Lesson Plan Introduction

The following flight training program has been designed with consideration for the student's comfort level. The advancement is dependent upon the student's ability.
The following is a summary of all maneuvers practiced in the training program (in no specific order).

* PRE-FLIGHT SAFETY CHECK
* ENGINE STARTUP
* ROTOR SPIN UP
* ROTOR BLADE MANAGEMENT
* TAXIING - STEERING - BRAKING
* TAKE OFF - LANDINGS
    A. Standard take-off
    B. Soft field take-off
* AIRPORT TRAFFIC PATTERN PROCEDURES
* AIRSPEED MANAGEMENT
    A. Level flight
    B. Turns (shallow - steep)
    C. Climbing turns
    D. Descending Turns
* EMERGENCY LANDING PROCEDURES
    A. Straight approach
    B. Turning approach
* RECOVERY FROM "BALLOON - UP"
* LANDINGS ..... Emergency Procedures
* SLOW FLIGHT
* VERTICAL DESCENTS
* CROSSWIND MANEUVERS
* FIGURE 8 TURNS AT LOW ALTITUDE OVER A FIELD
* HIGH SPEED RUNWAY FLIGHTS IN GROUND EFFECTS
* USING THE "FEEL" OF THE AIRCRAFT FOR INPUT RESPONSE.

At times some of the lesson plans may be grouped together depending on the student's progress. This is not a "high impact" aggressive training program, and it is important that you accept slow learning progress during some segments of the training program. Also included is a written test that is completed during the ground school by the student. All materials are furnished by the instructor. Each lesson plan will be discussed prior to flight. The instructor will demonstrate each flight maneuver before practiced by the student. Before any student pilot is signed off for solo flight, he/she must perform all maneuvers that have been practiced in the lesson plans. These maneuvers must be safely completed without the instructor's assistance. If there are maneuvers that become problematic, you will be requested to re-test on only those maneuvers.

Flight Lesson 1 - Basic Familiarization

Objective: Basic familiarization of the gyroplane.

Elements

- Use of checklists
- Preflight of major components such as propeller and drive systems, rotor blades, cyclic control system, and a general over all check of the aircraft.
- Engine starting, rotor blade spin up and preparing for taxiing

Completion Standards

The lesson is complete when the student demonstrates a proper understanding of the elements of proper preflight of the gyroplane and appropriate control of rotor during pre-rotation.

Flight Lesson 2 – Ground Handling

Objective: Ground handling, rotor management and taxiing.

Elements

- Before the student performs his or her first flight in a gyroplane begin they must get the "feel" of how it handles on the ground.
- Importance of functions of responsiveness of steering, braking, and acceleration needed for safe departures and landings.
- This lesson will allow the student to use the rudder and maintain cyclic position while maneuvering on the taxi way.
- While taxiing, the student will learn the importance of rotor blade management, especially in various wind conditions, and also how to control your forward speed using the cyclic control.
- The first few flights over the runway will be done by the instructor to allow the student to experience basic maneuvering of various flight conditions**.**
- Use of checklists

Completion Standards

The lesson is complete when the student demonstrates a proper handling of the gyroplane during ground handling including rotor management.

Flight Lesson 3 – Basic Flight Maneuvers

Objective: Introduction to gyroplane takeoff and landings

Elements

- The instructor will demonstrate some basic flight maneuvers.
- The student will then be given control of the rudder and assist with cyclic control.
- Most of the take-offs, landings, and flights will be confined within the length of the runway.
- Each flight will require the student to taxi back for another take off.
- This repetition will help the student become familiar and comfortable with the procedures for proper, safe take off, and runway departures.

Takeoff Procedure

- Rotor blade management while taxiing
- Traffic observation
- Report take off intentions
- Taxi in position and hold

- Check control stick position (wind conditions)
- All instruments check
- Rotor blade check
- Slowly accelerate - monitor rotor RPM
- Nose wheel lift off (student recognition required)
- Apply continuous power in small increments
- Slowly ease the cyclic control forward as the power is increased
- Be patient for your take off airspeed (rotors are still gaining speed)
- Use the power and forward cyclic to maintain proper airspeed

Note: The instructor will have full control of the throttle until the student becomes comfortable with coordination of rudder and cyclic control.

Landing Procedure

- Before descending to land, the instructor will reduce the power and the gyro will begin descending.
- Using the control stick to maintain airspeed, rudder control for straight alignment with runway and properly flaring (rearward cyclic to bring the nose of the gyroplane up allowing the tail wheel to touch down first.
- Power is then reduced to idle.
- Maintain controls until the nose wheel touches down.
- Then move the control stick and power to maintain proper taxi speed control.

Note: As the student becomes more relaxed and familiar with the "feel" of the aircraft, he/she will take on more cyclic and throttle control. This progression will depend of the student's ability to recognize situations, and act accordingly. As takeoffs and landings become more consistent, the student will make more of them in the runway available.

Completion Standards

The lesson is complete when the student demonstrates proper handling of the gyroplane during takeoff and landing. This lesson will usually need to be repeated multiple times for the student to reach this standard.

