Humber Valley R.C. Flyers
Pilot Training Handbook
Revision 4.0 - June 2017

Student's Name: _____

NOTE:
This training program is consistent with the MAAC Wings Program to attain MAAC Wings Level "A" proficiency.

Introduction

Welcome to the Humber Valley Radio Control Flyers pilot training program. This program is designed to teach you the basics of flying a radio controlled model aircraft safely. Once you learn the basics and get your wings, you will be able to continuously improve your skills and enjoy the thrill of radio control flying for decades to come.

Like many other things in life, your success will depend on your determination, patience and willingness to practice. This hobby can be very frustrating for beginners, but the rewards are great for those who put in the time and effort to learn and work on improving their skills. We can't say how long it will take you to be "cleared" and get your wings. Some people learn faster than others. However, one thing is certain, the more you come out to fly, the sooner you will succeed.

So let's get started. This Pilot Training Program is a sequential series of lessons designed to confirm your understanding of safety guidelines, club operating procedures, and gradually build up your flying skills and confidence. Upon completion of these lessons, you will be ready to take your MAAC Wings Level "A" test. This test is designed to demonstrate to the club's satisfaction that you are able to take off, fly your plane in full control, and land safely. After passing this test, you will be allowed to fly "solo" without an instructor present.

This training program follows the MAAC flying proficiency level "A" definition according to the MAAC Wings Program. There are four flying proficiency levels in the MAAC program listed below. Visit www.maac.ca for more information. The four proficiency levels are:

"A" - Basic Control
"B" - Intermediate
"C" - Intermediate Advanced
"D" - Advanced

You should select an easy to fly, stable, high wing trainer to learn to fly. Save that Spitfire or more advanced aerobatic plane you have always dreamed about until you are highly confident with your trainer. Even jet fighter pilots learn to fly in trainers before advancing to jets. Hopefully, the completion of your "A" Wings Test is only the beginning of your learning and will serve as your incentive to practice and improve your skills. Where you go from here is up to you. Good Luck!

… Tom Gottlieb, Vice President and Editor

Instructor and Student Responsibilities

It is up to students to initiate a request for instruction by contacting a qualified instructor. You can find instructors from the list of instructors on our web site in the Member's Section. There is also a Forum Section on our web site for students and instructors to communicate. The Forum can be used by students to ask for instructors or for instructors to post that they are available to instruct on some particular evening when they plan to be at the field. Please contact our webmaster if you do not have a Forum User ID so that you can post and reply to the forum.

You may only take your MAAC Wings Level "A" test after your instructor, or the Chief Instructor, has certified that you have successfully completed all the required lessons outlined in this booklet. After you have passed this test you may fly "solo" at the club field without the supervision of a club instructor.

Please remember that this course provides you with only the minimum amount of information and skill you need to safely enjoy radio controlled flight. Right after you get your wings, you will be tempted to try new maneuvers and more advanced aircraft. You should continue to seek the help of more qualified pilots as you improve your skills gradually over time. Patience, caution and of course safety, is what will prevent future crashes and frustration.

Each lesson 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 model. You will have opportunities to perform each element and receive an evaluation from your instructor.

Each lesson must be logged in the Student Training Log section at the end of this booklet, and your instructor will grade and initial the lessons that were conducted on that day. It is important that you keep this training program booklet with you at all times and ensure that instructors grade and initial lessons after they have been covered. This allows you to be taught by different instructors since they can review the logs to see what progress you have made previously with other instructors.

<u>Remember, no instruction will take place at the field without:</u>

1) This booklet,
2) Your club membership card, and
3) Your current MAAC membership card.

Lesson 1: Field Operations and Safety

Purpose**:**

- To familiarize the student with Humber Valley's Safety Guidelines
- To Familiarize the student with Humber Valley's General Guidelines and Member Obligations
- To familiarize the student with required safety procedures associated with model aircraft both on the ground and in the air.

Objective:
At the completion of the lesson the student will understand and be aware of required HVRCF and MAAC safety rules and field procedures.

Elements:
Students will study and memorize the following guidelines.

