DYNASTY
AVIATION

Air Agency Certificate # DNVS028M

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VFR Flight Training

Standardization Handbook

Welcome Onboard Dynasty Aviation!

Congratulations on taking the very first step (also the most crucial step) towards becoming a pilot. You have already been through enough work on researching for flight schools and planning out the resources necessary to achieve this life-long goal, let Dynasty Aviation take care of the rest and help you obtain your pilot certifications in the most efficient and hassle-free manner!

This standardization guide contains all the critical information that allows you to be fully prepared towards the training ahead, therefore the faster you memorize this material, the faster (and cheaper) to get the certification. Remember, the most practical way to approach flight training is to "***learn on the ground then practice in the airplane***". The most expensive place to learn on Earth is in the actual airplane, therefore make sure you memorize the procedures first on the ground then you can execute and practice the maneuvers smoothly in the airplane to maximize the training proficiency.

Here at Dynasty the training will split into two portions, the first is the ***online ground school*** for the purpose of the computerized Knowledge Exam, which consists of a series of multiple choice questions and requires a 70% to pass. You are able to watch the online videos and answer the questions at your own pace from the comfort of your home. Completion of the Knowledge Test is a prerequisite to take your actual Flight Examination, or Checkride, with an FAA examiner.

The Chief Flight Instructor (**Dao Chen**) and the School Owner (**Richard Lee**) are available at the school daily during the weekdays. Please do not hesitate to come directly to us for any issues or opinions. You are not restricted to your instructor for your concerns, we are all here as a resource to assist you in any possible means. Your valuable opinion is how we improve as a professional flight school, so don't be shy and come say hi in the office!

The second portion of your training will be the actual flight training, which is a combination of one on one ground knowledge on "how to fly this specific airplane and the operations of this specific airport/airspace" and flying the airplane. This one on one ground is not the same as the previously mentioned online ground school as this is tied specifically on how to fly the airplane. Each flight lesson will be accompanied with a prior ground lesson to ensure that before you enter the airplane, you already have a fundamental knowledge of what to do in that flight lesson.

Each flight lesson will be scheduled in a block of 2 hours but the actual flight time will be around 1 to 1.5 hrs. Make sure to arrive at least 15 minutes before each flight in order to prepare for the Preflight Dispatch Sheet and also allocate time for the Preflight Walk Around Inspection of the airplane.

Before you begin the flight lesson, please see the following for the mandatory items to bring to each lesson. These items are also sold at the school for your convenience.

- ☐ Kneeboard in the appropriate size that will fit in the airplane
- ☐ Pen and paper to write down ATC instructions
- ☐ Physical Logbook & Flight Circle Account (Free Dig. Logbook)
- ☐ Aircraft Checklist
- ☐ Flight bag or small backpack to carry the essentials for flight
- ☐ Aviation Headset
- ☐ Pilot's Operating Handbook for the aircraft
- ☐ Pilot Cert. / Medical Cert. / Government Issued Photo ID
- ☐ **Non-Owned Aircraft Insurance of $40,000 USD Coverage**

Private Pilot Training Outline - 3 Phases

1. Pre-Solo Preparation

- ➔ Preflight preparation, power plant operation, and aircraft systems.
- ➔ Taxiing or surface operations, including runups.
- ➔ Takeoffs and landings, including normal and crosswind;
- ➔ Straight and level flight, and turns in both directions;
- ➔ Climbs and climbing turns;
- ➔ Airport traffic patterns; entry and departure procedures;
- ➔ Collision avoidance, windshear avoidance, and wake avoidance;
- ➔ Descents, with and without turns, using drag configurations;
- ➔ Flight at various airspeeds from cruise to slow flight;
- ➔ Stall entries from various flight attitudes and recoveries;
- ➔ Emergency procedures and equipment malfunctions;
- ➔ Ground reference maneuvers;
- ➔ Approaches to a landing area with simulated engine malfunctions;
- ➔ Slips to a landing;
- ➔ Go-arounds.

2. Solo Cross Country Preparation

➔ Use of aeronautical charts for VFR navigation;

➔ Use of aircraft performance charts pertaining to cross-country flight;

➔ Procurement and analysis of aeronautical weather reports and forecasts.

➔ Emergency procedures;

➔ Traffic pattern procedures for non-towered environments;

➔ Procedures and operating practices for collision avoidance

➔ Recognition, avoidance, and operational restrictions of hazardous terrains.

➔ Procedures for operating the instruments and equipment installed i

➔ Use of radios for VFR navigation and two-way communication;

➔ Short-field, soft-field, and crosswind takeoffs, approaches, and landings;

➔ Climbs at best angle and best rate;

➔ Control and maneuvering solely by reference to flight instruments.

3. Checkride Preparation - Fine Tuning All Maneuvers Standards

➔ Navigation Log
➔ Slow Flight
➔ Power Off Stall to Recovery
➔ Power On Stall to Recovery
➔ Steep Turns
➔ VOR Usage & Triangulation
➔ Basic Attitude Flying and Unusual Attitude Recovery (Sim. Instrument)
➔ Diversion & Lost Procedures
➔ Emergency Descent
➔ Emergency Engine Failure Approach to Land
➔ Loss Communication Procedures
➔ S-Turns & Turn Around a Point
➔ Short-Field Takeoff & Landing
➔ Soft-Field Takeoff & Landing

- The above mentioned training items cover everything you will need to do during the training process and for the final examination. This information should be fully utilized to your own advantage in order to keep track of your own progression. You can use the above road map to create study plans for previewing upcoming maneuvers and to review the ones you've already learned.
- Work together with your instructor as he/she is your greatest asset during flight training. Flight training will not be efficient without self-discipline and self-motivation. Write down any questions you have encountered immediately during your study in order to have it answered on the next lesson. The more you ask, the faster you will make progress, happy flying!

