



Model Aeronautics Association of Canada

Flight Training Course

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Introduction

Welcome to the Model Aeronautics Association of Canada training program. This program will teach you the basics of flying radio controlled model aircraft and is MAAC's best effort to assist you in the process.

There is nothing in this program that guarantees that you will become a successful R/C pilot. Nor, are there any expectations on how long it will take to complete this program. Like everything else, your success will all depend on your willingness to spend the time and practice.

This program is a series of lessons designed to build upon previous lessons to develop the skill and confidence, which will allow you to thoroughly enjoy your new hobby.

Upon completion of these lessons, you will be ready to take your "A Wings" test. This test is designed such that you can demonstrate to the club's satisfaction that you are able to control your plane safely. After passing this test, you will be allowed to fly without an instructor present.

Hopefully, the completion of your "A Wings" is only the beginning of your learning and will serve as an incentive to get out and fly. Where you go from here is up to you. Good Luck!

Reminder

You must learn to crawl before walking and walk before running. For this reason, MAAC strongly recommends that you start your flight instruction on a trainer and then evolve to more advanced planes.

A trainer will enable you to learn easier and it will simplify your instructor's roles. Your plane will last you longer with less chance of a serious crash.

Remember, even the jet fighter pilots learn to fly in trainers before advancing to jets. So leave the scale planes until after you have learned to fly.

SAFETY FIRST, FUN SECOND

Thank you to the Victoria Radio Control Modelers Society for letting MAAC use their Flight Training Course which will become the national standard

PROGRESS CHECK LIST

To be presented to Instructor prior to each days flying training. The instructor will initial each item when covered.

FLIGHT PROFICIENCY

INSTRUCTORS NOTE: You are to demonstrate each step of the particular lesson to be learned. Show the student what it looks like. When the student understands the control input sequences and reasons for them, then give him control. You are to initial and date each sequence when the student has shown he/she has mastered it.

Field Layout

- Parking _____
- Gate (rules, keys) _____
- Transmitter Compound _____
- Frequency Board _____
- Pegs (construction and use) _____
- Boundaries (fence, ditch) _____
- Danica property _____
- Flying restrictions _____
- Runway (Pilot positions) _____
- Windsock storage _____
- a PitsTaxi OUT. After passing last aircraftTaxi IN.
Engine off before entering Pit area _____
- Flying restrictions for Members without "A" Wings _____
- Club Information Test _____

Aircraft

- Engine _____
- Radio (receiver and servos) _____
- Fuel system _____
- Balance _____
- Flight Controls: Direction and throw; Hinges and Clevises etc.; Dual Rates (deactivate) _____
- Explanation of Battery Charging requirements _____

Initial Date

- | | | |
|---|-------|-------|
| 1. Taxiing out - right and left turns | _____ | _____ |
| 2. Taxiing in - right and left turns | _____ | _____ |
| 3. Taxi down center of runway at medium speed | _____ | _____ |
| 4. Straight and Level Flight | _____ | _____ |

- | | | | | |
|-----|--|---------|-------|-------|
| 5. | Left Turns maintaining height | | _____ | _____ |
| 6. | Right Turns maintaining height | | _____ | _____ |
| 7. | Trim for level flight various power settings | | _____ | _____ |
| 8. | Horizontal 8s | | _____ | _____ |
| 9. | Tracking over runway at | 150 ft. | _____ | _____ |
| | | 75 ft. | | |
| | | 25 ft. | | |
| 10. | Slow Flying | | _____ | _____ |
| 11. | Trimming for slow flying | | _____ | _____ |
| 12. | Stalls and recovery | | _____ | _____ |
| 13. | Take off, Climb, Level off reduce power and trim | | _____ | _____ |
| 14. | Landings (discuss why take off and land into wind) | | _____ | _____ |
| 15. | Take off, trim for level, slow flight, and land | | _____ | _____ |
| 16. | Overshoots | | _____ | _____ |
| 17. | Touch and Goes | | _____ | _____ |
| 18. | Dead Stick Demo - by instructor only, S turns etc. | | _____ | _____ |
| 19. | "A" Wings practice | | _____ | _____ |
| 20. | Recommended for "A" VVings test Date | | _____ | _____ |

Airfield Layout

Insert the Airfield (s) Layout here

Lesson 1: Instructor - Student Responsibilities

You are about to embark upon the Primary Flight Training Course of Model Aeronautics Association of Canada.

