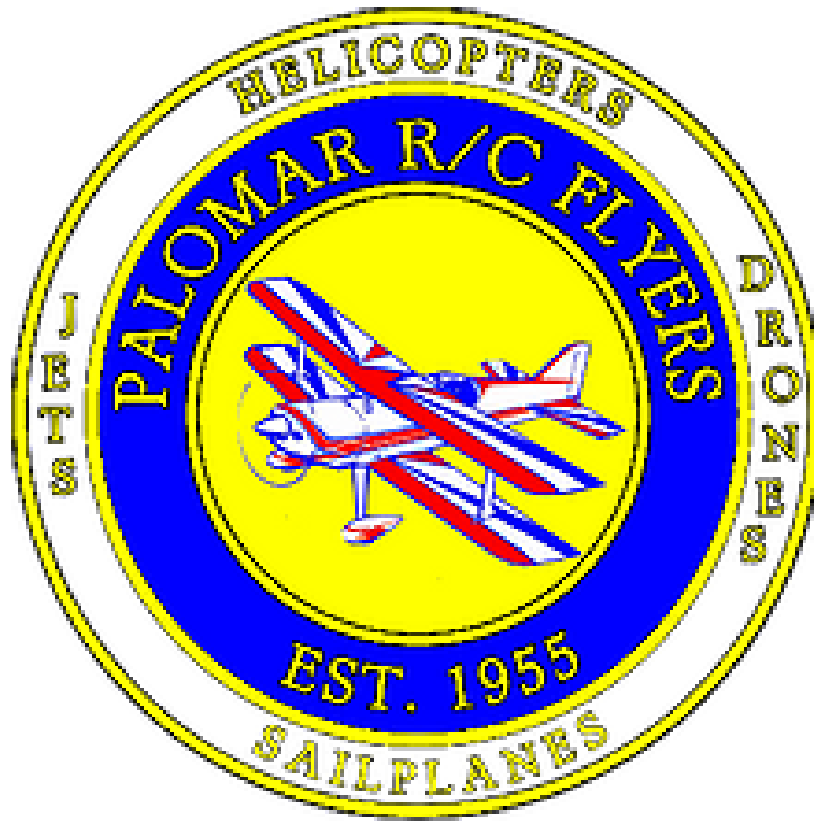


**Palomar RC Flyers  
AMA Charter #141  
A Gold Level Leader Club**



**Flight Training Program**

Student: \_\_\_\_\_

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## INTRODUCTION

We are happy you have decided to take the next step and become an approved model airplane pilot at Palomar RC Flyers. Our goal is to teach the novice student how to safely operate an electric RC airplane. The student will be given a training syllabus detailing our requirements, safety protocols, and AMA & FAA regulations.

Requirements:

- ❖ Participate in multiple introductory/orientation flights
- ❖ Join the club [www.palomarrcflyers.com](http://www.palomarrcflyers.com)
- ❖ Join the AMA (Academy of Model Aeronautics) [www.modelaircraft.org](http://www.modelaircraft.org)
- ❖ Purchase or obtain an appropriate training type, electric model aircraft

Instruction can be performed during the Monday evening training, 5pm to sunset (March-October) or any other time the student can coordinate with an instructor.

- ❖ Instructors are members that have been evaluated and approved to perform this task. They are not paid and perform these duties out of passion for the hobby and interest in teaching students how to fly model aircraft. Some instructors are retired and some work regular jobs. We ask that students be understanding of these circumstances when they seek instruction outside the Monday evening training sessions.

During the initial phase of training, instruction will be performed with the club's training aircraft. Instruction will be conducted with the E-Flite Apprentice, and the buddy box system. Taking off and landing will be performed by the instructor. As the student progresses the instructor may allow the student to perform take-offs with the club plane but landings will be performed by the instructor until the student provides their own plane for the final phase of instruction.

The student will be provided with a Training Syllabus, a copy of the AMA flight Safety Handbook, links to other training materials and Palomar RC Flyers' Rules & Regulations.

New pilots are encouraged to continue practicing with their basic model aircraft. When a new pilot feels he/she is ready to move on to a more advanced model, the pilot should consult with instructors or other members as to what would be a good "next step plane".

On behalf of the Palomar RC Flyers Board and Training Division,

Congratulations and welcome to the hobby!

# PALOMAR RC FLYLERS FLIGHT TRAINING COURSE

## LESSON 1 - RADIO AND FIELD PROCEDURES

**PURPOSE:** To teach the student how to use his/her transmitter radio at the field.

**OBJECTIVES:** To make the student aware of the necessity and self-disciplined use of the radio, and safe operation of his/her model at the field.