Rotax 912iS Engine Systems

- 100HP @ 5800 rpm (max. 5 min)
- Fuel injected (fuel and air mixes inside the cylinder)
- Reduction gear box (slows down the propeller by 2.43 ratio)
- Engine Control Unit (the computer that runs the engine system)
- Mixed cooling (coolant to cool the cylinder head, oil to cool the cylinder body)
- Dry sump oil system (oil reservoir is separated from the engine)
- To check the oil level = burping
    - By rotating the propeller to push the oil from the engine back to the reservoir.
- Fuel = 100LL Avgas and/or 91 Octane Mogas
- Oil = Aeroshell Sport Plus 4

Rotax 912iS Electrical Systems

- 2 Generators in the form of a stator (14V each)
- One 12V Master Battery.
- One smaller EFIS battery.
- Gen 1 -> Regulator 1 -> ECU (Lanes, Pumps, Eng. Indications)
- Gen 2 -> Regulator 2 -> Master Battery -> EFIS Battery
- If Reg 1 fails, reg 2 will automatically take over to power the ECU.
    - Will result in the Master Battery not charging.
- ECU BKUP is a switch that supplies power to ECU from the Master Battery.
- Voltage regulator to ensure constant output in all rpm conditions.
- Ammeter to measure if the master battery is charging.
- Voltmeter to measure the generator output.
- Circuit breakers or fuses to organize and protect the electrical system.

Flight Instrument Systems

- Air Data Computer (ADC)
    - In charge of the Pitot/Static Systems.
    - Uses the ram pressure from the pitot tube and the static pressure from the static port and converts it to digital data via the “pressure sensors”.
    - Airspeed Indicator, Altimeter, Vertical Speed Indicator, True Airspeed, Outside Air Temperature.

- Attitude Heading Reference System
    - In charge of the gyroscopic instruments.
    - Accelerometer, rate sensors, tilt sensors and connected to a magnetometer for magnetic north info.
    - Attitude indicator, rate of turn indicator, inclinometer and HSI.

Light Sport Aircraft Limitations

- Max. 1320 lbs.
- No more than 2 seats.
- “Light-Sport” label displayed on the exterior.
- Fixed landing gear
- Fixed pitch propeller.
- No more than 120kts.
- Special-Issuance Airworthiness Certificate (S-LSA)
- VMC Only (Can not enter the cloud)
- Non-pressurized cabin.

SAFETY BRIEF (Passenger Brief)

- **Seatbelt** has to be fastened during all phases of flight.
- **Air Vents** locations in case pilots get warm.
- **Flight Control Exchange** 3 ways verbal exchange, I have, you have, I have.
- **Emergency Exit** is the canopy, exit 45 degrees towards the rear.
- **Traffic Scan / Talking** in military time, focus on ATC during critical phases.
- **Your Questions and Concerns** please let the PIC know during the flight.

❖ ***Emergency Engine Failure (ABC)***

- ➢ **A**irspeed for Best Glide
- ➢ **B**est Place to Land
- ➢ **C**onfiguration - 7 Up
  - ■ Lanes + Master + Pumps + ECU Backup + Selector
  - ■ Throttle Half -> Attempt Starter
  - ■ If no restart -> 7700 / 121.50 / Mayday x3 + Callsign
  - ■ Engine Failure _____ miles West of KHWO, _____ souls on board
  - ■ Before Landing -> Flap as needed, all switches off, canopy open.

❖ ***Flight Instrument Check (During Run-Up)***

- ➢ Airspeed 0 (Close Canopy)
- ➢ Attitude Level Pitch/Bank no more than 5^{o}
- ➢ Altimeter Set, +/- 75 ft of airport elevation, VSI 0, Alt. bug set
- ➢ Ball Centered
- ➢ Heading bug set to runway
- ➢ Heading matches compass or MFD
- ➢ G5 Instruments verified matching and the battery is charging.

❖ ***Engine Failure During Takeoff Brief***

➢ During takeoff, if RPM below **4600**, engine not green or airspeed not alive.

- Power idle, brake, exit the runway.

➢ Engine failure after rotation below **700 ft.**

- Lower pitch Vg, directional control, declare, land straight ahead.

➢ Engine failure after rotation above **700 ft.**

- Lower pitch Vg, directional control, declare emergency, and turn back.

❖ ***Pre-Maneuver Checklist (ABCCD)***

- **Altitude Set** above 1500 AGL or as required by the ACS.
- **Best** place to land in case of emergency.
- **Clear**ing turn and/or clear of traffic visually + on TCAS.
- **C**onfiguration
  - Lanes On / Pumps On / Eng. Green / Fuel Highest
  - Set Heading + Altitude Bug
  - All Lights On
- **D**eclare intention over the practice area frequency.

❖ ***Climb Checklist (> 1000 ft)***

➢ Engine Verify All Green

➢ Taxi Light Off

➢ Landing Light On within 10 miles of the airport or in the practice area.