Although you may seek instruction from any club instructor your primary instructor is:

Name:

Phone:

He will work with you and monitor your progress..

Your instructor has met the qualifications of MAAC. He has accepted the responsibility to teach you to become a responsible and safe pilot who can be proud of his flying abilities and an enjoyable fellow club member. If the instructor ignores his responsibility, you may be a pilot who is a hazard to yourself and other persons wherever you fly. You may seek training assistance from any other club instructor. However you should look to your designated instructor as your primary source of assistance.

You may not take your "A" Wings test until your instructor, or the Chief Instructor has signed below indicating that you have completed the elements of your primary training program and you are ready for your "A" Level Wings test.. You must pass your "A" Wings test before you are allowed to fly at the club field without supervision.

As a student, you have shown the diligence to build your first trainer, seek out the Local Club and join this training program. It is your responsibility to apply yourself diligently to learn and apply the material presented in this course. By doing so, you will learn the minimum amount of information and skills to allow you to safely enjoy radio controlled flight.

Each section of this course deals with a different aspect of flying a radio controlled model aircraft. Your instructor will explain and demonstrate each element of each lesson. Where applicable he will demonstrate the element in the air *using your aircraft*. You will have opportunities to perform each element and receive an evaluation from your instructor. In each lesson there is a space for a club instructor to "initial" that the material has been reviewed with you. It is important that you keep your training program with you at all times and ensure that instructors initial elements after they have been covered. Other club instructors will use the initials and notes to assist you when your instructor is absent.

I recommend that _____ take the MAAC "A" Wings test.

Instructor

Lesson 2: Aircraft Familiarization

Purpose:

To teach the student how to properly pre-flight his model.

Objective:

At the completion of the lesson the student should be able to inspect his model and identify any deficiencies that could cause a malfunction or safety hazard. He will be able to start and adjust the engine properly.

Elements:

- Inspection of aircraft structure, center of gravity and longitudinal balance.
- Inspection of radio installation.
- Inspection of all linkages and control surfaces including controls for proper throw, direction and freedom of movement
- Engine, fuel system installation and security (including propellers).
- Instructor's demonstration of safe engine starting procedure and starting of engine.
- Student starts and adjusts engine
- Instructor teaches student how to identify rich and lean engine settings.
- Instructor teaches student how to adjust the idle mixture to get optimum performance from that type of engine.

Evaluation:

Student should be able to perform lesson objectives.

THIS LESSON SHOULD BE REVIEWED AS NECESSARY AT THE START OF ALL LESSONS IN THE PRIMARY TRAINING COURSE.

Lesson 3: Radio and Field Procedures

Purpose:

To familiarize the student with all safety aspects associated with model aircraft both on the ground and in the air.

Objective:

At the completion of the lesson the student will be aware of all MAAC and MAAC safety rules and field procedures. The student shall also be able to perform a pre-flying session and pre-flight check list.

Elements:

MAAC SAFETY AND FIELD RULES

- Current MAAC membership and MAAC membership card (or photocopy) to be prominently displayed on frequency pin. MAAC insurance is mandatory to fly.
- "A" Wings qualification before solo flying.
- No taxiing in the pit area. Engines off when clear of runway after landing.
- There will be absolutely **NO FLYING**:
 - 1 Over any general area where field workers or equipment are active.
 - 2 Behind the flight line no matter how far away from the runway. No flying over the pits, car parking.

Note: The presence of active field workers could easily require that no flying take place at all!

- Maximum of three aircraft flying at a time.
- MAAC noise limits apply measured at 3 meters (10 feet) with full throttle. As of April 1999, MAAC noise guide lines are:
 - ◆ 98 dba @ 3 meters on hard surface
 - ◆ 96 dba @ 3 meters on soft surface
- Pin possession time is limited to 15 minutes (recommended) per flight.
- All aircraft shall be flown in a safe manner with consideration to others at the field.*
- Aircraft shall be flown in a fashion so as to minimize the noise footprint as perceived in adjacent areas.*
- Unaccompanied spectators (any observer who is not a club member unless invited) and animals must stay out of the pit area.
- No breaking in engines in the pit area while other members are flying.
- Every transmitter shall be placed in the impound upon arrival at the field.
- Every transmitter shall display the appropriate MAAC frequency flag at all times.
- No transmitter shall be switched on without the appropriate MAAC recommended frequency pin (with pilot name and channel number) first being attached to the frequency board. When the transmitter is turned off, the pin is to be removed from the frequency board by the pilot and the transmitter returned to the impound.
- No flying before **(Club Times if Set)** am Monday to Saturday and **(Club Times if Set)** am on Sunday.

