



# Training Syllabus

U.S. Powered Paragliding Association  
& U.S. Ultralight Association

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**T**his guide derives from many experienced PPG instructors whose input is highly appreciated. We've tried to place emphasis where experience suggests it's needed.

Initialing content by both student and instructor helps track that the material was covered and understood by the student. It can be both a checklist and verification.

Students should keep a log that records at least the date, location, motor, wing, inflation type, number of landings, time and maneuvers performed for each day of flying or, if more detail is desired, each individual flight.

Items not covered during flight should be covered verbally on the ground. **Items in Blue are for rehearsal. Items in red are of particular importance.**

**\*\*\* For a Rating To Be Issued: \*\*\***

**Instructors:** The appropriate signature block must be completed, and its image submitted, for any rating to be issued. Check the box to indicate that you covered (or verified that the student was already rated) previous syllabuses as appropriate. Previous syllabuses must be covered unless the student already has that lower rating.

For example, for a PPG 2 rating, submit an image of the signed PPG 2 first page with the box checked indicating that the PPG 1 syllabus was covered.

Thank you for your thoroughness!

[FL] means the item is required for foot launching but optional for wheel launching. To issue a wheel launch add-on or rating, the Wheel Launch Syllabus must be completed in addition to this one.



# PPG 1 Syllabus: First Solo

When completed, the student and instructor must sign below in order for a rating to be administered:

**I have given the training listed in this PPG 1 syllabus.**

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
Print Instructor Name                      Instructor Signature                      Date

**I have received training in, and understand the material covered in this PPG 1 syllabus.**

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
Print Student Name                      Student Signature                      Date

This is intended to take the student through first solo under close, immediate supervision. Kiting should only be practiced with the instructor present unless the student has a clear understanding of weather factors as outlined in the PPG 2 Syllabus. A first solo student should be watched the entire flight.

It is advisable for students who have never *piloted* an aircraft (or parachute) to experience flight while at the controls of *something* before soloing a PPG. This can be through towing, tandem flight (even in another type of craft) or “bunny hill” paraglider training. Doing so reduces the chance of having an adverse reaction to a first flight under their own control.

**Objective:** Student should be able to kite in winds up to 12 mph, be able to launch, fly a pattern and land in a designated area with close supervision and an instructor on the radio.

<u>Task</u>	<u>---Initials---</u>		<u>Curr</u>
	<u>Stu</u>	<u>Instr</u>	<u>Date</u>
<b>1. Before Training Begins. Time 0:15.</b> .....	_____	_____	_____
<b>A. Limitations:</b> .....	_____	_____	_____
<b>i. Student flies <i>only with instructor approval!</i></b> There is airspace where flight is prohibited due to airport proximity, populated areas, military use, presence of dignitaries, sensitive areas and other reasons. This airspace can be enacted at any time and violating it can result in severe penalties up to being forcibly brought down.			
<b>ii.</b> Student must not kite except under conditions or other approval of the instructor (set wind limits and times of day).			
<b>iii.</b> Motor should not be started until directed by instructor and only in the manner directed.			
<b>B. Risk awareness and disclosure</b> .....	_____	_____	_____
<b>i.</b> Some of the Risks on Ground: Falling, contact with the propeller, being hit by a flyer or his gear, being dragged, lifted, or snagged while kiting or handling the wing, other.			
<b>ii.</b> Some of the Risks In Flight: Wing collapse, obstacle collision, bad landing, mid-air, other.			
<b>iii.</b> Fill out and sign forms.			
<b>C. Payment plans and expectations. Student should know what to expect</b> .....	_____	_____	_____
<b>i.</b> How many training sessions/days, stipulations			
_____			
<b>ii.</b> Cost and what’s included (sign forms as applicable)			
_____			
<b>iii.</b> What gear is provided, if any, and replacement of damaged gear policy.			
_____			
<b>iv.</b> Ratings offered and explanation of requirements. Ratings are given based on ability to demonstrate certain skills and knowledge in addition to having the requisite experience. They are in no way guaranteed.			
_____			
<b>2. PPG 1 Knowledge. Time 3:00 including classroom, field &amp; Video</b> .....	_____	_____	_____
<b>A. Inflight</b> .....	_____	_____	_____
<b>i.</b> Importance of landing into the wind but better to land off the wind somewhat than to land in an oscillation or bank.			
<b>ii.</b> Importance and reasoning for avoiding low, downwind operations.			
<b>iii.</b> Torque effects and implications: turn, motor twist, potential for riser twist, reducing power if it gets too bad.			
<b>iv.</b> Brakes control of speed and temporarily affect on altitude, Throttle for height (except slow flight).			
<b>v.</b> Wake turbulence: Heavy, clean and slow craft are worst. Sinks 300-500 fpm. Lasts up to 2 minutes. Will fly through own wake in a 360 degree turn.			

vi. Brakes – maximum safe amounts and risks of exceeding (stall, spin).

vii. Recognizing wind direction.

viii..... Throttle Use: only controls altitude and causes swing in the process.

B. Existence of FAR 103, restricted airspace ..... and the importance of learning it before proceeding beyond supervised solo.