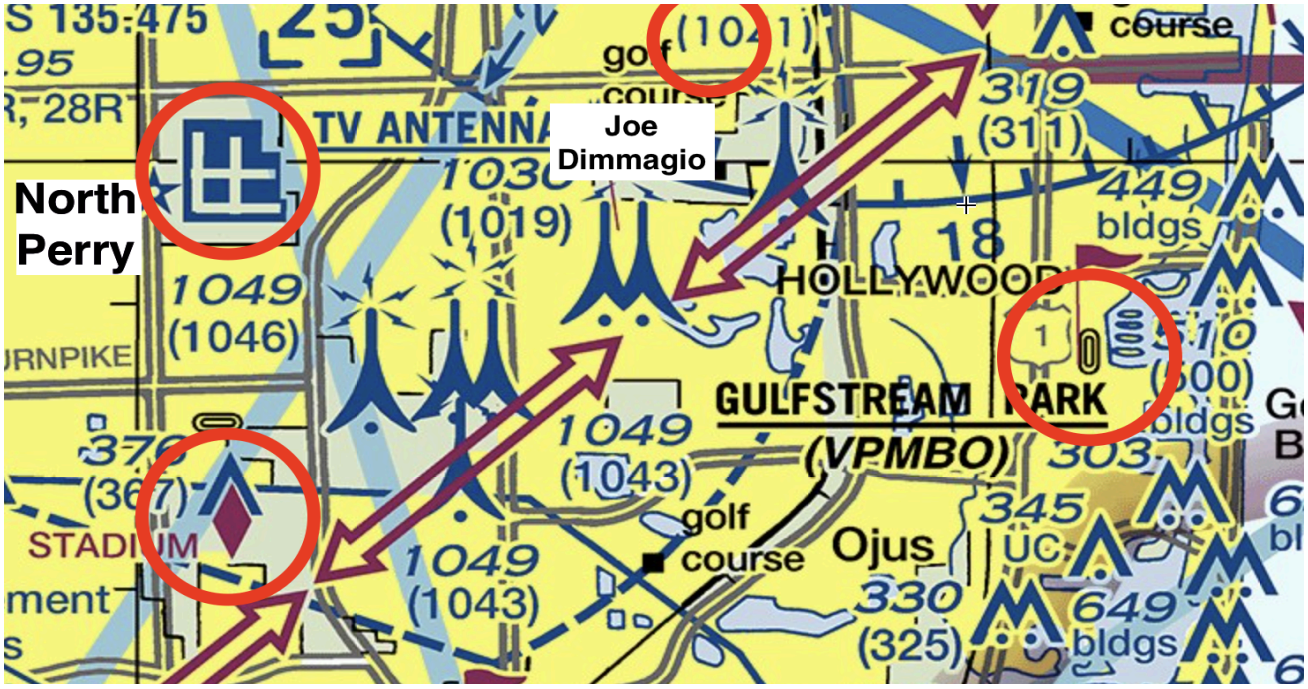
❖ ***Pre-Landing Checklist (Memorized, performed when time permits prior to land)***

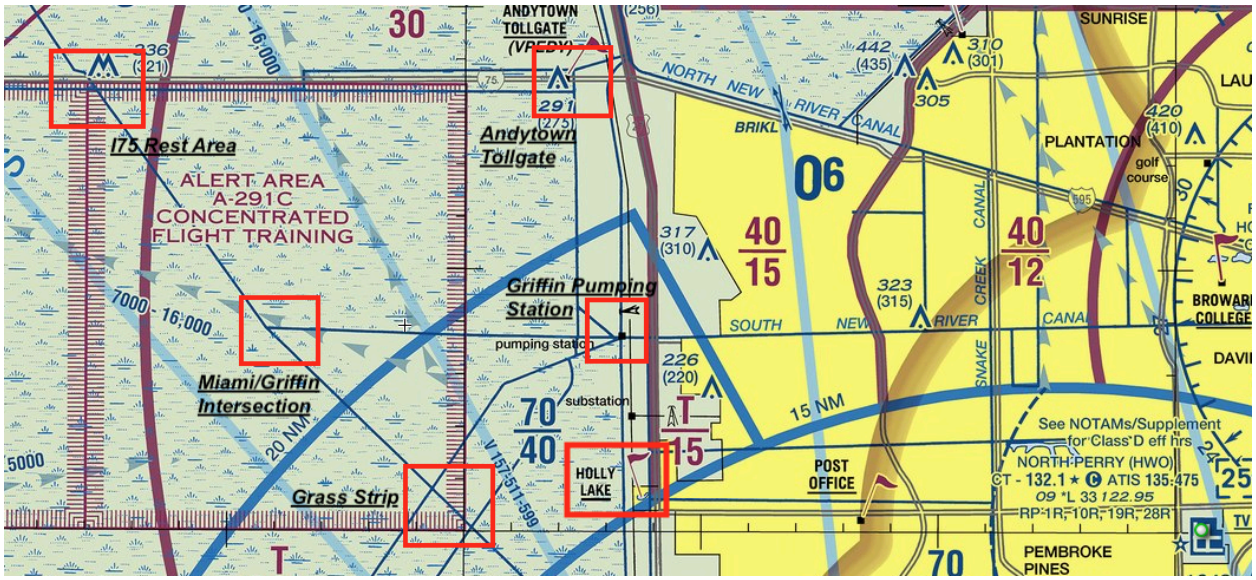
- ➢ Lanes A/B On
- ➢ Pumps Both On
- ➢ Engine Verify All Green
- ➢ Fuel Highest Tank
- ➢ Lights On As Required

❖ ***<u>Airport Procedures</u>***

- ***Westbound Departure***
  - Maintain 1,300 ft or above and remain clear of Class C Airspace.
  - 10L = Left Downwind Departure / 10R = Right Downwind Departure
  - 28R = Straight Out Departure / 28L = Straight Out Departure
  - 19R = Right Crosswind Departure / *19L = Unlikely to be used for Westbound
  - 1L = Left Crosswind Departure / *1R = Unlikely to be used for Westbound