### **ELEMENTS:**

- 1) Review AMA safety handbook and PRCF rules.
- 2) Conducting a radio range check.
- 3) Batteries: charging, checking, and life.
- 4) Servo operation.
- 5) Use of throttle cut/on-off switches/ when to plug in the battery for planes without these features
- 6) Pit area.
- 7) Motor operation in the pits. (No motor operation in pits)
- 8) Taxiing on the field. (No taxiing from pit area to flight line.)
- 9) Use of and operation of the runway. (Takeoff after the limit line.)
- 10) Flight area and boundaries. (Flag poles West ,North, East Runway)
- 11) Other traffic and right of way on the field. (Announce position and movement while in flight area). Glider traffic has right of way.
- 12) Restricted airspace (pits and parking lot).
- 13) Critique of student's performance, as required.

**COMPLETION STANDARDS:** This lesson is complete when the student meets the requirements of the lesson objectives and understands the practice of the lesson elements. This lesson should be reviewed at the start of all following lessons.

## LESSON 2 - AIRCRAFT FAMILIARIZATION

**PURPOSE:** Using the checklist, teach the student to properly preflight his/her model.

**OBJECTIVES:** At the completion of this lesson the student should be able to inspect his/her model and identify deficiencies that could cause a malfunction or a safety hazard. He/she should be able to start and adjust the engine.

### **ELEMENTS:**

- 1) Use of preflight checklist.
- 2) Check battery and transmitter voltage.
- 3) Check propeller confirmed well attached.
- 4) Check servo connections.
- 5) Check center of gravity.
- 6) Range test
- 7) Critique of student's performance.

**COMPLETION STANDARDS:** This lesson is complete when the student can perform the lesson objectives. This lesson should be reviewed at the start of all following lessons.

### LESSON 3 - FLIGHT FAMILIARIZATION

**PURPOSE:** To flight test student's model. To introduce the student to controlling the model in flight.

**OBJECTIVES:** To allow the instructor to evaluate the airworthiness of the student's model and to allow the student to become familiar with the model's controls and their use in flight.

**ELEMENTS:**

- 1) The instructor flies and lands the student's model to evaluate its performance and airworthiness.  
NOTE: THIS FLIGHT SHOULD BE DONE IN A SAFE AND CONSERVATIVE MANNER.
- 2) On the ground, familiarize the student with the controls and what kind of reactions he/she can expect from them. Example: explain the necessity of holding a little up elevator in turns to keep the model from diving. Keep the explanation simple.
- 3) Explain the procedures you will use for transfer of pilot in command. Example: "My plane, your plane."
- 4) Explain what you would like the student to do. Example: "Just get familiar with the controls and don't worry about losing control. That's why I'm here."
- 5) With the model trimmed in level flight and at a reasonable airspeed, allow the student to fly it. Whenever possible, verbally correct his/her inputs rather than doing it yourself. DON'T LET THE STUDENT GET NERVOUS. If he or she does, take the transmitter from him and allow him or her to relax.
- 6) Critique of student's performance.

**COMPLETION STANDARDS:** The lesson is complete when the instructor has determined that the student is able to determine and execute proper control inputs to achieve a desired change in the model's attitude. Example: The model dives and the student gives up elevator. PROFICIENCY AND ACCURATE CONTROL ARE NOT A CRITERIA AT THIS POINT.

### LESSON 4 - FLIGHT MANUEVERS

**PURPOSE:** To acquaint the student with the basic flight maneuvers.

**OBJECTIVES:** To teach the student to properly control the model during basic maneuvering.

**ELEMENTS:**

- 1) Explain the effect of wind on the model during flight.
- 2) Orientation to level flight and trim.
  - a) Instructor will fly parallel to the runway demonstrating moderate use of elevator, ailerons, and rudder. After demonstration, allow student to attempt maneuver.
- 3) Once student has mastered straight/parallel flight, instructor will demonstrate and student will perform rectangular pattern using 90 degree turns. Concentration will be on bank and elevator making 90 degree turns to the right and to the left.
- 4) Instructor will demonstrate and student will master level flight to a point using figure 8s as illustrated on pages 9 and 10.
- 5) Use of different power settings.
  - a) Demonstrate point to point using power to change altitude. Power up to flag, power down to runway, power for altitude to trees, power down to flag pole, and complete maneuver power up to mid runway and repeat. (See maneuver diagram.)
- 6) Straight climbs.