- Pilots shall announce their intention to land or take off.
- Landing aircraft shall have the "right of way".
- When in the pit area, aircraft shall be placed between the pilot and the runway to enhance awareness of the potential hazards posed by already flying aircraft.
- Importance of MAAC and MAAC safety rules.
- Enforcement of MAAC and MAAC safety rules

CHECK LIST

Before each flying session:

- Radio range check.
- Field workers.

Before each flight:

Pre-Start

- Frequency Board - Peg In Place
- Receiver Battery - Voltage Check
- Radio Antenna - Out
- Radio Transmitter - On and Checked for Interference
- Radio Receiver - On
- Aircraft Controls - Transmitter Operation Check
- Throttle set

Start

- Aircraft Secure
- All Clear - Ahead (prop) and Behind
- Run Up - Mixture Set (engine testing to take place in testing area)
- Idle - Reliable

Pre-Takeoff

- Engine - Full Power Performance OK
- Controls - Free and Correct
- Rate Switches - Set
- Trims - Set for Take-off
- Timer - On
- Field Workers - Checked
- Wind Sock - Checked
- Runway - Clear
- Announce intention to take off to other pilots on flight line.

Evaluation:

Student should be able to perform lesson objectives.

Lesson 4: Flight Familiarization

Purpose:

To introduce the student to controlling the model in flight.

Objective:

To allow the student to become familiar with the model's controls and their use in flight.

Elements:

- On the ground, instructor familiarize the student with the controls (pitch, yaw and power) and what kind of affect they will have on the aircraft in flight.

The procedures used by the instructor to give the transmitter to the student and take it from him during the flight will be explained.

Note: As each instructor has different preferences concerning the process of exchanging the transmitter the student should ensure that he has reviewed and understands this procedure with new instructors.

- Instructor flies and lands the student's model to evaluate its performance and air worthiness. This flight determines any changes necessary for control throws and trims. If the instructor can trim the aircraft without landing the aircraft, the transmitter will be passed to the student or the use of a buddy box is strongly recommended.
- With the assistance and direction of the instructor, the student will start the process of becoming familiar with the controls.
- The student will strive to keep the model in level flight and follow turning instructions given by the instructor.
- When the student becomes tired or disoriented, pass the transmitter back to the instructor or ask the instructor to take the controls from the buddy box.

Note: It is the student's responsibility to pass the transmitter back to the instructor in time for the instructor to take corrective action to prevent a crash. Concentrate on flying within your ability. If you become disoriented or confused, pass the transmitter back to the instructor.

Evaluation:

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. Proficiency and accurate control are not critical at this point.

Notes:

Lesson 6: Accuracy Maneuvers

Purpose:

To teach the student to perform the five basic maneuvers to a standard that will develop proficiency in their executions.

Objective:

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

Elements:

- Level flight, maintaining heading and altitude.
- Level flight at reduced power, maintaining heading, altitude and trim.
- Left and right turns to specific headings.
- Climbing turns to specific headings.

Use of rudder for turns and maintaining straight flight at slower speeds.

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 200 ft and glide to the north end at an altitude of about 100 ft.

NOTE: Keep in mind that the object is to develop skill and ability, AND an awareness of the model's position relative to directions and altitude. Don't insist on mechanical precision. Review disorientation with the student if necessary.

Evaluation:

The lesson is complete when the student can maneuver the model at the instructors directions and can demonstrate an ability to control the model in an accurate manner.

Lesson 8: 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:

- Pre-flight discussion of stalls. What causes them and how to recover.
- Practice of stalls by the student with power and without power.
- Stalls in turns. (take-off, departure stalls)

NOTE: Take-off and departure stalls are almost impossible to set up with most trainers, but do occur in more advanced models. Therefore, it is recommended that power be reduced to about 1/3 throttle, and a steep climbing turn entered. The stall entry will look similar to a spin entry with the model rolling towards the high wing. During this lesson it should be emphasized to the student that a stall can occur at any airspeed and is a function of angle of attack.