- ***Arrival from the West***
  - Maintain 1,300 ft remain clear of Class C Airspace when near Holly Lake.
  - Aircraft need to be positioned for proper entry **<u>BEFORE</u>** reaching Holly Lake.
  - 10L = Straight In Approach / 10R = Straight In Approach
  - 28R = Right Downwind Entry / 28L = Left Downwind Entry
  - 19L = Right Base Entry / 19R = Right Base Entry
  - 1L = Left Base Entry / 1R = Left Base Entry



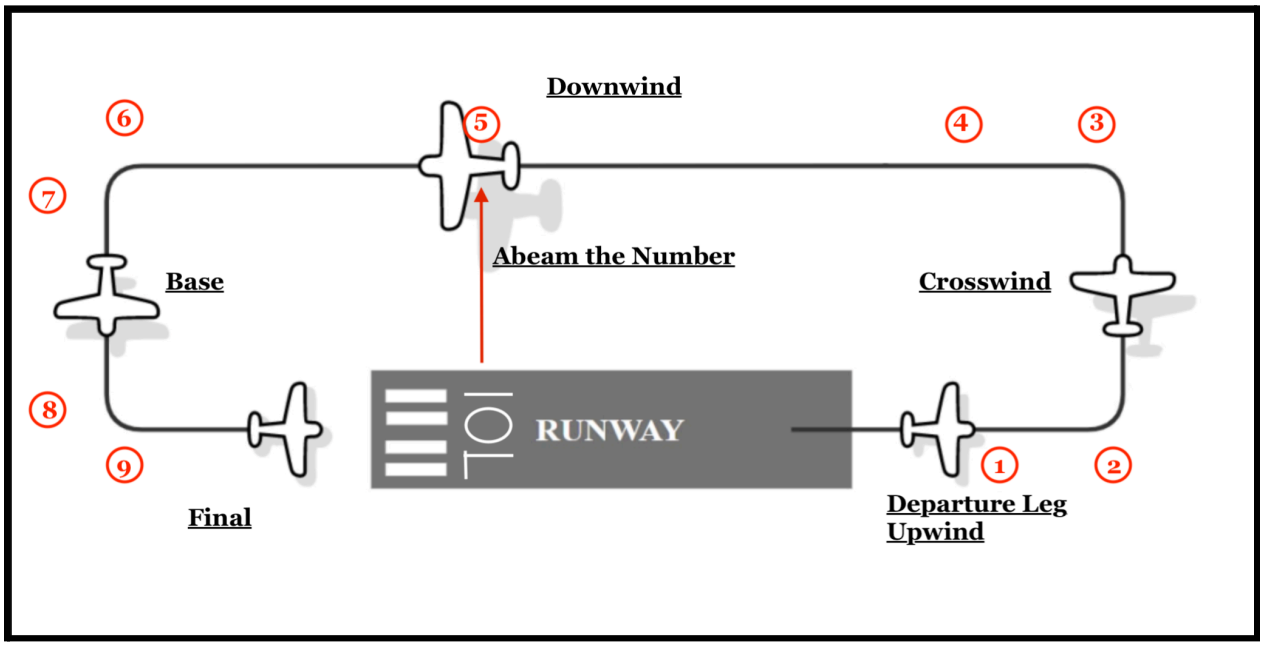


❖ **<u>Practice Area VFR Checkpoints *(Please Memorize!)*</u>**

- Holly Lake, Grass Strip, Miami/Griffin Intersection, I-75 Rest Area
- Andytown Tollgate, Griffin Pumping Station

❖ ***Traffic Pattern Procedures (KHWO)***

1. Upon Takeoff -> Maintain Proper **TRK** -> Above **300 ft** Flap up.
2. **500 ft** -> Turn Crosswind (Perpendicular to Runway)
3. Approx. 1 Mile From the Runway -> Turn Downwind.
4. Level Pitch at TPA -> Power Set to 4400 - 4500rpm.
    a. Pre-Landing Check -> Pumps On, Engine Green, Fuel Highest.
    b. ATC Clearance Received.
5. When Abeam the Runway Number -> 3700 rpm and Hold Altitude.
    a. Below **White Arc** -> Flap 1 -> Slight Descent (Trim as Needed)
6. 45 Degrees from the Runway Threshold -> Turn Base.
7. Flap 2 on Base and Maintain Proper Pitch (Do not pitch above horizon).
8. "Visually Clear Final" Before Turning Final.
9. Flap 3 on Final -> Aim for 65-70 KIAS (Trim as Needed)
    a. Use **Power For Descent Rate**, Maintain **Pitch Slightly Below Horizon**.



❖ Private Pilot Airplane Maneuvers

- ***Short Field Takeoff***
    1. Request “Short Delay” with Tower.
    2. Simulate Full Use of Runway.
    3. Hold the Brake -> Full Power -> RPM more than 4600 and Engine Green.
    4. Release Brake -> Airspeed Alive -> 50kts rotate.
    5. Climb with **Vx** until 50ft of altitude.
    6. Lower pitch to **Vy** and continue to climb
    7. Positive Rate -> Retract Flaps incrementally.
    8. Safe Altitude **300ft** -> Flaps Up

- ***Short Field Landing (Touchdown On First or Second Stripe)***
    1. Abeam the stripe -> 3700 rpm -> Hold Pitch -> Below **White Arc** -> Flaps 1
    2. On Final -> Approach at 65 kts -> Short Final 60 kts
    3. Maintain 100ft when above the threshold, nose pointing to the numbers.
    4. Transition close over the runway and fly level -> Power idle after transition.
    5. Touchdown on the stripe +100/**-0** feet.