Flight Lesson 4 – Traffic Pattern

Objective: Proper flight around the airport traffic pattern

Elements

- This will be a continuation of Lesson Plan #3 with shallow left and right turns as follows:
- The student will continue to make standard take-offs.
- Maintain proper airspeed as you make a climbing shallow turns over the field.
- Reduce power to cruise.
- Fly along side of runway.
- Then proceed in tuning back to the runway to make a procedural landing.
- The student will alternate turns to the left and right continuously throughout this lesson plan until good consistent control inputs and coordination are achieved.
- Traffic pattern communication and phraseology

Completion Standards

The lesson is complete when the student demonstrates correct input to allow for proper airport traffic pattern, forming a rectangular ground track.

Flight Lesson 5 – Bad Landing Recovery

Objective: To learn proper recovery procedures from a low-energy landing condition

Elements

- This lesson will again be confined to the length of the runway. The student will be practicing recovery from "balloon up" landings. An over-flare which causes the gyroplane to balloon up during landing will be induced by the instructor. At times, the student will be warned, but not always. The correct recovery to landing procedure will be as follows :
- As the aircraft starts to flare and balloon up, it is very important to react immediately.
- Throttle response=full throttle.
- At the same time, rearward pressure is applied to the control stick.

Note: The full power will cushion the aircraft in ground effect. The control stick rearward movement will prevent the aircraft from descending on it's nose wheel.

- The recovery will require constant coordination with all controls as the gyroplane settles to the runway. The student will learn how to recover to landing and recover to continued forward flight. Recovery to forward flight as follows:
- The pilot maintains full throttle as he or she ever so slightly moves the control stick forward, allowing the aircraft to regain forward airspeed for continued forward flight. It may be necessary to allow the gyroplane to settle to the ground as the pilot attempts to fly out of this condition. This is a condition called the "back side of the power curve."

These recovery techniques are very important to learn. This exercise will continue using this procedure until the student can safely recover the aircraft from both situations. One of the most unsafe configurations occurs when you are preparing to land and a gust of wind puts you at several feet altitude with the nose high, and very little air speed. You must learn to safely recover from these conditions.

Completion Standards
The lesson is complete when the student demonstrates a good understand of risks involved in bad landing situation and can show proper technique to recover.

Flight Lesson 6 – Traffic Pattern 2

Objective: Proper flight around the airport traffic pattern

Elements

- At the start of this lesson, the student should be comfortable with take-off and landings in calm, headwind and crosswind conditions.
- The student will be flying the airport traffic pattern.
- The instructor will explain the requirements of this airport traffic pattern.
- The student will be practicing the following sequence:
- Normal take-off
- After lift-off accelerate to climb airspeed
- Normal runway departure, climb to proper altitude while turning cross wind and down wind.
- Reduce power to cruise RPM
- Forward control stick movement to maintain cruise airspeed.
- Always look for other aircraft and listen to radio announcements.
- PREPARATIONS FOR LANDING APPROACH AND TOUCHDOWN:
- Turn base and final in a continuous turn.
- Align the aircraft with the runway, using the control stick to maintain airspeed, and the throttle for altitude control.
- Flare when appropriate, touching the tail wheel down first.

Completion Standards
The lesson is complete when the student demonstrates correct input to allow for proper airport traffic pattern, forming a rectangular ground track.

Flight Lesson 7 – Slow Flight & Vertical Descents

Objective: Practice of slow flight and vertical descents.

Elements

- These maneuvers will be practiced when approaching to land in the traffic pattern.
- Before turning base while flying down wind, reduce power and slowly add some rearward pressure to the control stick. This will reduce the airspeed, allowing the aircraft to slow and maintain 40 mph.
- Continue this airspeed until instructed to regain approach speed for landing.
- To regain approach airspeed, move the control stick slightly forward and add power if needed.
- When in ground effect and preparing to flare, reduce power to idle.
- Land touching down the tail wheel first.
- This procedure will teach the student how to slow the aircraft transitioning from horizontal flight to a vertical descent, the benefit of this maneuver is to lose altitude without gaining airspeed and forward distance.

Completion Standards

- The student should be able to safely and in a controlled fashion slow the aircraft to below 20 mph, recognize the descent condition, continue to control the azimuth of the aircraft with proper rudder inputs and the recovery to an airspeed required for level flight

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Flight Lesson 8 – Emergency Landings

Objective: Proper coordinated flight to a safe landing with simulated power out condition.

Elements

- Practice of emergency landings.
- The initial landings will begin on the final approach while the aircraft is aligned with the runway.
- As the student becomes more familiar with this approach and landing, the emergency procedure will begin while on the downwind leg of the airport traffic pattern.
- "PROCEDURE FOR STRAIGHT" IN EMERGENCY LANDING:
- The instructor will reduce the power to zero thrust condition. This will simulate an "engine out" condition.
- The pilot must then maintain proper airspeed using the control stick.
- Continue the descent maintaining alignment with the runway, flare and land tail wheel first.
- Note: The student should use the throttle as needed to make a safe landing.
- Emergency landing starting from downwind to base leg to final approach.
- The instructor will reduce power to zero thrust. The student will maintain descending airspeed using the cyclic control. Your descending turn from downwind to final will be a continuous turn.
- On final approach, align aircraft with runway, check airspeed, flare when required, touching the tail wheel first.
- The student should carefully watch for and avoid other traffic in the area.

Note: To reiterate, the student can use added power if required, to make a safe landing.

Completion Standards

The student should demonstrate good judgement on the descent rate of the aircraft to assure reaching a safe landing point while maintaining a safe airspeed. The round-out and touchdown should reliably have enough energy to arrest the descent rate for smooth touchdown.