- 7) Climbing turns.
- 8) Gliding.
  - a) Instructor to focus on no power glide to runway and focus on nose of airplane to centerline. Demonstrate flare and use of eyes to focus on landing gear and centerline.
- 9) Proper pattern work and going around.

**COMPLETION STANDARDS:** This lesson is complete when the student can perform the maneuvers without assistance from the instructor. Each maneuver should be done with a reasonable degree of accuracy. Example: turns should be fairly smooth and altitude maintained fairly well.

## LESSON 5- ACCURACY MANUEVERS

**PURPOSE:** To teach the student to perform the five basic maneuvers to a standard that will develop proficiency in their execution.

**OBJECTIVES:** To develop the skill and ability of the student to control the model in a specific manner.

### ELEMENTS:

- 1) Level flight, maintaining heading and altitude.
- 2) Level flight at reduced power, maintaining heading and altitude.
- 3) Left and right turns to a specific heading.
- 4) Climbing turns to a specific heading.
- 5) Power off (idle) glides that require the student to maneuver the model to a specific area and approximate altitude. Example: Have the student close the throttle over the south end of the field at two hundred feet and glide to the north end of the field arriving at approximately one hundred feet.
- 6) Critique of student's performance.

**COMPLETION STANDARDS:** This lesson is complete when the student can maneuver the model at the instructor's direction and can demonstrate the ability to control the model in an accurate manner.

## LESSON 6 - ORIENTATION MANUEVERS

**PURPOSE:** To develop the skill and ability necessary for the student to make his/her first landing.

**OBJECTIVES:** To teach the student to control the model regardless of its heading or direction relative to him or herself.

### ELEMENTS:

- 1) Figure 8 - The student must fly a figure 8 pattern consisting of two 360 degree turns, one left and one right. The student must place the maneuver in front of him or herself at a safe distance and altitude.
- 2) The student must fly a rectangular pattern at a safe altitude with the up-wind leg crossing (parallel with) the landing area. NOTE: The instructor will designate the size and altitude of the maneuver.
- 3) Critique of student's performance.

**COMPLETION STANDARDS:** This lesson is complete when the student can fly the figure 8 without experiencing disorientation and can fly both right and left rectangular patterns consistently.

## LESSON 7 - STALLS

**PURPOSE:** To develop the student's understanding of stalls, their cause and avoidance.

**OBJECTIVES:** To teach the student to recognize and recover from stalls.

**ELEMENTS:**

- 1) Pre-flight discussion of stalls, what causes them, and how to recover. (Stalls are a function of angle of attack.)
- 2) Practice of stalls by the student with and without power.
- 3) Stalls in turns (take-off, departure stalls). NOTE: Takeoff and departure stalls are almost impossible to set up with most trainers, but do occur in more advanced models. Therefore, it is recommended that the power be reduced to about 1/3 throttle and a steep climbing turn be entered. The stall will look similar to a spin entry with the model rolling toward the high wing. During this lesson it should be emphasized that the stall can occur at any airspeed and is a function of angle of attack.
- 4) Instructor should introduce trimming an out-of-trim aircraft. With the aircraft at a reasonable altitude, the instructor should de-trim the airplane and have the student re-trim it.
- 5) The stall turn and spin/spiral may be introduced for variety.
- 6) Critique of student's performance.

**COMPLETION STANDARDS:** This lesson is complete when the student understands the cause of stalls and has demonstrated the lesson elements and proper recovery.

## LESSON 8 - TAKE-OFF

**PURPOSE:** To teach the student how to make a normal take-off.

**OBJECTIVES:** To teach the student how to control the model during take-off, both into the wind and in a crosswind.

**ELEMENTS:**

- 1) Discussion of the effects of torque and wind during take-off and initial climb. Discuss aborted take-offs.
- 2) Use of rudder. Have student practice taxiing in both directions.
- 3) Use of throttle.
- 4) Student makes a normal take-off into the wind.
- 5) Use of trim controls to achieve level flight AFTER the plane has made a normal takeoff. NOTE: After student has demonstrated proficiency in normal take-offs, instructor should intentionally de-trim model at the transmitter to allow the student to practice take-offs with a slightly out of trim model. Re-trimming at altitude must also be taught.
- 6) Discussion of what to do on an aborted take-off (i.e.; sudden loss of power and loss of parts - prop, wheels, control surfaces, etc.).
- 7) Student makes a crosswind take-off.
- 8) Critique of student's performance.