Field Safety Guidelines

1) All members should make safety their first priority during any club activity and follow the safety guidelines set out by MAAC and the Club.
2) ALL 72 MHz transmitters should claim exclusive use of their specific 72 MHz channel, by placing a tag on the frequency board before turning on the transmitter.
3) Pilots should not start an engine or motor directly behind a pilot flying in front of a starting station. An adequate tail restraint should also be used when starting engines.
4) No one should stand in front of the safety fence.
5) A maximum of 5 aircraft should be flying at any one time. Exceptions can be made for club sanctioned events.
6) Taxiing in the pit area is not permitted.
7) The No Fly Zone is north of the railroad tracks or south of the flight line.
8) Any pilot calling out "DEAD STICK!" has landing priority.
9) Pilots should call out loudly an intention to land (LANDING!), to taxi for takeoff (TAKING OFF!), or to retrieve a plane from the field (ON THE FIELD!), and proceed only when safe to do so.
10) Whenever more than one plane is in the air, pilots should agree on a circuit direction. Aerobatics and 3D flying should be performed, with

due courtesy and consideration for safety, in the general direction of the circuit.

11) Student members should fly with a designated instructor present; preferably using a buddy box.

12) Members should not use alcohol and/or illegal drugs at the field. The use of alcohol and/or an illegal drug at the field will be treated with ZERO TOLERANCE and automatically result in the immediate grounding and suspension of flying privileges for the balance of the day.

General Guidelines and Member Obligations

1) All flyers should hang their current club membership and MAAC cards on the frequency board at the correct channel location or a 2.4 GHz position BEFORE flying. This provides the required evidence of current Club and MAAC membership status.

2) Priority will be given to fixed wing flyers for the use of the main field. Helicopter or drone flying on the main field is permitted only with the unanimous consent of all members present at the field at any given time. The operation of any helicopter or drone on the main field is prohibited while any fixed wing flying is taking place.

3) Pilots should endeavor to operate models in a manner as to not disturb the residents in the area. All models powered with internal combustion (glow or gas) engines are prohibited from flying prior to 10:00 am. Engines producing more than 88 decibels at 25 feet are not permitted.

4) The last person leaving the field is responsible for closing and locking the gate. To prevent theft of the lock, the entrance chain should be re-locked to the gate after opening and the combination dials of the lock changed.

5) Guest pilots should be sponsored by a member and present a valid MAAC card to fly their aircraft.

6) Garbage should not be left at the field. Members and visitors should take their refuse home. The club does not provide garbage collection service.

7) Members should not park their vehicles in the designated loading/unloading area. After unloading/loading aircraft and equipment, members should move their vehicles to the general parking area.

8) Membership fees should be paid before January 1st.

9) Any member of the Executive Committee may ground a pilot for the duration of the day for any action considered in his sole discretion to be unsafe or detrimental to the club.

10) Flying hours are:

(Glow or Gas powered models may not fly before 10:0am)

Monday to Saturday 8:00am to 9:00pm

Sunday 9:00am to 9:00pm

Lesson 1 Test:

Instructor will ask the student to verbally answer all the following questions. Students must correctly answer all questions.

1) What is the frequency board and why do we use it?
2) What is the difference between 72 MHz and 2.4 GHz radio systems?
3) What is the flight line?
4) What is the allowable flight zone?
5) What is the circuit direction and how do you determine it?
6) What should you do before attempting to take off or land?
7) What is the gate lock combination and where can you find it (see note below)?
8) What should you do if you are the last person to leave the field?
9) Where should you park your car?
10) Where is the club's First Aid Kit, what is the Safety Box combination and where can you find it?
11) How early in the morning are you allowed to fly electric powered aircraft?
12) How early in the morning are you allowed to fly piston powered aircraft?

Evaluation:

Students must correctly answer all questions.

Notes:

- Unlocking and locking the gate combination lock can be tricky if you have never tried it (the combination line is off center). Instructors should make the student confirm he has successfully unlocked and locked the gate.
- Instructors may spot test students at any time during this training program to ensure students are aware of and remember the club's Safety Guidelines, and the General Guidelines and Member Obligations.

Lesson 2: Aircraft Familiarization and Pre-Flight Check

Purpose:

- To teach the student how to correctly pre-flight check his model.
- To teach the student correct setup, direction and control of flight surfaces.

Objective:

At the completion of this lesson the student will be able to inspect his model and identify deficiencies that could cause a malfunction or safety hazard. He will understand and check control surface direction and be able to start and adjust the engine properly. The student shall also be able to perform a complete pre-flight check.

Elements:

The instructor will explain, demonstrate and discuss with the student all of the following procedures and confirm that the student understands and can follow the procedures of the pre-flight check below.

