



Teaching Extraordinary Students Lessons in Aerospace Quadcopter Flight Certification

Authored by Diego Martinez.
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Name _____

Co-pilot's Name _____

Date started _____ Date Completed _____

Materials: Internet access, Composition book,
Quadcopter

Prerequisites: An interest in aerospace.

What is a course checksheet? A course checksheet is a list of all the materials and everything you need to do to successfully complete the course. It includes assignments, essays and sketches that will enhance your understanding and ability to apply the course materials.

Co-pilot: Each student will be assigned a peer (aka Co-Pilot). You will be graded in part on how you successfully help your peer.

How to use this course checksheet: The materials are carefully arranged in an exact sequence so you

smoothly progress at your own pace. It is therefore important to follow the checklist as closely as possible.

When you finish an item mark it off on the checklist with your initials and the date and go on to the next one. Your initials beside an item on the checklist means you know and can apply the material contained in that step or that you have done and can do that action or that your twin is competent on that item.

Flight time: learn the parts of your quadcopter, look at it, feel it. Learn the parts, it is possible to keep it running for a very long time. All parts are replaceable and there are other attachments like squirt guns, winches etc...

Course Product: A person who can skillfully fly a quadcopter and knows the gradient approach to training.

Additional Note:

It is very important that students look up words they encounter as they study as this is known to bog down students. A student who has no misunderstood words will progress smoothly.

Tips for successfully getting through this checklist:

Leave no word misunderstood. It is only misunderstood words that make a subject incomprehensible (not understood).

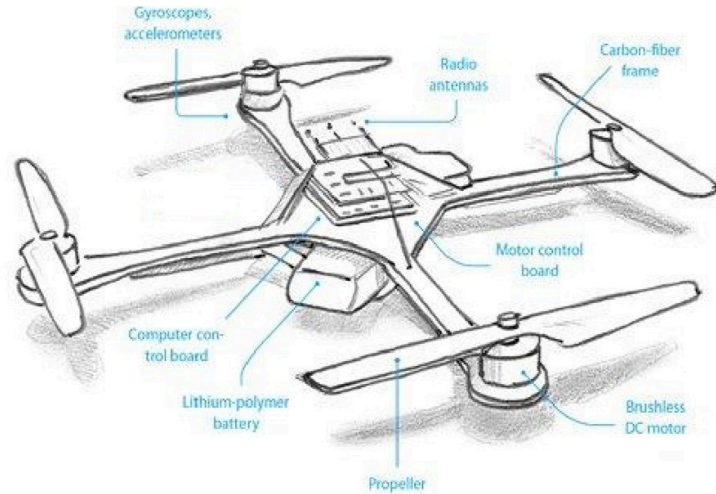
Take responsibility for yourself and your copilot.

Responsibility is very closely related to knowledge. This is an exciting field to be part of and it starts with the fundamentals of flight. Other planets exist possibly with other life. Mars and beyond awaits. Are you ready? 3... 2... 1... Blast off!!

Section One

1. Read the above thoroughly. Ensure there are no misunderstood words

2. Memorize these parts to an quadcopter. Be able to point to a part and name it.



3. Learn all the key words that are in the key word list. If you are having problems learning these terms see an instructor they know advanced tools to help you understand them. We are not focused on memory but understanding.

Instructor Signature_____

- A quadcopter is not a toy.
- Check the reliability of the Quadrocopter Multi-Rotor.
- The flight battery and transmitter battery must be fully charged.
- Always turn on the transmitter first and then the Quadrocopter Multi-Rotor.
- Watch for visible damage such as loose screws, broken, unbalanced or damaged propellers, faulty connectors or solder joints, broken pipes, etc.
- The propeller must be in a good condition and securely mounted. The rotors must spin smoothly. Please ensure that there are no objects are in the rotational plane of the propellers or within a distance that poses a risk of obstruction. Rotating propeller ends are dangerous to touch - never touch a rotating propeller with fingers or other body parts
- Attest below that you understand some of the safety risks.