**COMPLETION STANDARDS:** This lesson is complete when the student has successfully taken off and established a normal climb with adequate airspeed, both in the trimmed and untrimmed mode. He/she must also demonstrate adequate directional control during the crosswind take-off.

## LESSON 9 - LANDING

**PURPOSE:** To prepare the student for and conduct his/her first landing.

**OBJECTIVES:** To teach the student to visualize and perform a stable and controlled approach to landing.

**ELEMENTS:**

- 1) Review of lesson 6.
- 2) Discussion of proper landing techniques-decent, flare, gently controlled elevator.
- 3) Student flies a rectangular pattern as in lesson 6, but reduces power and establishes a normal glide on the base leg and continues the approach until over the end of the runway, at which point he/she is to add power and go around. The minimum altitude at the end of the maneuver should be no less than twenty (20) feet.
- 4) As the student becomes comfortable with the maneuver, the altitude should be lowered until the instructor is confident that the model can glide to the runway with the power off (idle).
  - a) Emphasize visualizing the nose of the aircraft in relationship to the centerline.
  - b) Use flare to allow aircraft to settle. Last adjustment is wheels in relation to the runway centerline.
- 5) The student should make at least two dead stick landings at this time. The engine may be set at idle to simulate a dead engine.
- 6) Critique of student's performance.

**COMPLETION STANDARDS:** This lesson is complete and the student can advance to supervised solo flight after the student has successfully landed the model several times and is comfortable with the maneuver.

**LESSON 10 - SOLO FLIGHT EVALUATION**

**PURPOSE:** To certify the student for solo flight.

**OBJECTIVES:** The student is to perform a series of solo flights under the supervision of the instructor and complete the required maneuvers on the solo flight evaluation to earn his/her full membership badge.

**ELEMENTS:**

- 1) Preflight discussion to answer questions and resolve problems that concern the student about the lesson.
- 2) Student performs 3 flights under the instructor's supervision starting with a thorough pre-flight and ending with return of the aircraft.
- 3) The solo flight certification is signed off by both the instructor and the student.

**COMPLETION STANDARDS:** This lesson is complete and the student signed off for solo flight ONLY after he/she has demonstrated a practical knowledge of all course objectives, has completed the required 3 flight demonstration of competence, and has observed all safety and field operating rules.



# PRE-FLIGHT CHECKLIST

## **A. ENGINE & NOSE AREA**

- Check motor mount, engine, muffler, carb, prop nut and/or spinner for security, and throttle connections for proper adjustment.
- Check prop for nicks, cracks, etc.
- Check nose wheel steering for security (if equipped).
- Check cowling for security (if equipped).

## **B. FUSELAGE**

- Battery for security and protection.
- Battery connections for security and damage.

## **C. RADIO COMPARTMENT**

- Check to ensure fuel has not leaked into radio compartment. (Gas only)
- Check servo mount, servos, and servo arms for security and proper operation.
- Check push rods and links for security and adjustment.
- Check wiring for solid connections for all surfaces.
- Check receiver for solid connection double check with transmitter

## **D. TAIL AREA**

- Check vertical fin, hinges, rudder, and rudder clevis for operation, security, and proper adjustment.
- Check tailwheel for security and proper adjustment (if equipped).
- Check horizontal stabilizer, hinges, elevator, and elevator clevis for security and proper adjustment.

## **E. WING**

- Check wing for breaks, warps, cracks, hinges, and ailerons for security.
- Check aileron servo, pushrods, linkages, and clevis for operation, security, and proper adjustment.
- Check landing gear for security of attachment (if equipped).
- Check wing attachment points for possible damage. If rubber bands are used, make sure there are enough as well as proper elasticity
- With wing attached, check center of balance of model.
- Check wing to fuselage mating.

## **F. RADIO**

- Check for proper operation and control directions.
- Range check (25-75 feet) or per manufacturer's instructions.

# SOLO FLIGHT EVALUATION AND CERTIFICATION

**STUDENT PILOT'S NAME:** \_\_\_\_\_ **AMA NUMBER:** \_\_\_\_\_

- 1) This checklist will serve as a permanent record of your post-training evaluation and the instructor's certification of your earning your solo wings. This checklist, when signed off, will be turned over to the club secretary.
- 2) Solo certification consists of three separate flights, each with a specific piloting skill to be demonstrated. You will be judged on your ability to safely demonstrate your basic proficiency in each of these areas.
- 3) Student's aircraft: Make \_\_\_\_\_ Model \_\_\_\_\_ New/Used \_\_\_\_\_  
Condition \_\_\_\_\_ AMA & FAA numbers properly marked? \_\_\_\_\_
- 4) Instructor certifies the model has been both checked out on the ground and in the air and is safe to fly.