- Inspection of aircraft structure, and center of gravity.
- Inspection of radio installation, servo linkages and control surface horns and freedom of movement.
- Demonstration and discussion of transmitter stick inputs, trims, end point and center point adjustments, and dual rates.
- Confirmation of correct control surface direction with correct stick inputs (see diagrams below).
- Understanding and completing the club's Flight Log Book before the first flight of the day. Note: this is not the same as the Student Training Log found at the end of this booklet.
- Reconfirm the need to hang club member card and MAAC card on the frequency board. The consequence of failure to hang member cards is immediate grounding for that day.
- Understanding and testing of failsafe operation (see Lesson Reference Information below).
- Understanding and testing of correct range test procedure (see Lesson Reference Information below).
- Discussion and demonstration of safe engine starting and operating procedures including:
    - Battery check OK
    - Transmitter and Receiver turned on
    - All clear of prop arc

- All spectators well behind airplane
- Secure tail restraint in use
- Full power performance OK
- Idle settling is reliable (piston engines only)
- Throttle kill switch operation OK (piston engines only)

- Discussion of correct takeoff procedure including:
  - Runway is clear
  - Windsock check for direction
  - Confirmation of circuit direction with other pilots
  - Announce intention to take off by calling out “TAKING OFF”
- Discussion of landing procedure including:
  - Runway is clear
  - Landing direction according to wind direction and established circuit direction
  - How to deal with a change in wind direction during flight
  - Announce intention to land by calling out “LANDING”

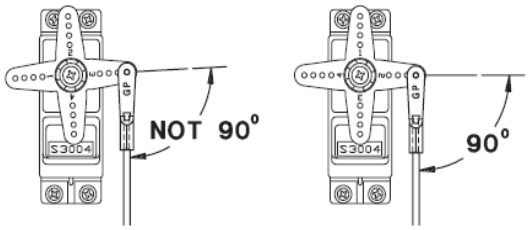
Lesson Reference Information

Transmitter Controls

Students should be aware of transmitter stick controls and trims and also learn how their specific brand of transmitter can be set up to adjust end points, servo centering and dual rates. These functions are setup differently depending on manufacturer. Students should study their transmitter manuals before coming out for lessons and bring the manual with them if they have any questions about how to establish correct settings.

Servo Centering

New models should be set up as much as possible with servo arms initially set at 90 degrees as shown. This provides equal throw in both directions and allows for the maximum amount of adjustment through trim in the event that the model needs adjustments to fly straight and level.



Range Check

A range check must be performed before the first flight of the day of each model. The purpose of the range check is to ensure your receiver and transmitter are communicating reliably. The range check is done on the ground by limiting transmitter power output and testing the control surfaces from a distance of about 30 feet. For 72 MHz transmitters, power is limited by keeping the antenna down. For 2.4 GHz transmitters, there should be a function on the transmitter to limit power output to 1/30th of full radio power. On some transmitters, this may involve holding the reset button for several seconds until the transmitter responds to indicate it is in range test mode. This may be indicated with beeps, lights, or display function. Read your transmitter instructions and learn how to enter and exit Range Check Mode on your particular brand of transmitter.

Note: Always make sure you exit “Range Check Mode” (and for 72MHz transmitters, extend your antenna) before flight or you may lose control and crash due to limited transmitter power output.