Evaluation:

The lesson is complete when the student understands the cause of stalls and has demonstrated the lesson elements and proper recovery.

Notes:

Lesson 10: Approaches to Landing

Purpose:

To prepare the student for his first landing.

Objective:

To develop the student's ability to visualize and perform a stable and controlled approach and landing.

Elements:

- Review of Lesson 6. (Slow Flight and Gliding)
- Discussion of proper landing techniques.
- Student flies a rectangular pattern as in Lesson 6, but reduces power and establishes an appropriate glide on the base leg and continues the approach until over the end of the runway, at which point he is to add power and go around. The minimum altitude at the end of the maneuver should be no less than 20 ft.
- 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).
- Landing. At this point the instructor will tell the student to continue the approach and land.

NOTE: The chances of a successful landing will be increased if the instructor reminds the student to keep the power at idle. It may be necessary to talk the student through the flare and touchdown.

Evaluation:

The 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.

Wings Test

Check off the correct answer to the following True or False questions.

Club Procedures		T	F
1.	The Frequency Board, at the Club Field, may not be used when 5 or less flyers are present.	<input type="checkbox"/>	<input type="checkbox"/>
2.	During normal flying times 3 transmitters may be in use providing only 2 aircraft are actually flying.	<input type="checkbox"/>	<input type="checkbox"/>
3.	Every transmitter shall be placed in the impound upon arrival at the field.	<input type="checkbox"/>	<input type="checkbox"/>
4.	No Flying before 8:00 am or after 8:30 p.m.	<input type="checkbox"/>	<input type="checkbox"/>
5.	Vehicles must park by the road unless unloading or loading by the Pits. The one exception is if less than 4 vehicles are present and one of the flyers is an instructor.	<input type="checkbox"/>	<input type="checkbox"/>
6.	Guest flying privileges shall be (4) times per year and in the company of a member who is responsible for the guest.	<input type="checkbox"/>	<input type="checkbox"/>
7.	Flying is not permitted over the pits except on final landing approach.	<input type="checkbox"/>	<input type="checkbox"/>
8.	Pilots shall announce their intent to land or take off.	<input type="checkbox"/>	<input type="checkbox"/>
9.	Full throttle engine noise level is to meet MAAC noise limits and must be checked before flying by a club noise meter.	<input type="checkbox"/>	<input type="checkbox"/>
10.	Aircraft are not to fly at altitudes less than 50 ft. when above workers in nearby fields.	<input type="checkbox"/>	<input type="checkbox"/>
11.	The only time aircraft are allowed to be flown over the pits is during fun flies.	<input type="checkbox"/>	<input type="checkbox"/>
12.	Only instructors may start an engine on the runway.	<input type="checkbox"/>	<input type="checkbox"/>
13.	Taxing in the pits is not permitted.	<input type="checkbox"/>	<input type="checkbox"/>
14.	Every member must have an " A " Wings rating to fly alone at the field.	<input type="checkbox"/>	<input type="checkbox"/>
15.	Ways to reduce engine noise are:		
	1. Use a larger propeller.	<input type="checkbox"/>	<input type="checkbox"/>
	2. Use less Nitro.	<input type="checkbox"/>	<input type="checkbox"/>
	3. Stuff muffler with brass scrubbing material.	<input type="checkbox"/>	<input type="checkbox"/>
	4. Richen the high speed mixture.	<input type="checkbox"/>	<input type="checkbox"/>