C. Acceptable Flight Locations..... Until a student has gained knowledge to read sectionals and call FSS to determine the legality of his flight, the instructor must go over areas where the student may fly.

D. Student should watch USPPA’s Risk & Reward and go over questions..... This is best done after the student has spent time in the simulator. Replace “Hands Up, Power off” with “reduce power, reduce brakes, then steer.”

E. Pass PPG 1 written test, go over any missed questions.....

3. **PPG 1 Pre-Solo Ground Handling (No Motor). Time 4:00**..... Best covered in a situation where the student can be shown and practice with the equipment.

A. Relevant parts of the paraglider: carabiner, Risers, Brake toggles, lines, trimmers, speedbar and other accessories as equipped.

B. Use of ground handling harness.....

C. [FL] Dangers of kiting, risks of being dragged, cut, injured or killed.....

D. Use of safety gear. (helmet, gloves, other as utilized).....

E. Preparing wing.....

i. Laying out properly.

ii. Avoiding tangles and getting knots out.

iii. Verifying clear lines.

iv. Proper layout.

F. Hooking in (general).....

i. Be fully ready to handle the wing. Once clipped it is possible to get lifted or dragged.

ii. Importance of verifying correct riser positioning, brake position and freedom.

G. [FL] Hooking in Reversed.....

H. Hooking in Forward and why proper layout is so critical for success.....

I. [FL] Inflation Reversed with dampening (6+ mph or so).....

J. Inflation Forward (light wind, some wind, dampening).....

K. [FL] Turning around from reversed to forward and vice-versa.....

L. [FL] Kiting forward. Importance of turning and moving forward immediately to improve control.....

M. [FL] High Winds .....

i. Why it's risky: getting dragged, lifted or caught in the lines.

ii. How wind can come up quickly and how little it takes to be risky.

iii. Description of rotor/mechanical turbulence and why it’s worse in stronger winds. Use example of standing behind a wall and envision the glider flying into a suddenly blowing wind from the building’s shadow.

iv. How to minimize getting dragged or lifted (for example, minimizing brake pressure).

v. De-powering the wing: brakes, or B/C/D-line pull, value of grabbing fabric.

vi. Getting lifted or Dragged: what to do.

N. [FL] Using throttle. Kiting with dummy throttle (if available) and quickly getting to kill switch.....

O. [FL] Kiting with motor on but not running. Practice inflations, turning, using the throttle and the kill switch on command. ....

P. [FL] PLF (Parachute Landing Fall), how its done and when its appropriate: slightly bent knees, legs together, roll onto hip. In all likelihood motor will absorb much of the impact from here. Protect the spine (avoid butt landings). ....

Q. Securing Equipment.....

i. Wing folding, stuffing and storage to reduce tangles.

- ii.* Motor postflight and storage.
4. **PPG 1 Towing (if not used, complete section A on risks) Time 2:00 or 0:05 if only covering section A.**
- A. Risks and Their Avoidance..... \_\_\_\_\_
    - i.* Only use certified (USPPA or USHPA) experienced tow operators.
    - ii.* NEVER tow behind a vehicle without a payout winch or similar due to lockout, over stress and other problems.  - B. Flying on Tow (if used) ..... \_\_\_\_\_
    - i.* Hookup.
    - ii.* Initial Climb.
    - iii.* Pilot release and signals to release.
    - iv.* Emergency procedures (lockout, no release, entanglement, etc.).
5. **PPG 1 Pre-Solo Motor Use and Safety. Time 0:45**
- A. Preflight Inspection. .... \_\_\_\_\_
    - i.* Lift web, Carabiners & Harness connection to frame.
    - ii.* Throttle: freedom of movement & insure carburetor/linkage resets to idle.
    - iii.* General condition of cage, spark plug, muffler, fuel tank and other accessories.
    - iv.* Motor
    - v.* Propeller/redrive/clutch & Attachment: free moving and not hitting cage or other parts.
    - vi.* Fuel valve on (as installed), cap secure, vent free and quantity sufficient.
    - vii.* Electrical components connected properly (as installed).
    - viii.* Personal items or attachments clear of prop.  - B. Starting & Getting in. .... \_\_\_\_\_
    - i.* Recheck throttle at idle, position and unable to increase (stepped on or squeezed accidentally).
    - ii.* Master on (as installed), choke/prime as required.
    - iii.* Preferred method: pull or electric start while on pilots back, next best is to have someone else pull start while on pilots back, next best is to position your body low enough so that full thrust will not catch the pilot off guard. Hunker down in front of while starting. Be prepared for the motor to go to full throttle. **NEVER hold by cage.**
    - iv.* **Risk: From a serious injury perspective, starting the motor is the riskiest thing that a paramotor pilot does.**
    - v.* Before getting in make sure the throttle is out of the way. **Never reach back towards cage.**
    - vi.* Runup: Clear blast area, run-up, make sure full power is available (using Tachometer), test kill switch.
    - vii.* Final preflight checklist (varies based on gear – see appendix).
6. **PPG 1 Pre-Solo Simulator: Time 2:00**..... \_\_\_\_\_
- Do emergencies with a distraction so the students reaction becomes automatic. Shaking the cage to simulate turbulence improves realism. This has proven to be an important step to improve student reaction in flight. Anything not rehearsed will not likely be remembered.
- A. Establish all harness/connection settings and adjustments with motor not running..... \_\_\_\_\_
  - B. Checklist use (see appendix or instructor provided checklist)..... \_\_\_\_\_
  - C. Radio use. Insure that student can hear clearly (even at high power) ..... \_\_\_\_\_
  - D. [FL] Getting into seat with motor at high power. If release of brake(s) is required, rehearse and insure student releases brake(s) first. This must be practiced repeatedly. Explain the likely results of pulling down the brake(s) while reaching for the seat board: stall or spin. Adjust to make as easy as possible..... \_\_\_\_\_
  - E. Risk of brake lines getting into propeller and how to avoid..... \_\_\_\_\_
  - F. [FL] Getting out of seat. .... \_\_\_\_\_
  - G. Rehearse primary and secondary method (if available) to shut off motor. .... \_\_\_\_\_
  - H. Taking directions via radio. It is critical that at least one verbal method of communicating with the student is functioning and that the student is able to respond correctly. It is recommended that any student who is unwilling or unable to react properly to instructions be politely removed from training..... \_\_\_\_\_
  - I. Visual signals for verification or in case of radio failure. Cover basic USPPA Signals as used by instructor..... \_\_\_\_\_