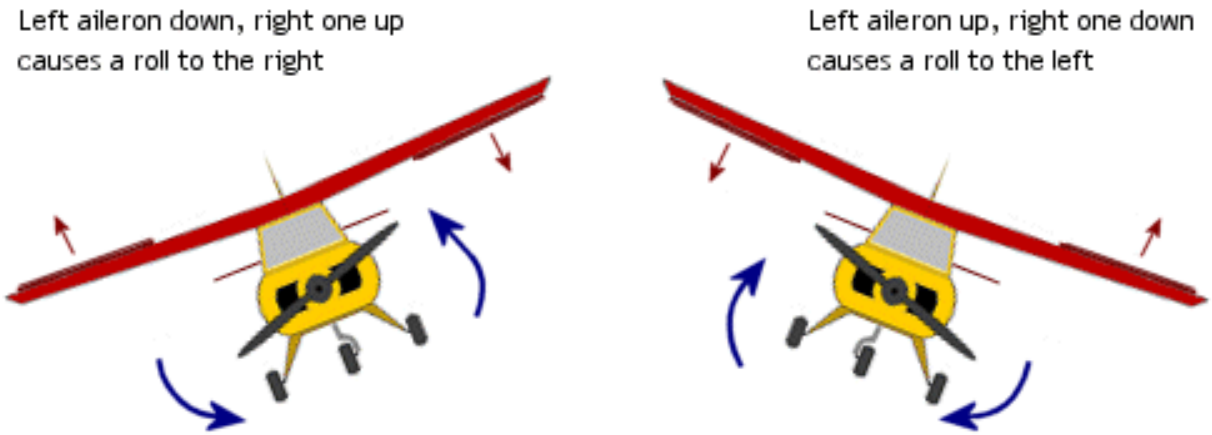
Failsafe

Failsafe is a feature of most modern 2.4 GHz radio systems. Older 72 MHz systems may not support failsafe operation. Failsafe is a receiver feature that returns control surfaces to neutral and throttle to the off position (or low idle for piston engines) in the event that the receiver loses signal from the transmitter. This feature is designed to return the model to the ground as safely and as quickly as possible to prevent models from flying off for miles (until its battery or fuel is exhausted) in the event of a transmitter failure. It is club policy for all pilots to use failsafe if your radio system supports this feature.

Flight Surface Directions

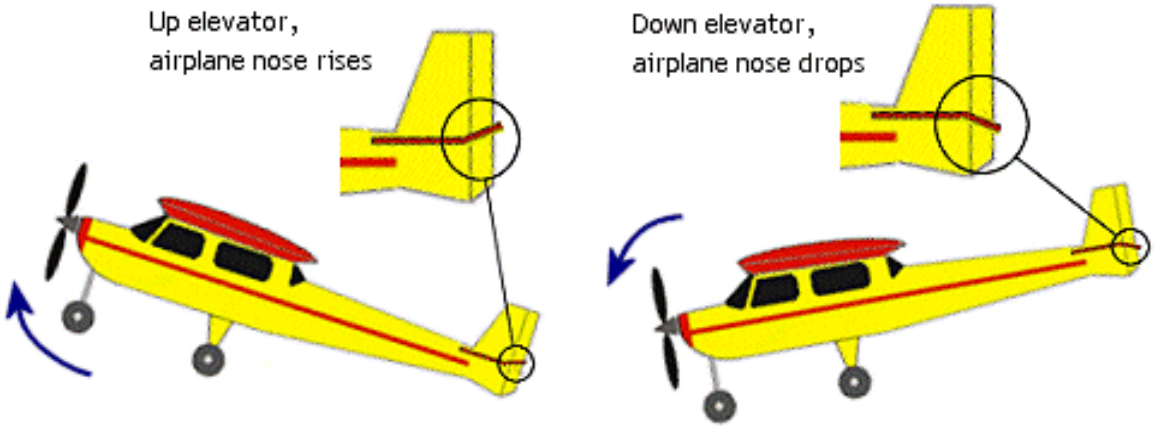
Students should check that all flight surfaces deflect in the correct direction before each flight. Even experienced pilots with proven aircraft always check aileron, elevator and rudder direction before each take off. Always check surface movement by consistently standing behind your model so that your orientation is always the same. Any time you adjust, your transmitter settings, change from one model memory to another, maiden or re-maiden an airplane after a repair, you will almost certainly crash if any flight surface is moving in the wrong direction. Surprisingly, this easily preventable error happens to one or more pilots almost every season. Don’t let it happen to you!

Aileron Movement (Roll)