Student Signature_____

Instructor Signature_____

4. Get basic verbal training or online videos before you start.

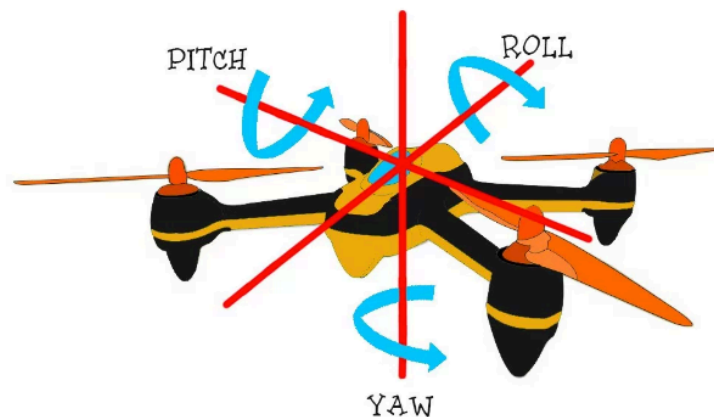
Twin Signature_____

Instructor Signature_____

5. **Zero the throttle:** Becoming a great quadcopter pilot depends on learning on a gradient, step by step level by level. The first step is to know how to stop the quadcopter at any time. Without the quadcopter running train your hands to shutdown the quadcopter immediately. This is the “brake”. Have your co-pilot drill you on immediate shutdown via the radio control throttle down to zero. Practice this over and over.

Twin signature _____

6.



Yaw is the rotation you quadcopter would have if rotated on a record player. When you start flying for the first time, make sure to face the quad with the front end away from you. This will make it easier to fly because it's right will be your right, and its left will be your left. When you turn it so that it is facing you, these controls would now be backwards. Adjust the yaw so that it faces in the direction you are facing.

Pitch is the rotation for moving the front and tail end. This means it moves the front end higher than the tail end, or vice versa. This controls whether the quad is moving forward or backward. Think the pitch of a roof and you got it.

Roll is the rotation from side to side. As you can expect, this makes it move to the right or to the left. Quadcopters can do a full 360 degree roll or what some call a flip. This is often a single button to initiate the “flip”.

Altitude is the height at which the quad is flying. Keeping the quad at a

lower altitude while learning to fly is an easy way to get used to the controls.

Demo to Instructor
Signature_____

7. The left most stick controls the altitude and the yaw. The default area for this to be in is down (a motor speed of 0) and in the middle. It should automatically want to be in the middle for the side to side aspect. The side-to-side area of the controller is the yaw. The right most stick controlled the pitch and the roll. The pitch is in the up and down direction and the roll is the side-to-side motions. The little switches can control the default setting for how the quad wants to fly. No power should be on. Drill with your co-pilot naming the movements of each controller as you move them. Your co-pilot will be moving the quad copter to mimic its movement. Sign when you are satisfied you know the controller movements.

Co-pilot signature_____

8. **Tethered Hover Challenge:** Be able to Hover in a cube of space with a piece of string tied to a weight, 7'x7'x7' for 5 seconds. While practicing be ready to throttle down the moment the string is tightened.

Instructor Signature:_____

9. **Hover Challenge:** No tether allowed. Be able to Hover in a cube of space 7'x7'x7' for 5 seconds. While practicing be ready to throttle down the moment you are out of this space. The gentler you do this the safer your quad will be.

Instructor Signature:_____

10. **Circle Challenge:** Do not work with the yaw, keep it facing away from you. Now try using the pitch and roll to make it go in a circle in the clockwise direction. Once you have the hang of that, do the counter-clockwise direction. Learning to change between these two will come after mastering both directions.

(clock wise circle) Instructor Signature _____
(counter-clockwise circle) Instructor signature _____

11. **A to B Challenge:** Your flight instructor will have a flight path marked with takeoff and landing. Your challenge is to fly the quadcopter from points A to B
12. **Figure 8 Challenge:** Fly a figure 8 pattern in a 20'x20'x 20' cube of space.
13. **Additional Challenge:**

Instructor Signature _____

Student Completion

I have completed the requirements of this checksheet and I know and can apply this material.

Student attest _____ Date _____

I have trained this student to the best of my ability. The student has completed the requirements of this checksheet and knows and can apply the checksheet data.

Instructor attest _____ Date _____

The Student will receive a certificate for successful completion of this course.