- J.** Rehearse launch, climb, [FL] getting in seat, turns (including clearing-look, shallow, look up/down, turn), landing and flare (running the motor, if safely secured, adds realism) ..... \_\_\_\_\_
- K.** Emergencies:..... \_\_\_\_\_
- i.* Rehearse recognizing parachutal stall (wing goes back and headwind dies off) and correcting (reduce brakes, reduce power smoothly, prepare to brake surge and steer).
  - ii.* Rehearse what to do in case of unexpected pendulum (nothing) and how doing so will allow it to dampen out on its own. While it is good to practice pendulum correction up high, it has proven beneficial to NOT have the student try correcting it during landing. The dampening action (pulling brake in the direction of swing's start) is completely counter-intuitive to a new pilot.
  - iii.* Rehearse reserve use (as installed): "Kill, Look, Pull, Clear and Throw." Use dummy reserve if available.
  - iv.* Rehearse steering options in case of brake line or pulley failure: Rear riser turn, weight shift, differential trimmers.
  - v.* Rehearse what to do in case of spin or riser twist (reduce brakes, reduce power smoothly, prepare to brake surge and steer). Reemphasize that this can happen with too much or too quick brake.
  - vi.* Rehearse what to do in case of wing collapse (reduce brakes, reduce power, then steer to straighten the flight path).
  - vii.* Rehearse what to do if turbulence is encountered (reduce power, brakes to about ¼, allow some swinging to avoid over control).
- L.** Rehearse controlling pitch and surge with brakes. Discuss posture and arm position. Emphasize smooth application and maximum pull position..... \_\_\_\_\_
- M.** Rehearse surging with power and go over wing reaction to power changes. Emphasize smooth application..... \_\_\_\_\_
- N.** Point out torque effect and explain why to avoid turning against it. .... \_\_\_\_\_
- O.** Rehearse student reaction to commands (brakes, throttle and kill switch) ..... \_\_\_\_\_
- P.** Brake position/pressures while in flight including maximum safe pull positions. .... \_\_\_\_\_
- Q.** Landing Preparation (get out of seat [FL], throttle idle, kill motor, only slight brake pressure)..... \_\_\_\_\_
- R.** Flare and Landing. .... \_\_\_\_\_
- 7. PPG 1 Solo Flight Briefing. Time 0:15** Student should know what to do for the entire flight in case radio communications break down. This is intended to be done immediately before the flight..... \_\_\_\_\_
- A.** [FL] Flight Plan including when and how to get into the seat.
  - B.** Establish how the Instructor will call an abort or go.
  - C.** Have student show what the established visual signals are.
  - D.** Have student explain and motion how to get into the seat (keeping hands up).
  - E.** Have student explain and motion (as able) emergency procedures (Motor failure, Steering failure, Parachutal stall)
  - F.** Have student explain the pattern and landing including when to shut of motor and [FL] when to get out of seat.
- 8. PPG 1 Solo Flight. Time 0:30**..... \_\_\_\_\_
- A.** [FL] After launch and at least 100' of altitude gain, tell student to let go of brake (if required) before getting into seat THEN tell him to get into seat. If he is unable to get into the seat, direct him to land to avoid the legs going numb.
  - B.** Climb to safe altitude (at least 300' recommended).
  - C.** Practice shallow turns as directed including at least one 360 (if able).
  - D.** Throttle into level flight, descent and back into climb.
  - E.** Direct the flight as necessary, call out when to shut off motor, when to get out of seat, when to flare.

# PPG 2 Syllabus



When completed, the student and instructor must sign below in order for a rating to be administered:

**I have given the training listed in this syllabus. Check here [ ] if PPG 1 Syllabus completed.**

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
 Print Instructor Name                      Instructor Signature                      Date

**I have received the training listed this syllabus. Check here [ ] if PPG 1 Syllabus completed.**

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
 Print Student Name                      Student Signature                      Date

This is intended to get the student to a more advanced state where he can more reasonably be on his own with little or no instructor supervision.