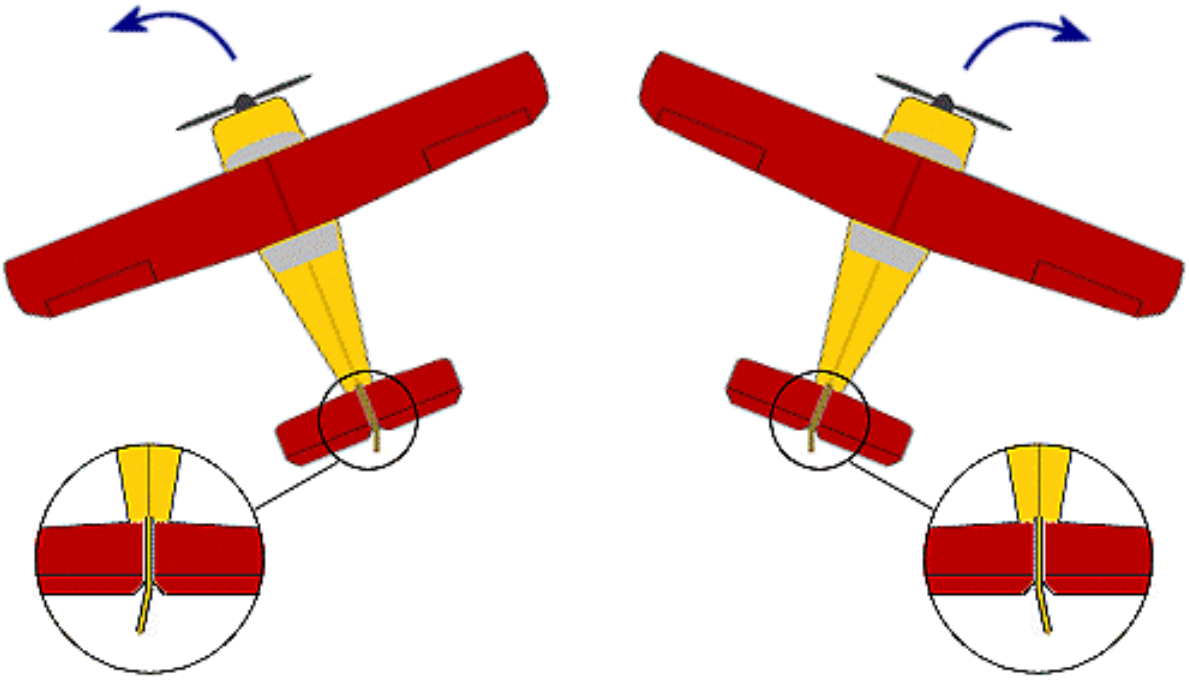
Tip:
From behind the model, right aileron surface should move up to meet right aileron stick input.

Elevator Movement (Pitch)



Tip:
From behind the model, elevator surface should move up when you pull the stick toward you. This is also called “Pull-Up” or “Pull-Back” due to the fact you have to ‘pull’ the elevator stick towards you which will cause the aircraft to climb (assuming you are flying upright and level). The elevator surface should move down when you push the stick away from you which will cause the aircraft to descend. Since this may seem counter-intuitive at first, make sure you are comfortable with these terms before flying. If an instructor asks you for more “up elevator”, you need to be able to respond correctly by pulling back on the elevator stick.

Rudder Movement (Yaw)



Left rudder cause left yaw

Right rudder cause right yaw

Tip:

Rudder movement is the easiest to understand and get right. From behind the model, rudder should move right in response to right rudder stick movement and left with left rudder stick movement.

Lesson 2 Test:

- Student completes Flight Log Book entry before first flight.
- Student demonstrates his airplane's failsafe operation to instructor.
- Student demonstrates range check procedure to instructor.
- Student is able to respond reliably to the following instructor commands:
    - Show me right aileron
    - Show me left aileron
    - Use trim to center ailerons
    - Show me up elevator
    - Show me down elevator
    - Use trim to center elevator
    - Show me right ruder
    - Show me left rudder
    - Use trim to center rudder
    - Show me ½ throttle
    - Show me throttle off (electric) or idle (piston engines only)
    - Show me throttle kill (piston engines only)

- Student is able to complete the following Pre-Flight Check:

  Before Each Flying Session
  - Log entry into the Flight Log Book
  - Hang member cards on the frequency board
  - Radio range check
  - Failsafe operation check

  Before Each Flight
  - Aircraft is securely restrained
  - Battery voltage check OK
  - Transmitter antenna extended (72 MHz radios only)
  - Transmitter and receiver are turned on
  - All control surfaces direction OK
  - All clear of prop arc
  - All spectators well behind airplane
  - Full power performance OK
  - Idle settling is reliable (piston engines only)
  - Throttle kill switch operation OK (piston engines only)

  Before Taking Off
  - Runway is clear
  - Windsock check for direction
  - Confirmation of circuit direction with other pilots
  - Announce intention to take off by calling out “TAKING OFF”

Evaluation:
Student understands and is able to correctly perform all elements of the Pre-Flight Check.

NOTE:
THE PRE-FLIGHT CHECK IS PERFORMED AT THE START OF EACH FLIGHT IN SUBSEQUENT LESSONS OF THIS TRAINING PROGRAM AND SHOULD BE STANDARD OPERATING PROCEDURE FOR ALL PILOTS.