- ***Soft Field Takeoff***
    1. Half back pressure on the control with minimum braking.
    2. Align on centerline -> Full power -> 4600rpm / eng. green / airspeed alive.
    3. Rotate 50kts -> Level flight over the runway (Remain in Ground Effect)
    4. Accelerate to **Vy** over the runway -> Gentle climb out
    5. Positive Rate -> Retract Flaps incrementally
    6. Safe Altitude 300ft -> Flap Up

- ***Soft Field Landing***
    1. Upon touchdown, back pressure as needed to prevent the nose from touching the ground while rolling down the runway.
    2. Only when **backpressure can no longer hold the nose**, apply slight power to prevent the nose from touching the ground.

- ***Rejected Landing (Go-Around)***
    1. Full Power -> Pitch for Gentle Climb
    2. Release Trim if Needed
    3. Pos. Rate -> Retract Flaps incrementally.
    4. At Safe Altitude 300ft -> Flap Up

- ***Forward Slip to Land (Flaps Not Recommended)***
    1. Simulating Stuck Flap.
    2. Power Idle.
    3. Aileron into the wind, **half** opposite rudder as needed for descent rate.
    4. Adjust Pitch for approx. 70 kts. (Do not pitch up above the horizon)
    5. At proper altitude, release the rudder to align nose to centerline and level the airplane to land.

- ***Slow Flight***
    1. Pick Reference (Heading) and Altitude (Above 1500 ft)
    2. Reduce Power 3000 rpm -> Hold Altitude.
    3. Below **White Arc** -> Flap 1 -> Stabilize -> Flap 2 -> Stabilize -> Flap 3
    4. At 60 kts -> Increase power to 4000 rpm and hold the target altitude.
    5. Say "Pitch for airspeed and power for altitude" (**Backside of Power Curve**)
    6. When turning, approx. 10 degrees of bank.

- ***Crosswind Landing (Sideslip Method, aka Winglow Method)***
    1. Aileron into the wind ***first*** to correct the ground track of the airplane.
    2. Once flying towards the runway while correcting the wind, then apply rudder as necessary to ***align the NOSE*** of the plane down the centerline of the runway.
    3. **AILERON for Wind first, then RUDDER for the NOSE for CENTERLINE.**

- ***Power-Off Stall to Recovery (Transition From Slow Flight)***
    1. Simulating Approach to Land Stall.
    2. Lower pitch to simulate descent -> Power Idle
    3. Pitch to maintain altitude, rudder for heading control.
    4. Verbally Announce "**First Indication"**
    5. Continue Hold for Full Stall (**Negative VSI or Buffet**)
    6. Recovery
        - Lower Pitch for Horizon
        - Full Power -> Climb -> Positive Rate
        - Flaps up incrementally.
        - Continue climb, DO NOT level off until notified.

- ***Power-On Stall to Recovery (Departure Stall) - Up to 20 degrees of Bank***
    1. Simulating a Departure Stall
    2. Power idle -> Hold altitude and slow to **65 kts.**
    3. Announce Takeoff Power (Half Position) -> Pitch up for 20^{o} and hold.
    4. Rudder to maintain heading.
    5. Announce First Indication.
    6. Continue for full stall (**Buffet or Negative VSI**)
    7. Recovery
        - Lower Pitch for Horizon
        - Full Power -> Climb (DO NOT level off until notified)

- ***Steep Turn (4400 - 4500 RPM)***
    1. Clearing Turn / Pre Maneuver Check (Speed < Va)
    2. Roll to 45^{o} -> Back Pressure as necessary to **match the nose to horizon**
    3. Correct altitude with necessary Back Pressure.
    4. Manage speed by listening to the engine sound for cruise power setting.
    5. Level airplane at entry heading +/- 10^{o} and altitude +/- 100 feet.

- ***Emergency Descent (eg. Wing Fire)***
    1. Exterior lights off + Set Target Altitude
    2. Power Idle.
    3. Bank 30-40^{o} away from fire -> Lower the pitch
    4. Use pitch to hold ~90 - 95 kts.
    5. ~100 feet above desired altitude begin to level.
    6. Resume straight and level at desired altitude -> Power **<u>smoothly</u>** to cruise.

- ***S-Turns (4500 rpm Slow Cruise)***
    1. Enter 800ft downwind
    2. Wings can be straight and level ONLY over the road / canal reference.
    3. Initial bank should be very minimal to feel the effect of the windrift.
    4. Try to draw two half circles with similar radius on both sides of the reference.
    5. Use eyes / feelings to judge the distance and the wind drift.
        - <u>*Common Error:*</u> Not able to split attention between inside and outside therefore unable to maintain altitude. Make sure to listen to the engine for proper rpm speed and look at the horizon to ensure airplane's pitch attitude, do not fixate on the reference and the instrument.

- ***Turn Around a Point (4500 rpm Slow Cruise)***
    1. Enter 800ft downwind.
    2. Pick a reference ~1 to 2 miles on the pilot side.
    3. Fly a circle with a constant "Ground Track" radius around the reference.
    4. The maneuver is based on the pilot's feeling of wind drift.
        - <u>*Common Error*</u>: The maneuver is not based on the "Heading" but is based on the ground track of the aircraft motion, sometimes the nose has to be pointed away from the reference in order to achieve a ground track of a circle.

- ***Lost Procedures (Triangulation + 5C)***

    - ***GPS and Visual Aids***
        - Use the onboard GPS and MFD to identify your locations.
        - Visually scan the area for familiar VFR Checkpoints.
        - If GPS is inoperative then proceed with VOR.

    ➢ ***Triangulation (If VOR Equipped)***
        - Find a landmark and circle over
        - Identify the VORs
        - Use DHP VOR and center CDI, note radial
        - Use FLL VOR and center CDI, note radial
        - Draw two straight lines of the radials on Sectional from the VORs
        - Where the two radials intersect is your current location.