The student should go over the equipment with the instructor for appropriate use, care and maintenance.

**Objective:** Student should be able to make his own decisions on wing layout, launch type, launch location and direction in approved field, flight pattern, and landing. He should be able to perform the items required of the PPG 2 rating. He should generally be able to operate autonomously in a wide-open field with good weather.

<i>Task</i>	<i>---Initials---</i>		<i>Curr</i>
	<i>Stu</i>	<i>Instr</i>	<i>Date</i>
1. <b>PPP 2 Limitations</b> .....	_____	_____	_____
<b>A.</b> Student should consult with an instructor before flying a new area to determine suitability and airspace requirements.			
<b>B.</b> Student should not fly with wind, including gusts, at or forecast to be above 10 mph (kiting up to 12 mph).			
2. <b>PPG 2 Knowledge</b>			
<b>A.</b> FAR 103: .....	_____	_____	_____
i. Solo operation and only in USA (no tandem allowed except under special exemption).			
ii. Where we cannot fly: around bigger airports, military, temporary flight restrictions, sensitive facilities, populated areas, other as appropriate. Understands that any area to be flown in must be checked for legality.			
iii. Night flying prohibition and use of strobe to go 30 minutes past sunset. During that 30 minutes, G airspace only.			
iv. What conditions we cannot fly in (visibility and clouds).			
v. Limits to commercial operations (recreational only) of getting paid to fly PPG.			
vi. Flight physical not required			
<b>B.</b> Regulations and Airspace.....	_____	_____	_____
i. Sectional charts: obtaining, periodic publication, general structure and use.			
ii. Where we fly.			
iii. No-Fly areas on charts and how to determine: Class A, B, C, D, surface area of D. Military, National parks.			
iv. No-Fly areas other than charts and how to determine: TFR's, events with large gatherings of people, dignitaries, nuclear facilities, dams and other sensitive areas.			
v. FSS briefing.			
vi. Visibility requirements and how to determine from the sectional chart.			
<b>C.</b> Preflight.....	_____	_____	_____
i. Wind drift, gradients and options to increase range.			
ii. How to obtain info from FSS or by computer.			
iii. Basic Weather.			
1. Avoiding dangerous thermals: what time of year, time of day and type of locations are worse (sun angle, surface types).			
2. Pressure systems, circulation in high's and low's, frontal conditions and risks.			
3. Convective: cumulus, thunderstorms and "cloud suck".			
4. Sea breeze/land breeze and how an offshore wind can come up quickly.			
5. Convergence.			
6. Density altitude: barometric pressure, humidity (temp/dewpoint) and elevation.			
7. Effects of wind around obstructions & wind gradient.			

8. Mountain weather, mechanical turbulence, & rotor.

- D.** Courtesy and avoiding trouble (avoid people and their animals and staying in same area)..... \_\_\_\_\_
- E.** Motor..... \_\_\_\_\_
  - i. Appropriate gas & oil including ratios
  - ii. Fueling safety (only fuel with jug on ground).
  - iii. Fuel/Air mixture and how to adjust, spark plug color (light brown is good).
  - iv. Regular upkeep requirements of respective unit.
  - v. Belt tightness, indication of looseness (chirping), redrive, and clutch care.
- F.** Propeller..... \_\_\_\_\_
  - i. Repair techniques and their limits.
  - ii. Static balance, longitudinal and lateral, and Aerodynamic balance (pitch the same on each blade).
    - i. Tracking – having each blade pass the same point on the propellers plane (small effect).
    - ii. Dynamic balance – having each blade use the same effective pitch angle.
  - iii. Proper mounting (most curved side forward).
  - iv. Load path and bolt torquing.
  - iii. Adverse effect of vibration on all associated equipment including motor.
- G.** Wing..... \_\_\_\_\_
  - i. Professional Inspection and interval.
  - ii. Field Repair.
  - iii. Storage & UV avoidance.
  - iv. Line make-up: structural core and sheath, condition, stretch, shrink and avoidance of sharp bends.
  - v. Porosity.
  - vi. Effects of wing size.
  - vii. Reflex vs Non Reflex.
  - viii. Ratings: EN, DHV, DULV, AFNOR meanings, limitations and significance.
- H.** Reserve (if used)..... \_\_\_\_\_
  - i. Selection (size, weight, landing speed), operation (fast opening), loading, and installation.
  - ii. Professional Inspection and repack interval.
  - iii. Minimizing accidental deployment.
- I.** Other equipment:  
helmet, gloves, footwear, hook knife, string or other tree removal gear. .... \_\_\_\_\_
- J.** Judgment & Risks: Most common maladies to be avoided..... \_\_\_\_\_
  - i. Judgment – most important determiner of survival.
  - ii. Choosing appropriate site: pilot's skill level, measuring, obstructions, winds, etc.
  - iii. Propeller strike via improper starting, holding, being around or using motor.
  - iv. Improper brake usage such as [FL] getting into seat while holding brakes, turning against torque or being heavy handed..
  - v. Reacting to pendulum instead of doing nothing (unless it is well rehearsed).
  - vi. Low flying: downwind, maneuvering, power lines.
  - vii. Water – landing in water leads to drowning. Even getting the wing into moving water can drag the pilot in.
  - viii. Flying in strong thermals or rotor affected air.
- K.** Inflight..... \_\_\_\_\_
  - i. Judging wind and knowing its effect on groundspeed/drift.
  - ii. Wind gradient and its effect on climbs.
  - iii. Estimating fuel quantity (using time, mirror, indicator or other method).
  - iv. Clearing turns and the need for extra power.
  - v. Difficulty and methods for recognizing power lines, how to cross them (over poles, at an angle, twice the height).
  - vi. How to estimate/improve glide in headwind and tailwinds.

