, slow flight, ground reference maneuvers, exiting and entering a traffic pattern, standard, and high performance take offs and landings.
- Equipment:** Aircraft
- Instructor's Actions:**
- Discuss the desired flight agenda with the student.
- Student's Actions:**
- Perform high performance take offs for each of the take offs
 - Exit the traffic pattern in the standard fashion
 - execute clearing turns prior to performing slow flight
 - determine wind direction, pick an appropriate turning point, execute clearing turns, and practice ground reference maneuvers (turns around a point)
 - navigate to a nearby airport
 - enter the traffic pattern by flying over the airport, establishing the wind direction, entering the 45 to downwind leg, executing a standard traffic pattern.
 - At least one short or soft field landing
 - return to the home airport
- Completion Standards:** Student completes the tasks agreed on with the instructor prior to flight
- Post-Flight Review:** Quiz student about the maneuvers he/she performed
- Student's Assignment:** Plan a cross country flight for the night, dual cross country.

Lesson 21: Night Cross Country

Dual, 2 Hours

Objective: Navigate to an airport at least 50nm from the home airport at night, perform 3 landings to a full stop, return to the home airport and perform 2 more landings to a full stop.

Elements: Night cross country planning, navigation, performance, weather briefing, VFR flight plan

Equipment: Aircraft

Instructor's Actions:

- Check the student's cross country planning
- Check the student's performance calculations
- Discuss the weather briefing with the student
- fly the cross country flight with student
- Quiz student on physiological factors which are different at night, as well as visual illusions at night

Student's Actions:

- Plan a cross country flight to an airport of the instructor's choice
- Cross country planning shows good usage of night time land marks (radio towers etc.) instead of daytime landmarks (mountain tops)
- Calculate appropriate performance information
- Obtain a full weather briefing
- Execute cross country
- Perform 5 landings to a full stop, at least one of which should be at the destination airport
- Return to the home airport

Completion Standards: Student demonstrates knowledge of night time operations, proper equipment (flashlight, spare batteries), plans a cross country while taking into account the visual cues which will be available at night. Student obtains a full weather briefing and files a flight plan, executes cross country flight, demonstrates good navigation and situational awareness, shows proper control of the aircraft in the landing pattern and performs 5 full stop landings.

Post-Flight Review: Review night illusions and physiological factors. Review and areas the student might have had trouble with.

Student's Assignment: Plan a day time cross country to two airports at least 50nm away.

Lesson 22: Solo Cross Country

2 hours solo

Objective: Fly solo cross country to 2 other nearby airports which are at least 50nm away

Elements: Cross country planning, navigation, performance calculations, weather briefing and filing a flight plan

Equipment: Aircraft, navigational tools

Instructor's Actions:

- Check the student's cross country planning
- Endorse log book for the flight

Student's Actions:

- Obtain a timely weather briefing and make a go/no-go decision as is appropriate for the weather
- Plan the cross country flight including plotting course, finding enroute check-points, correcting for wind drift, find information on the destination airports, and calculate fuel burn enroute.
- Execute cross country flight with full stop landings at the desired airports and return to the home base

Completion Standards: Student successfully navigates to the intended destination and returns.

Post-Flight Review: Answer any questions. Go over a potential route for a long cross country flight.

Student's Assignment: Plan for long cross country flight

Lesson 23: Long Solo Cross Country

4 hours solo

Objective: Satisfy the FAR requirements for private pilot by flying a cross country of at least 150nm with at least one 50nm straight line leg

Elements: Cross country planning, navigation, performance calculations, weather briefing and filing a flight plan

Equipment: Aircraft, navigational tools

Instructor's Actions:

- Check the student's cross country planning
- Endorse log book for the flight

Student's Actions:

- Obtain a timely weather briefing and make a go/no-go decision as is appropriate for the weather
- Plan the cross country flight including plotting course, finding enroute check-points, correcting for wind drift, find information on the destination airports, and calculate fuel burn enroute.
- Execute cross country flight with full stop landings at the desired airports and return to the home base

Completion Standards: Student successfully navigates to the intended destination and return

Post-Flight Review: Student debriefs instructor on the flight

Student's Assignment: Review the PTS for private pilot check ride

Lesson 24: Private Pilot Maneuvers Review

2 hours Dual, Local

Objective: Determine if the student is operating at a proficiency level suitable for private pilot by reviewing flight maneuvers including maneuvers for the private pilot check ride and adhering to the PTS standards for performance.

Elements: Private pilot flight maneuvers

Equipment: Aircraft, hood

Instructor's Actions:

- Asks the student numerous questions during the flight
- Preflight: asks the student to identify the necessary paperwork in the aircraft, to explain the use and need for checklists, and to explain each item on the preflight as it is performed
- Take off: high performance take off (short / soft field) to PTS standards
- Climb out to cruise area: check that the student climbs at best rate and then at cruise climb, scans for traffic and levels off at the requested altitude ± 100 ft
- Maneuvers: navigation by pilotage, dead reckoning and using radios. Ground reference maneuvers, steep turns, slow flight, stalls and accelerated stalls all to PTS standards
- Introduce distractions such as simulated engine out
- Asks student to put on the hood or view limiting device and places the aircraft into an unusual attitude; student recovers to level flight
- return to traffic pattern, demonstrate proper radio technique, traffic pattern entry technique and several landings including short field and soft field.

Student's Actions:

- Explains each task as it is performed to the instructor
- answers instructor's questions on tasks
- performs tasks to PTS standards
- recovers from unusual attitudes under the hood.

Completion Standards: Student demonstrates good flying skills and performs maneuvers to with the PTS standards.

Post-Flight Review: Any areas in which the student needs more work

Student's Assignment: Review for the Private Pilot oral exam and review any other material assigned by the instructor.

Lesson 25: Solo Private Pilot Maneuvers Practice**2 hour solo, local**

- Objective:** Student reviews maneuvers for the check ride based on the results of the previous flight with the instructor
- Elements:** Instructor directed activities in preparation for the private pilot check ride
- Equipment:** Aircraft
- Instructor's Actions:**
- Discuss with the student the maneuvers which need to be worked on and the standards to which the maneuvers need to be performed
 - Quiz student on aspects of flight operations, and FAR part 91
- Student's Actions:**
- Practice the maneuvers recommended by the instructor until comfortable with performing the maneuvers to PTS standards
- Completion Standards:** Student feels confident that he/she is performing to the level necessary to pass the private pilot practical test
- Post-Flight Review:** Discuss any maneuvers which might need more work
- Student's Assignment:** Review of FAR parts 61, and 91 for oral exam in the practical test. Study guide; ASA private pilot oral exam book.

Lesson 26: Pre-Checkride Review**1 hour**

Objective: Final stage check by the instructor prior to signing the student off for the practical test

Elements: Private Pilot flight maneuvers of the instructor's choice

Equipment: Aircraft, hood

Instructor's Actions:

- Evaluate the student's performance on all maneuvers which the instructor asks the student to perform.
- On any maneuver which is not performed to PTS standards, stop, evaluate and repeat the maneuver.

Student's Actions:

- Perform maneuvers as requested by the instructor

Completion Standards: Student can fly all requested maneuvers at a level sufficient for being a private pilot

Post-Flight Review: Review any areas in which the student might wish to study prior to the practical test.

Student's Assignment: Register for the practical test and go pass it!

Note: lessons 25 and 26 will be repeated until the student is prepared for the private pilot check ride.