Lesson 3: Rectangular Circuits and Buddy Box Procedure

Purpose:

- To understand buddy box procedures used to pass control between the instructor and student.
- To develop skill needed to maintain a constant flight altitude and speed while executing 4 square turns in both left and right circuits
- To become familiar with the model's controls and their use in flight.

Objective:

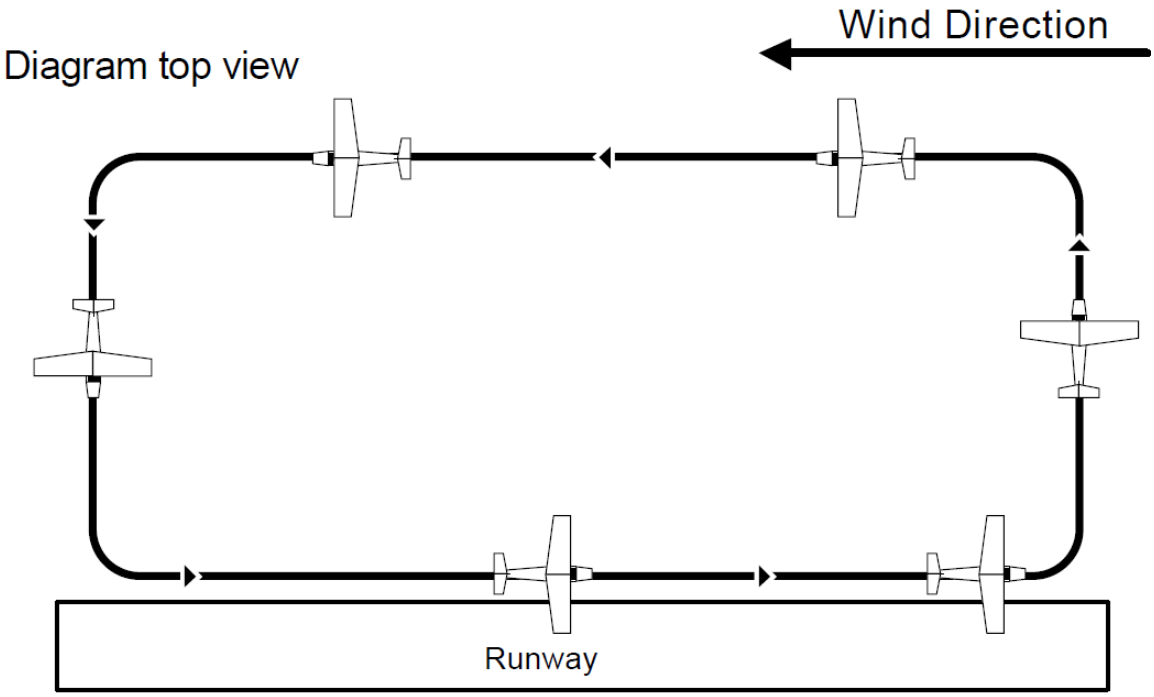
Student learns the basics of level flight and orientation in both directions.

Elements:

- Instructor confirms that student has completed a pre-flight check.
- Instructor explains and demonstrates (on the ground) the stick inputs needed to perform left and right turns and return wings to level position after each turn using aileron and elevator inputs.
- Instructor explains how to address disorientation issues - silhouette and control reversal issues with in-bound aircraft.
- Instructor takes off, flies and lands the student's model to evaluate its performance and air worthiness. This flight determines if any changes are necessary for control throws and trims. If the instructor can trim the aircraft without landing, he will demonstrate a left or right circuit and then pass control of the aircraft to the student using the buddy box procedure.
- The buddy box procedures used by the instructor to take control of the aircraft from the student will be explained.
  - Instructor positions the model so it is flying away from the student.
  - Instructor verbally confirms that student is ready to receive control.
  - Instructor gives control to student with a verbal queue such as “I am giving you control … now.”
  - It is the student’s responsibility to request the instructor take control of the plane... in time for the instructor to take corrective action to prevent a crash.
  - Instructor may also seize control if necessary for flight safety with a verbal queue such as “I have control”.
- The student will strive to keep the model in level flight and follow turning instructions given by the instructor. NOTE: Gyro must not be used.
- If the student becomes disoriented or confused, he should request the instructor take control.
- Instructor will take control and land the model at the end of the lesson.