	vii. Landing backwards (handling a wind beyond landing speed).			
	viii.....	Descent techniques and risks: big		
	ears, spirals, B-Line stall.			
	<b>L.</b> Wing deformation/problem: frontal collapse, asymmetric collapse, cravat.....	_____	_____	_____
	<b>M.</b> Aerodynamics.....	_____	_____	_____
	i. Angle of climb, angle of attack, stall.			
	ii. Thrustline, hang points and their relationship (eg: high thrustline, low hang points).			
	iii. Brake's affect on speed, lift & drag.			
	iv. Trim speed, min sink rate & speed, best glide ratio & speed, maximizing glide for wind.			
	v. Why turns produce "G"s and the effect on handling.			
	vi. Aspect ratio – flat and projected.			
	vii. Affect of wing size and load on speed, launch, handling and landing.			
	<b>N.</b> Pass PPG 2 written test.....	_____	_____	_____
3.	<b>PPG 2 Inflation/Launch</b> .....	_____	_____	_____
	<b>A.</b> [FL] One handed reverse, choice of turn direction (best if opposite throttle).			
	<b>B.</b> Steering while running/taxiing (introduce technique and reasoning).			
	<b>C.</b> Abnormals. what to do if:			
	i. Motor failure right after launch, Leg straps undone, Pendulum, and Severe torque turn.			
4.	<b>PPG 2 Inflight: Maneuvers</b> .....	_____	_____	_____
	<b>A.</b> Surge Damping (fore/aft).....	_____	_____	_____
	<b>B.</b> Turns.....	_____	_____	_____
	<b>C.</b> Maximum brake pull and the extreme Risk of getting too steep (beyond about 45°).....	_____	_____	_____
	i. Against torque and with torque and risks of turning against it.			
	ii. Clearing.			
	iii. Adding power as necessary to stay level.			
	iv. Exiting without pendulum (releasing inside brake slowly).			
	<b>D.</b> Airborne restarting procedure (as applicable).....	_____	_____	_____
	<b>E.</b> Trimmer use. Explain if not installed.....	_____	_____	_____
	<b>F.</b> Speedbar use. Explain if not installed.....	_____	_____	_____
	<b>G.</b> [FL] Weight shift turns, value and execution. Explain if not installed.....	_____	_____	_____
	<b>H.</b> Practice using other accessories (as installed).....	_____	_____	_____
5.	<b>PPG 2 Inflight: Landing</b> .....	_____	_____	_____
	<b>A.</b> Spot landing with power and why it can be better in turbulence.....	_____	_____	_____
	<b>B.</b> Spot landing withOUT power from at least 300' high (see Rating Program for standards and Precision Landing Special Skill).....	_____	_____	_____
	<b>C.</b> Power off : value of closer patterns or s-turning (figure 8's) in stronger winds .....	_____	_____	_____
	<b>D.</b> Value and Risks of brake use during spot landings.....	_____	_____	_____
	<b>E.</b> Energy management and value of "Hands nearly full up prior to first flare".....	_____	_____	_____
	<b>F.</b> Water landing. (if time permits, have all straps undone, leave machine and swim away immediately after touchdown).....	_____	_____	_____
6.	<b>PPG 2 Post flight: Value of cleaning and inspection</b> .....	_____	_____	_____

# PPG 3 Syllabus

When completed, the student and instructor must sign below in order for a rating to be administered:

**I have given the training listed in this syllabus. Also completed syllabus for: PPG 1 [ ], PPG 2 [ ]**

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
 Print Instructor Name                      Instructor Signature                      Date

**I have received the training listed this syllabus. Also completed syllabus for: PPG 1 [ ], PPG 2 [ ]**

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
 Print Student Name                      Student Signature                      Date

This is intended to get the pilot to operate at a high level of skill and knowledgeable.

**Objective:** Pilot should be able to be smooth, precise and solidly under control at all times, exhibiting mastery of the craft, and thorough knowledgeable about the various types of gear available and limitations on use.