    ➢ ***5C if Continue to be Lost***
        - Circle (To check visual reference and not get more lost)
        - Climb (To get better visual range and VOR reception)
        - Conserve (Slow cruise to save fuel)
        - Confess (To ATC that you require assistance)
        - Comply (To ATC instructions)

- ***Diversion***
    ➢ Circle over a landmark
    ➢ ***Direct on GPS*** and enter the diversion airport.
    ➢ Read the info on the GPS and make a simulated report to the FSS on 122.9
    ➢ Fuel Required = ETE / 10 (Based on 6 GPH)
    ➢ Contact FSS
        - Miami Radio, N12345, divert to (Airport) on a course of (XXX), ETE (min), Fuel Required (Gallons) and Fuel Onboard (Gallons).

- ***Flight Solely by Reference to Instrument Skills***

    - ➢ Cross Radial Scan (Always start and finish with attitude indicator)
    - ➢ Standard Rate Turn (3^{o} per second turn; 1min = 180^{o} turn to exit IMC)
    - ➢ Unusual Attitude
        - ■ If Pitching Up = Full Power -> Level -> Power to Cruise
        - ■ If Pitching Down = Power Idle -> Level -> Power to Cruise

❖ <u>Commercial Pilot Airplane Maneuvers</u>

- ***Chandelles***
    1. Set Heading +/- 180^{o} from the current heading.
    2. Bank 30^{o} -> then apply full power.
    3. First 90^{o} = Constant bank (30^{o}), gradually pitch up to hold 17.5^{o} (Don't stall)
    4. Once passed the 90^{o} reference, hold the pitch attitude (~17.5^{o})
    5. Second 90^{o} = Constant Pitch, gradually level the airplane on target heading.
        - Tips: Hold the bank at 20^{o} until your target heading.
    6. Finish maneuver ~60 kts while holding a pitch up attitude.
        - <u>*Common Error*</u>: Chandelles to the right require “more right rudder” to overcome the extensive left turning tendencies.

- ***Lazy Eights***
    1. Fly Parallel with Reference (Road / Canal)
    2. Bank ~5° then stop (Demonstrate Overbanking Tendency)
    3. Gradually pitch up, the plane will increase bank by itself.
    4. Try to climb ~200 ft around the 45° Reference.
    5. 45° Reference = Max pitch up, ~30° bank.
    6. 90° = Nose slice through horizon, ~30-40° bank
    7. 135° = Max pitch down, make sure to descent back to entry altitude
    8. Level the airplane to original altitude and heading +/- 180°
        - *Common Error*: Make sure to "STOP the BANKING" upon reaching the desired bank. Ensure gaining altitude when reaching the 45° Reference to allow altitude to descend at the 135° reference.

- ***Steep Spiral***
    1. Note entry heading (recommended > 3500ft)
    2. When the reference disappears under the wing root, count 5 seconds.
    3. Power idle and bank towards reference ~40°, pitch for **best glide +5kts**.
    4. Reference should be directly underneath the aircraft position.
    5. Remain circling on top of reference, bank as needed for windrift (< 60° bank)
    6. Increase power briefly to 2000 rpm passing entry heading, then idle again.
    7. Perform 3 x 360° turns over the reference to recover before 1500 ft.
        - *Common Error*: When increasing the bank for windrift, proper back pressure needs to be adjusted in order to maintain best glide or the descent rate and airspeed will be too excessive to compensate.

- ***Eights On Pylons***
    1. Calculate pivotal altitude for various groundspeeds.
        - Pivotal Altitude = GS^2 (kts)/ 11.3
        - 70 kts = 433.6 ~ 450 ft
        - 80 kts = 566.4 ~ 600 ft
        - 90 kts = 716.8 ~ 750 ft
    2. Pick two ground reference ~1.5 mile apart
    3. Remember it's a "**Pivotal Altitude Chasing**" maneuver!
    4. Enter 45° downwind straight and level, note entry heading.
    5. When the wingtip is directly abeam the reference, bank until ref is above wingtip.
    6. Imagine a line connecting your shoulder to the wingtip to the reference.
    7. Keep the reference slightly above the wing during the maneuver.
    8. When entering upwind, start descending (Look at pitch)
        - Reference moves forward = Need to Descend.
    9. When entering downwind, start climbing (Look at pitch)
        - Reference moves backwards = Need to Climb.
    10. Level at 45° between your references until reaching the other pylon.

- ***Accelerated Stall (> 3000 ft AGL)***
    - ➢ Cruise configuration (4000rpm and below Va)
    - ➢ Left turn 45° bank.
    - ➢ Continuously and gradually pitch up for 15°
    - ➢ Hold for the first indication.
    - ➢ Recover: FIRST Lower Pitch, THEN level afterwards.
    - ➢ Full Power, gentle climb.

❖ CFI Airplane Maneuvers

- *Make sure to develop a **"Plan of Action (POA)"** prior to the exam and list out all of the maneuvers of your choice according to the ACS to go over with the examiner.*

- ***Demonstration of Flight Characteristics at Various Config. And Speed***
  - ➢ To demonstrate flying at the first indication without stalling the aircraft.
  - ➢ Configuration could be clean or with flaps.
  - ➢ Note the relationship between the pitch and power while maintaining assigned altitude and near first indication.