Lesson Supporting Information

Rectangular Circuits:
The maneuver begins with the model flying straight and level into the wind parallel to the runway. At the far end of the runway, the model turns 90 degrees away from the flight line for the first cross-wind leg. The model makes a second 90 degree turn into the downwind leg. The model makes a third 90 degree turn into the second cross-wind leg. The model makes a fourth 90 degree turn into the wind and continues on to the starting position of the maneuver. Student should return wings to straight and level flight after each turn.



Lesson 3 Test:
Student flies two circuits in both left and right directions achieving level flight and constant speed. Banked turns should be no more than 30 degrees. Turns should be smooth and maintain constant altitude.

Evaluation:
The lesson is complete when the instructor has determined that the student is able to fly level rectangular circuits in both directions reliably.

Lesson 4: Figure Eight Maneuver

Purpose:
To perform a horizontal figure eight maneuver while maintaining control and altitude.

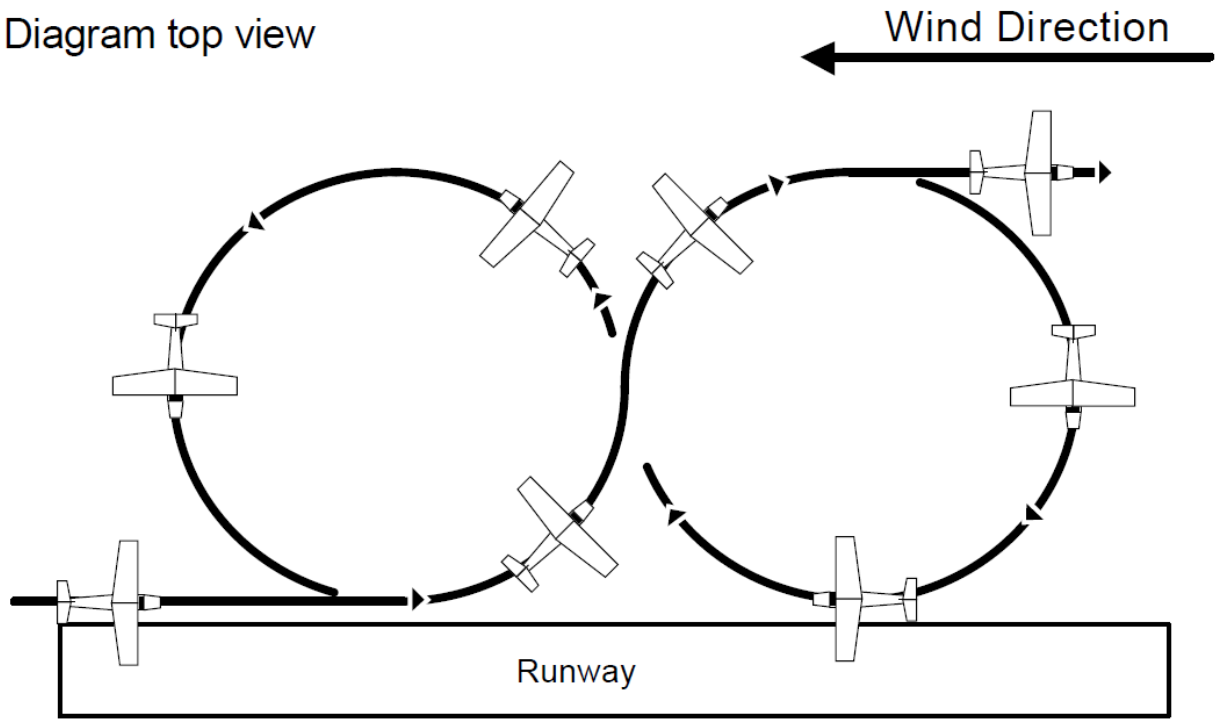
Objective:
To further advance flight control skills and reinforce orientation in both directions.

Elements:

- Instructor confirms that student has completed a pre-flight check.
- Instructor explains and demonstrates (on the ground) the stick inputs needed to perform a figure eight maneuver.
- Instructor takes off the student's model, flies to a safe altitude and demonstrates a figure eight maneuver with explanations of stick inputs.
- Instructor passes control to the student using the using the buddy box procedure.
- The student will attempt to perform figure eight maneuvers following turning instructions given by the instructor.
- If the student becomes disoriented or confused, he should request the instructor take control.
- Instructor will take control to land the model at the end of the lesson.