<i>Task</i>	<i>---Initials---</i>		<i>Curr Date</i>
	<i>Stu</i>	<i>Instr</i>	
1. PPG 3 Limitations.....	_____	_____	_____
<i>A.</i> Awareness of “Intermediate Syndrome” and the extreme risk of spirals and other steep maneuvers.			
2. PPG 3 Knowledge			
<i>A.</i> Flying into controlled fields: need for proper radio phraseology and rehearsal, understanding of airport runways, patterns, and operations.....	_____	_____	_____
<i>B.</i> Motors. `.....	_____	_____	_____
i. Two stroke and four stroke trade-offs.			
ii. Hook-in points and their affect on launch, weight shift and landing. How to adjust.			
iii. Distance bar types: fixed J-bars, floating j-bars, fixed under-arm bars, pivoting under-arm bars, no bars (Fly 70).			
iv. Electrical systems used on paramotors.			
v. Clutches – explanation including benefits and drawbacks.			
vi. Carburetors: float bowl, membrane, fuel pump.			
vii. Fuel system and need for venting.			
viii..... Fuel/Air mixture, Fuel/Oil mixture.			
ix. Reduction drive styles (geared and belt).			
x. Torque and asymmetric thrust (having the motor’s center of thrust go off to the side causing the pilot to turn).			
<i>C.</i> Wings.....	_____	_____	_____
i. How to connect a Speedbar, ideal pulley locations and wing pulley ratio. Basic use was covered in PPG 2.			
ii. Use of reflex in paragliders, advantages, drawbacks, limitations.			
<i>D.</i> Propellers.....	_____	_____	_____
i. Disk size and its relationship to thrust, noise and speed: accelerating a lot of air a little.			
ii. Torque, significance of lean-back torque and torque induced lock out (pilot twists left, banks right).			
<i>E.</i> Inflight.....	_____	_____	_____
i. Precise dampening of left/right oscillations.			
ii. Precise dampening of fore/aft oscillations.			
<i>F.</i> Pass PPG 3 written test, review incorrect answers.....	_____	_____	_____
3. PPG 3 Ground Handling.....	_____	_____	_____
<i>A.</i> ([FL]Optional) Kiting without harness using A’s and Brakes/D’s.....	_____	_____	_____
<i>B.</i> ([FL]Optional) Kiting without harness using one hand in each riser.....	_____	_____	_____

- C. ([FL]Optional) Kiting with the brake lines having arms behind risers..... \_\_\_\_\_
- 4. PPG 3 Inflight: Inflation/Launch. .... \_\_\_\_\_
  - A. [FL] Cross-armed reverse (optional)..... \_\_\_\_\_
  - B. [FL] One handed reverse (most common method for motor pilots).  
Prefer turn direction opposite throttle..... \_\_\_\_\_
  - C. [FL] Two handed reverse (common method in free flight). Discuss risk of throttle engagement..... \_\_\_\_\_
  - D. Steering while running/taxiing (introduce technique and reasoning).  
Should get to the point where pilot can steer in any upwind direction desired  
while running/taxiing with power on..... \_\_\_\_\_
- 5. PPG 3 Inflight: Maneuvers. .... \_\_\_\_\_
  - A. Wingovers and Pendulum damping. (avoid steeper than 60° bank and 30° pitch)..... \_\_\_\_\_
  - B. Precision Turns..... \_\_\_\_\_
    - i. Maximum brake pull.
    - ii. Coordinating – making the wing track so as to avoid tip collapses when recovering.
    - iii. Adding power as necessary to stay level.
    - iv. Exiting without pendulum (releasing brake slowly).
  - C. Steep turns (optional). In general a turn is considered steep when the pilot feels..... \_\_\_\_\_  
some increase in “G” load and the brake pressure required to stay in the turn decreases.  
Note: Steep turns carry inherent risks and, if practiced, must be done with great care .
    - i. Initiating & Maintaining – extra power required.
    - ii. Maintaining – extra power required.
    - iii. Exiting without climbing.
    - iv. Risks – spin (aggressive entry), dive, extra load on gear, blackout, control sensitivity, locking in.  
Don't go steeper than 60° bank.
  - D. Slow flight.
- 6. PPG 3: Inflight: Landing. .... \_\_\_\_\_
  - A. Spot landing with power and its advantages in turbulence. Minimum standards for rating..... \_\_\_\_\_
  - B. Spot landing without power. Minimum standards for rating..... \_\_\_\_\_
  - C. Landing backwards (getting caught in strong winds)..... \_\_\_\_\_



# PPG 1 Wheel Launch *Syllabus Addendum*

This assumes that relevant parts of the PPG 1 syllabus have been completed. After successful completion, both student and instructor sign below in order for a PPG 1 – Wheel Launch rating to be administered:

**I have given the training listed in this Wheel Launch syllabus.**

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
Print Instructor Name Instructor Signature Date

**I have received training in, and understand the material in this Wheel Launch syllabus.**

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
Print Student Name Student Signature Date