- ***Cross Controlled Stall (> 3000 ft AGL)***
  - ➢ Simulating overshooting base to final with the student applying excessive rudder into the final turn (Skid, which could lead to a spin if stalled)
  - ➢ Power to idle, slow down to Vg.
  - ➢ Left turn 30^{o} bank.
  - ➢ Apply left rudder first to induce a nose drop attitude.
  - ➢ Apply right aileron and back pressure to hold 30^{o} bank.
  - ➢ Wait for the first indication to recover.
  - ➢ Release left rudder and lower pitch simultaneously.
  - ➢ Level the wings, full power, gentle climb.
- ***Elevator Trim Stall (> 3000 ft AGL)***
  - ➢ Simulating a Go-Around operation with full aft trim.
  - ➢ Reduce power 3700 rpm and hold altitude.
  - ➢ Below white arc, deploy flaps incrementally to full.
  - ➢ Apply trim to full aft.
  - ➢ Lower the nose to simulate a descent.
  - ➢ Apply full power and pitch up to 20^{o}, hold for the first indication.
  - ➢ Recover: Level nose to horizon while applying forward trim to neutral.
  - ➢ Full power then gentle climb.

- ***Secondary Stall (> 3000 ft AGL)***
    - ➢ Demonstrating improper stall recovery by not allowing enough time for the airflow to accelerate over the wings.
    - ➢ Reduce power to idle and hold the altitude.
    - ➢ First indication, lower the nose to break the stall then pitch up immediately.
    - ➢ When the first indication came up again, say “Secondary Stall”.
    - ➢ Lower nose slightly, full power, gentle climb.

- ***Landing without Flight Instrument***
    - ➢ Fly the airplane by solely referencing the pitch.
    - ➢ Use various senses to help with a normal approach to land.
    - ➢ Visual on the horizon, listening to the engine, feeling the vibration.
    - ➢ Exercise to enhance pure stick and rudder skills.

- ***Landing with Stuck Pitch Trim***
    - ➢ Expect excessive pressure on the control stick.
    - ➢ Utilizing flaps and power for a stabilized approach to land.
    - ➢ If needed, disengage the circuit breakers or fuse.

- ***Autopilot Malfunction***
    - ➢ Monitor the Flight Director if the autopilot is malfunctioning.
    - ➢ If the servo is flying the controls, know the various ways of disengage.
    - ➢ Buttons on the stick, press the autopilot panel, autopilot master switch, pull the circuit breakers or fuses, or worse case scenario Masters Off.

VFR Navigation Log Planning Guide

- The True Course should be drawn on the Sectional Chart in the most direct manner, meaning a straight line from A to B unless restricted by Airspace, Obstacles, or Known Local Procedures.

- Visual checkpoints should be picked either “Left or Right” of the course at an interval of 10 - 15 nautical miles. Do not fly directly over the checkpoints and do not use Private Airstrips as checkpoints due to the difficulty of spotting in the air. VOR cross radials should also be considered as a valid checkpoint.

- Altitude should be chosen based on the following considerations:
    - Airspace / Obstacles / Local Procedures
    - Cloud Base / Ceiling
    - VFR Cruising Altitude (Part 91.159)
    - Cruising Performances (Winds/Temp Aloft)

- Weather Product for Wind to be used during the planning process:
    - KHWO = Wind info from the TAF for KOPF should be used.
    - Enroute = Wind info from Wind/Temp Aloft of MIA should be used.
        - GFA Tool should be used for Enroute cloudbase.
        - Surface Prognostic Chart should be used to identify hazard weather.
    - Destination = TAF should be used if available, or GFA Tool if uncontrolled airfield.

- Formulas for Calculations:
    - Distance = Speed x Time (hr)
    - Speed = Distance / Time (hr)
    - Time (hr) = Distance / Speed
    - Climb ETE = Altitude / Climb FPM
    - Descent ETE = Altitude Loss / Descent FPM (500)

Cross Country Flight Planning Procedures

1. Start by plotting the True Course on the Sectional Chart and input into the **Route (Track)**

2. Find the **Isogonic**(+W/-E) line on the sectional and obtain the **Magnetic Course**.

3. Plot the VFR Checkpoints with KHWO as the initial checkpoint, TOC as the second checkpoint, TOD as the second to last checkpoint and KFMY as the destination checkpoint.

4. Input the chosen altitude in the following format:
    a. ↗ to indicate climbing
    b. ↘ to indicate descending
    c. 2,500 feet MSL should be written as 025 with the last two 0's omitted.

5. Note the wind direction and speed using TAF (KOPF) for departure, Winds Aloft for enroute and GFA Tool or TAF for the destination. If no TAF then use GFA Tool.

6. Calculate the **Magnetic Heading** using the E6B. (MH = MC +/- WCA).

7. Ground Speed can be calculated using the following parameters.
    a. Climb TAS = 72 kts (Sling) / 75 kts (RV-12)
    b. Cruise TAS = According to the POH Section 5 Performance.
    c. Descend TAS = 85 kts.

8. Top of Climb Calculation (Distance)
    a. Calculate the GS using the Wind Info and the Climb TAS.
    b. ETE can be determined using the POH from dividing the Cruising Altitude by the Climbing FPM (ETE is always in Minutes).
    c. The TOC Distance = GS x (ETE/60)

9. Top of Descent Calculation (Distance)
    a. Calculate the GS using the Wind Info and the Descent TAS (85 kts)
    b. ETE can be determined from dividing the Altitude Loss (Cruise Alt. - TPA) by the Descent FPM of 500 (ETE is always in Minutes).
    c. The TOD Distance = GS x (ETE/60)

10. Input the remaining distance leg in the Nav Log (Omit the Remaining Portion).

11. Calculate ETE using the formula ETE = (Distance / GS) x 60.

12. Calculate Fuel Consumption for Each Leg.
    a. Find the Cruise Fuel GPH in POH Section 5.
    b. Fuel Required Each Leg = GPH x (ETE/60)
    c. (Omit the Remaining Portion, just fill the top box)
    d. Once you add up all the fuel required for each leg, that will be your Enroute Fuel.