Safety	
1. At medium speeds, it is safe to adjust the High Speed Needle from directly in front of the airplane.	<input type="checkbox"/> <input type="checkbox"/>
2. Care must be taken to keep spectators away from, in front of, or in line with the propeller arc when running up a motor.	<input type="checkbox"/> <input type="checkbox"/>
3. Chicken sticks are for sissies.	<input type="checkbox"/> <input type="checkbox"/>
4. Taxing is not permitted within 20 ft. of the Pits.	<input type="checkbox"/> <input type="checkbox"/>
5. It is safest to set Dual Rates so that low rate produces:	
1. Only a little control throw.	<input type="checkbox"/> <input type="checkbox"/>
2. About half throw.	<input type="checkbox"/> <input type="checkbox"/>
3. About 80 to 90% of full throw.	<input type="checkbox"/> <input type="checkbox"/>
6. Always charge your batteries the night before flying.	<input type="checkbox"/> <input type="checkbox"/>
7. It is wise to check your airborne battery before every flight.	<input type="checkbox"/> <input type="checkbox"/>
8. Sometimes it is OK to turn on your radio without checking the frequency board.	<input type="checkbox"/> <input type="checkbox"/>
9. If a transmitter is left on in a car:	
1. It won't bother anyone's airplane because it is shielded by the metal car body.	<input type="checkbox"/> <input type="checkbox"/>
2. It might cause someone's airplane to "glitch".	<input type="checkbox"/> <input type="checkbox"/>
3. It could cause someone's airplane to crash.	<input type="checkbox"/> <input type="checkbox"/>
4. Because the transmitter is not in the compound the owner is not responsible	<input type="checkbox"/> <input type="checkbox"/>
10. If one person without MAAC insurance flies at the field it will void the MAAC Field (Land Owners) Policy.	<input type="checkbox"/> <input type="checkbox"/>
11. It is best to have a "Rider" on your house insurance As Well As MAAC coverage	<input type="checkbox"/> <input type="checkbox"/>
12. The "Flight Line" is:	
1. Something attached to gliders.	<input type="checkbox"/> <input type="checkbox"/>
2. Divides the Pits from the Runway	<input type="checkbox"/> <input type="checkbox"/>
3. Is an extension of the "Pit" edge of the runway that goes from horizon to horizon	<input type="checkbox"/> <input type="checkbox"/>
13. MAAC insurance is absolutely necessary when flying at our field. MAAC insurance is VOID if you fly behind the Flight line.	<input type="checkbox"/> <input type="checkbox"/>

Aerodynamics:	
1. An aircraft will balloon when coming out on a turn if:	
1. It is turning into wind.	<input type="checkbox"/> <input type="checkbox"/>
2. The back pressure on the stick controlling the elevator is not released coming out of the turn.	<input type="checkbox"/> <input type="checkbox"/>
3. If the aircraft is allowed to dive in the turn due to a lack of "up" elevator.	<input type="checkbox"/> <input type="checkbox"/>
2. The stalling speed of an aircraft is the same when traveling upwind as downwind.	<input type="checkbox"/> <input type="checkbox"/>
3. Attitude controls airspeed and throttle controls height.	<input type="checkbox"/> <input type="checkbox"/>
4. A spin is when one wing is stalled and auto rotation sets in.	<input type="checkbox"/> <input type="checkbox"/>
5. An aircraft rolls about its longitudinal axis.	<input type="checkbox"/> <input type="checkbox"/>
6. An aircraft Yaws about its vertical axis.	<input type="checkbox"/> <input type="checkbox"/>
7. Rudder controls or prevents Yaw.	<input type="checkbox"/> <input type="checkbox"/>
8. Ailerons can produce yaw.	<input type="checkbox"/> <input type="checkbox"/>
9. Most aircraft will recover from a spin by just letting the sticks return to neutral.	<input type="checkbox"/> <input type="checkbox"/>
10. During take off most aircraft Yaw to the left and require right rudder.	<input type="checkbox"/> <input type="checkbox"/>
11. In other than calm conditions, the take off run must always be into the wind.	<input type="checkbox"/> <input type="checkbox"/>
12. Taking off into wind gives the aircraft maximum airspeed and minimum ground speed.	<input type="checkbox"/> <input type="checkbox"/>
13. The airspeed of an aircraft will remain the same when flying upwind or downwind.	<input type="checkbox"/> <input type="checkbox"/>
14. The ground speed of an aircraft will change when turning upwind or downwind.	<input type="checkbox"/> <input type="checkbox"/>

Wing Test Answers are on the next page...

Club		Safety		Aerodyn amics	
1	F	1	F	1.1	F
2	T	2	T	1.2	T
3	T	3	F	1.3	T
4	T	4	T	2	T
5	F	5.1	F	3	T
6	T	5.2	F	4	T
7	F	5.3	T	5	T
8	T	6	T	6	T
9	T	7	T	7	T
10	F	8	F	8	T
11	F	9.1	F	9	T
12	F	9.2	T	10	T
13	T	9.3	T	11	T
14	T	9.4	F	12	T
15.1	T	10	T	13	T
15.2	F	11	T	14	T
15.3	T	12.1	F		
15.4	T	12.2	F		
		12.3	T		
		13	T		