<i>Task</i>	<i>---Initials---</i>		<i>Curr</i>
	<i>Stu</i>	<i>Instr</i>	
<b>1. PPG 1 Wheels Limitations</b>			
A. Maximum crosswind 1 mph			
B. Maximum headwind 5 mph			
<b>2. PPG 1 Wheels Knowledge.....</b>			
A. Preflight.....			
i. Parts of cart, line holders, A-assists (as installed)			
ii. Hang points for front wheels to liftoff first.			
iii. A-assists. Basics of operation and use.			
B. Layout.....			
i. Keeping lines out of prop and wheels using either line holders or careful layout.			
ii. Line tension to keep lines from being sucked into prop.			
iii. When and proper technique to start motor.			
iv. How and why to use A-Assists and hands holding A's.			
C. Launch.....			
i. Throttle control for inflation and taxi (e.g. "flutter" throttle).			
ii. Why to abort.			
iii. How to abort. (let off throttle, press and hold kill switch).			
iv. Wing steering vs. Ground Steering.			
v. Use of mirror (if equipped).			
D. Inflight.....			
i. Cart swinging effect on flight, why it happens more than foot launching.			
ii. Roll oscillation and how to reduce (less power, less brake).			
E. Go Around (smoothly, 2 seconds to climb power).....			
F. Landing .....			
G. Take and go over Wheel Launch online test, go over any missed questions. Test is for PPG 2 WL but if a PPG 1 is issued with a WL rating the test must be passed.....			
<b>3. PPG 1 Pre-Solo Simulator:</b> Like each task, these are in addition to those covered in the main syllabus. Anything not rehearsed will not likely be remembered.			
A. Cart movement in turbulence (can be ignored).....			
B. Off-center wing during taxi or takeoff.....			
C. Rollover—what to do with hands, feet and throttle.....			
<b>4. PPG 1 Pre-Solo Ground Handling &amp; Preparation</b> Best covered in a situation where the student can be shown and practice with the equipment. Tow or ground powered cart is ideal, if available, to learn inflations, taxi, and deflation without taking off.			
A. Preflight Inspection. ....			

- i. Cart lift carry through, Wheels, axles, steering, mirror (as equipped),
- ii. A-Assists, Line holders.

- B.** Starting & Getting in. .... \_\_\_\_\_
- C.** Relevant parts of the cart. Structural support to carabiners, Line holders, A-assists. .... \_\_\_\_\_
- D.** Preparing wing so as to keep lines out of prop. .... \_\_\_\_\_
- E.** How to avoid blowing and deforming 1the wing. .... \_\_\_\_\_
- F.** Inflation. .... \_\_\_\_\_
- G.** Taxiing. .... \_\_\_\_\_
- H.** Deflation. .... \_\_\_\_\_
- 5. PPG 1 Solo Flight Briefing. This is intended to be done immediately before the flight. .... \_\_\_\_\_**
  - A.** Explain entire flight as if communications fail. .... \_\_\_\_\_
  - B.** Have student explain how far off centered the wing can be and what to do if it goes beyond that. .... \_\_\_\_\_
  - C.** When to go from taxiing to takeoff. .... \_\_\_\_\_
- 6. PPG 1 Flight**
  - A.** Two flights with no more than radio instructions. .... \_\_\_\_\_



# PPG 2/3 Wheel Launch *Syllabus Addendum*

Students/Instructors go through the relevant parts of the PPG 2/3 syllabus and adhere to those limitations as well as those listed here. When completed, the student and instructor sign below in order for a rating to be administered. As with all ratings, a student applying for a PPG 2 WL rating must also have completed the PPG 1 WL syllabus. A student applying for the PPG 3 WL rating must have completed the PPG 2 WL syllabus.

This assumes that relevant parts of the PPG 1 syllabus have been completed. After successful completion, both student and instructor sign below in order for a *PPG 2 or PPG 3 – Wheel Launch* rating to be administered:

**I have given the training listed in this Wheel Launch syllabus.**

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
Print Instructor Name                      Instructor Signature                      Date

**I have received training in, and understand the material in this Wheel Launch syllabus.**

\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
Print Student Name                      Student Signature                      Date

<i>Task</i>	---Initials---		<i>Curr</i> <i>Date</i>
	<i>Stu</i>	<i>Instr</i>	
1. <b>PPG 2/3 Wheel Launch Limitations</b> .....	_____	_____	_____
<i>A.</i> Maximum crosswind component 3 mph for WL 2, and 5 mph for WL 3.			
<i>B.</i> Maximum headwind component 7 mph for WL 2 and 10 mph for WL 3.			
2. <b>PPG 2/3 Wheels Knowledge</b> .....	_____	_____	_____
<i>A.</i> Attachment Systems, single loop riser (standard), multi-line.			
<i>B.</i> Weight and balance.			
<i>C.</i> Rules regarding tandem. (2 place requires FAA Sport Pilot License).			
3. <b>Taxiing with controlled turns</b> .....	_____	_____	_____
<i>A.</i> Leading with the wing.			
<i>B.</i> Steering through turns requiring at least two 30° heading changes.			
<i>C.</i> [WL 3 only] Figure eights (recommended in wind less than 2 mph) or steering through turns requiring at least two 90 heading changes.			
4. <b>[WL 3 only] Crosswind (Maximum 5 mph)</b> .....	_____	_____	_____
<i>A.</i> Risk of roll over.			
<i>B.</i> Prerequisite: must able to do figure 8's or other equally challenging taxi tasks before attempting.			
<i>C.</i> Where it would be used (roads, runways, other straight launch areas . where it's not possible to be exactly into the wind.)			
<i>D.</i> Best method to inflate into the wind then turn down road if room allows.			
<i>E.</i> Offset method (placing cart slightly downwind of centered).			
<i>F.</i> Off-wind method (pointing cart slightly downwind of straight ahead).			
5. <b>[WL 3 only] Assisted Launch</b> .....	_____	_____	_____
<i>A.</i> Risk to helper and pilot and why to avoid.			
<i>B.</i> When it's used.			
<i>C.</i> Briefing.			