\_\_\_\_\_  
Instructor's Signature and Date

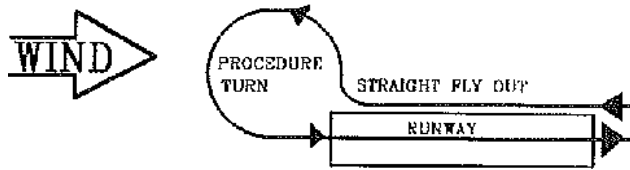
**REQUIREMENT**

**INSTRUCTOR'S INITIALS**

**A. First Flight**

1. Take-Off \_\_\_\_\_

2. Straight Flight Out, Procedure turn, and Straight Flight Back \_\_\_\_\_



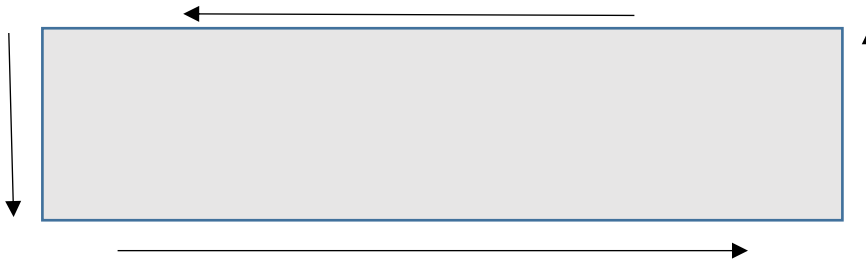
**STRAIGHT FLY BACK**

3. Landing \_\_\_\_\_

**B. Second Flight**

1. Take-Off \_\_\_\_\_

2. 90 Degree Turns (Left Turns)

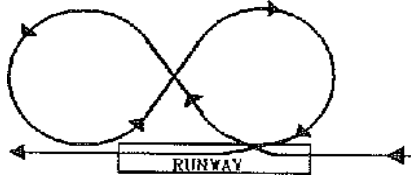


3. Landing \_\_\_\_\_

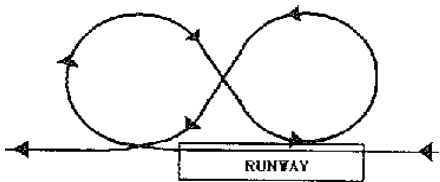
C. Third Flight

1. Takeoff \_\_\_\_\_

2. Figure Eight (left turn on left, right turn on right) \_\_\_\_\_



3. Reverse Figure Eight (Power on & Power off Figure 8) \_\_\_\_\_



4. Landing \_\_\_\_\_

C. Fourth Flight

1. Untrimmed Take-Off (Instructor will "de-trim" the aircraft using the transmitter trim controls only and will return the transmitter to the student. Student will takeoff and climb to altitude without re-trimming the plane.) \_\_\_\_\_

2. Trim the Aircraft (at altitude) \_\_\_\_\_

3. "Dead stick " Landing (With the plane at altitude, the instructor will direct the student to reduce the throttle to flight idle. The student lands the aircraft without advancing the throttle. If a crash or unsafe condition develops, the student may advance the throttle, but the requirement of this check will be considered not to have been met.) \_\_\_\_\_

CERTIFICATION

I certify that \_\_\_\_\_ has successfully demonstrated the minimum skills required to safely operate an electric powered, radio controlled model aircraft and is hereby designated a solo pilot.

\_\_\_\_\_  
Instructor's Signature and Date

ACKNOWLEDGEMENT

I agree to abide by the AMA Safety Code and the rules of Palomar RC Flyers and promise to fly my aircraft in a safe manner at all times.

\_\_\_\_\_  
Pilot's Signature and Date

# STUDENT PILOT PROGRESS LOG

**Student Name:** \_\_\_\_\_

**Primary Instructor:** \_\_\_\_\_

<u>Lesson</u>	<u>Instructor's Initials and Date</u>	<u>Comments</u>
1. Radio/Field Procedures	_____	_____
2. ACFT Familiarization	_____	_____
3. Flight Familiarization	_____	_____
4. Flight Maneuvers	_____	_____
5. Accuracy Maneuvers	_____	_____
6. Orientation Maneuvers	_____	_____
7. Stalls	_____	_____
8. Take-Off	_____	_____
9. Landing	_____	_____
10. Solo Flight Evaluation	_____	_____