13. Total Fuel Required = Taxi/Runup (1.0) + Enroute Fuel + VFR Fuel Reserve.

14. **Important Notes:** Fill in as much blank space as possible on the Nav Log such as noting all the formulas used, all the weather information, the NOTAMs, the Total Required Fuel, Airport Frequencies and perhaps even the runways drawn for the destination airport. ***Less Blank = Less Questions*** from the Examiner.

Cross Country Solo Cheat Sheet Sample

- Cheat sheets are mandatory (to and from) for all student solo cross country operations to ensure proper procedures are enforced, minimize workload and maximize situational awareness during the flight.

KHWO - KMKY (Do not copy and paste this sample to be used for actual flight)

1. Holdshort of runway, set sectional chart and GPS to KMKY.
2. Maintain 1300 feet and TRK of 275 west bound, remain clear of Class C.
3. Before Holly Lake set the standby frequency to 123.45.
4. Passing Holly Lake, climb to 2000 - 2500 feet, switch to 123.45.
5. Fly towards the Grass Strip.
6. Over the Grass Strip, follow the Twin Canal southwest bound.
7. Visual on highway, follow the highway west bound.
8. Monitor AWOS 119.075 and CTAF 123.0 for TNT - Update Altimeter.
9. GPS direct again to KMKY.
10. 20 miles from KMKY, monitor AWOS 120.075.
11. Determine runway entry based on the wind (draw on kneeboard)
12. Descent Checklist.
13. 10 miles from KMKY, monitor CTAF 122.7, report position.
14. 4 miles from KMKY, 1000 feet, pre landing check.
15. Report position.
16. Report to CFI via text/phone after clearing the runway.

Practical Test Examination Questions (Private Pilot)

1. Pilot documentations required to be onboard for student pilots acting as PIC?
2. Student pilot limitations?
3. Do you need to fly with your logbook?
4. Private pilot privilege and limitations?
5. Does your pilot certificate expire?
6. How to maintain currency as PIC?
7. How to obtain a Flight Review?
8. How to maintain currency to carry passengers as PIC?
9. What are the 3 night definitions?
10. What is the difference between Currency and Proficiency?
11. How to determine Fitness for Flight? (IMSAFE)
12. What are your personal minimums?
13. Medical classes, privileges and durations?
14. What is the category and class of your certificate?
15. When is type rating required?
16. What are the endorsements associated with ASEL?
17. What documents are required to be onboard the aircraft?
18. What are the limitations of a light sport aircraft?
19. What are the required aircraft inspections?
20. What are the types of ADs?
21. Who can sign off Annual Inspection and who can sign off 100hrs inspections?
22. What is the purpose of a Special Flight Permit?
23. Can you overfly a 100 hour inspection?
24. What is the difference between AD and Safety Notices?
25. What are the required aircraft equipment for VFR Day and Night (91.205)?
26. What are the inoperative equipment procedures? (MEL/POH/91.205/PIC Decision)
27. What is preventative maintenance?

28. Describe the engine system.
29. What is the function of ECU and FADEC?
30. How to identify imminent engine failure using the engine gauges?
31. Describe the electrical system.
32. What is the function of the voltmeter and the ammeter?
33. How to identify potential electrical failure?
34. What is ADC?
35. What are the pitot-static instruments?
36. WHat is AHRS?
37. What are the gyroscopic instruments?
38. Describe the landing gear system.
39. What are the V Speeds of the aircraft?
40. What are the four forces on an unaccelerated, straight-level flight aircraft?
41. How is lift generated? (2 Principles)
42. What are the different types of drags?
43. What is the procedure for crosswind landing? (Only one acceptable answer)
44. What is a forward slip and when do we use the procedure?
45. What is CG and %MAC?
46. What are the effects of forwards vs aft CG on the flight characteristics?
47. What is METAR / TAF / ATIS?
48. What are the types of weather advisories (AIRMET/SIGMET/Convective SIGMET)?
49. What is the Prog Chart?
50. What is the Winds Aloft?
51. What is the GFA tool?
52. What are the types of fronts?
53. What are the types of pressure systems?
54. What are the ingredients that make up a thunderstorm?
55. What are the stages of a thunderstorm?
56. What is the definition of VFR in a class D towered airspace?
57. What are the VFR definitions in flight per 91.155?
58. What is a Special VFR request?

59. What is a PIREP?
60. What are the required Preflight actions per 91.103?
61. What are the types of Weather Briefings?
62. What are NOTAMs and what are the types?
63. Describe the dimension and requirements of class A/B/C/D/E/G
64. Types of Echo airspaces
65. When is Mode C & ADSB-Out required?
66. Airspace airspeed restrictions (*Class C has 2 / VFR Corridor)
67. What are the types of TFRs?
68. What are the Special Use Airspaces?
69. Sectional Chart vs Terminal Area Chart
70. Sectional Chart Symbols
71. Congested vs Non-Congested area altitudes
72. FAA Publications - Chart Supplements, FAR/AIM, Flying Handbooks
73. VFR cruising altitude and fuel requirement?
74. What is TC / MC / MH / CH / Variation / Deviation?
75. What is the purpose of VFR flight plans?
76. What is the loss comm procedure?
77. What is the lost procedure?
78. What is the emergency engine failure procedure?
79. What are the hazardous attitudes?
80. What are the Special Disorientations?
81. What is SRM / CFIT / LAHSO?
82. What are 3P / 5P/ PAVE / DECIDE models?
83. What is the unpressurized cabin oxygen requirement per 91.211?
84. What are the nitrogen sicknesses and the FAA's recommendations?