# Glossary

A-Lines	The forward most row of lines going from their riser up to the leading edge of the wing.
B-Lines	The second most forward row of lines going from their riser up to the wing immediately behind the row of A-Lines.
Brake line	The line going from the brake toggle, through a pulley on the rear riser up to the trailing edge of the wing.
Brake toggle	The handle, attached to the end of a brake line, that the pilot holds onto for applying brakes.
C-Lines	The third row of lines going from their riser up to the wing immediately behind the row of B-Lines.
Carabiner	The attachment that clips the harness to the risers. It is generally left on the motor's harness although it is quickly removed. Some machines also have an alternate method of hooking in that may use a "screw on" type.
D-Lines	The fourth row of lines going from their riser up to the wing immediately behind the row of C-Lines. Some wings do not have this row, they are considered "3-riser" wings. Also known as the Rear lines.
Leading Edge	The forward most part of the wing when in flight.
Maillions	See "Quick Links"
Pendulum	The left-right swaying action that can happen in flight.
Quick Links	The steel rings that connect the wing's A, B, C or D lines to their respective riser. Also called Maillions.
Simulator	A device that allows the pilot and motor can be hung from the carabiners. It may also provide brake handles on bungies or other enhancements to improve realism. It is used by most instructors to give the student a feeling for the motor, throttle, brakes and harness and other aspects of flying or to practice things that are dangerous to practice in flight.
Risers	The thick series of strap-like material (A, B, C, and D usually) that connect the harness to the wing's lines. Riser loop is the lowest portion that connects to the carabiner, it fans out into the A, B, C and D risers with quick links at each end. Rear risers are the set that's farthest aft.
Stabilo Line	Line that goes to the very tip of the wing.
Surge	The characteristic of the wing to overfly the pilot under some conditions. It can be induced by pilot action or turbulence.
Trailing Edge	The rearmost part of the wing when in flight.

# Appendix

It is recommended to have students get into the habit of doing a check after being completely ready to fly and just before starting the launch inflation. Other preflight actions such as checking weather, choosing a safe launch area and preflight of the gear must be done prior to this point.

The Launch Checklist can be done in about 12 seconds before the run-up. Have them say, while physically checking, “leg, leg, chest, and chin,” then “brakes, ‘biners; trimmers and zippers” then clear the path, do the run-up and launch when ready.

<b>Launch Checklist</b>	<b>Action</b>	<b>Say (memory aid)</b>
1.Leg strap left	Fastened and adjusted.	Leg
2.Leg strap right	Fastened and adjusted.	Leg
3.Chest straps	Fastened and adjusted.	Chest and
4.Helmet strap secure	Fastened and adjusted.	Chin;
5.Brakes	Correct hand, clear to pulley.	Brakes,
6.Carabiners	Closed, locked	‘Biners,
7.Trimmers	Adjusted for takeoff.	Trimmers and
8.Straps and loose items	Secure and Zipped.	Zippers;
9.Run-up	Full power available, Kill test.	Power,
10.Launch path	Clear arrival/departure path	Path and go

*Note: If using a reserve parachute, include a look at the pin(s) when checking for straps and loose items.*

The procedure below (or similar) should be taught for clearing turns. It should be rehearsed in the simulator and can be done in about 2 seconds. The goal is to make it a habit pattern.

<b>Turning</b>	<b>Action</b>
1.Look	Turn head in direction of turn
2.Shallow	Apply light brake pressure in direction of turn
3.Up/Down	Look above and below in the direction of turn
4.Turn	Apply desired brake pressure to turn

The procedure below is also best taught with the student in a simulator. Even if the training machine does not have a reserve, it’s helpful to expose students to the procedure and have them understand the importance of rehearsing it before each flight where a reserve could be used. It could also be part of the reserve container check.

<b>Reserve Toss</b>	<b>Action</b>
1.Kill	Press and hold the kill switch.
2.Look	Physically look down at your reserve handle,
3.Pull	Grab the handle and pull it out
4.Clear &	Look around for clear air (not into your paraglider)
5.Throw	Throw it hard!

2017-03-23 Added mention of items only required for foot launching [FL] but not necessary for wheel launch rating.  
Added: Wheel launch rating Syllabi  
Changes: Cleaned up formatting.  
Changes: improved layout and clarity of signature blocks.  
Changes: improved wording of intro, included mention of WL syllabus and items that are optional when giving a [WL] only rating.

2015-11-22 Added PPG 2 Precision Landing Special Skill, added reserve container check common  
Changes: Added "Launch" to correcting pendular swing, spelling corrections, other minor changes.  
Changes: 2015-07-18 Spelling corrections