Lesson Reference Information

Figure Eight:
The model will attain altitude and must be flown parallel to the runway to a point at the center-line of the runway. Model then makes a 90 degree turn in a direction away from the flight line, levels its wings, and then makes a 360 degree flat turn to the right or left. When the model returns to its original heading away from the flight line, it makes a second 360 degree flat turn in the opposite direction to the first 360 degree turn. The maneuver is complete when the model levels its wings after the second 360 degree turn.



Lesson 4 Test:
Student flies two figure eight maneuvers in both left and right directions achieving level flight and constant speed.

Evaluation:
The lesson is complete when the instructor has determined that the student is able to fly level figure eight maneuvers in both directions reliably.

Lesson 5: Stalls and Recovery

Purpose:
To develop the student's understanding of stalls, their cause, how to avoid them.

Objective:
To teach the student to understand, recognize and recover from stalls.

Elements:
- Pre-flight discussion of stalls, what causes them, and how to recover.

- Student flies to high altitude, reduces throttle, keeps nose up with elevator to induce stall, recognizes stall event when one wing drops, applies power to recover from stall and continues to complete circuit.

Note:
More advanced pilots also use this procedure to initiate a spin.

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. Performing a banked turn at a high angle of attack with low power or low air speed will likely result in a stall. See Lesson Reference Information below.

Lesson 5 Test:
Student climbs to high altitude, induces stall and is able to recover.

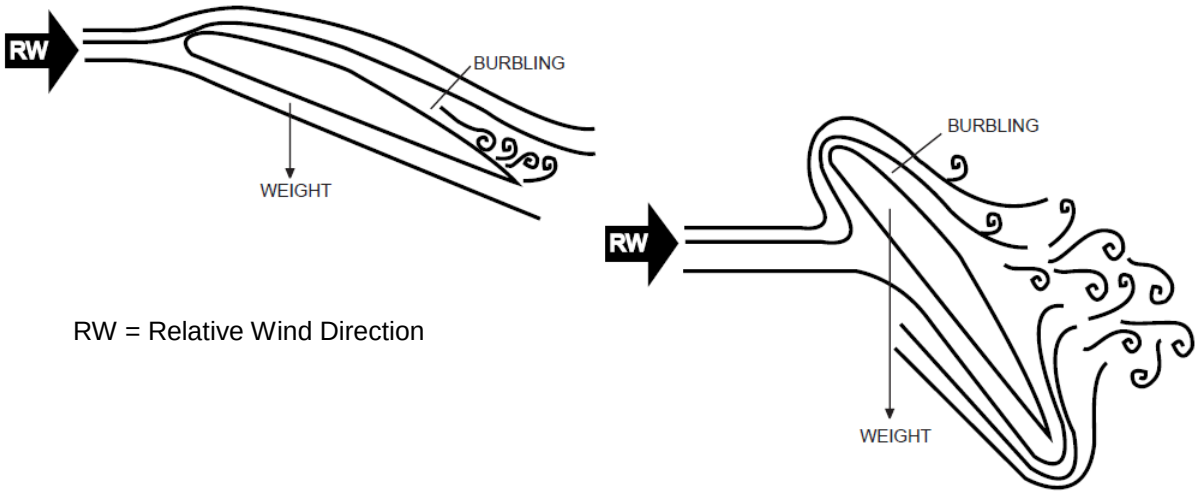
Evaluation:
The lesson is complete when the student understands the cause of stalls and has demonstrated the lesson elements and proper recovery.

Lesson Reference Information

Sufficient airspeed must be maintained in flight to produce enough lift to support the airplane without requiring too large an angle of attack. At a specific angle of attack, called the critical angle of attack, air going over a wing will separate from the wing or "burble" (see drawing), causing the wing to lose its lift (stall). The airspeed at which the wing will not support the airplane without exceeding this critical angle of attack is called the stall speed.

The stall speed will vary with changes in wing configuration (flap position). Excessive load factors caused by sudden maneuvers, steep banks, and wind gusts can also cause the aircraft to exceed the critical angle of attack

and thus stall at any airspeed and any attitude. Speeds permitting smooth flow of air over the airfoil and control surfaces must be maintained to control the airplane.



RW = Relative Wind Direction

NOTE:
In the event of a stall, throttle power is your best friend. Even if your plane is heading straight down to the ground, you need to apply full power to re-establish airflow over the wing surfaces in order to be able to pull up out of a stall. If this happens to you, you will only have about 2 seconds to apply power and pull up when your plane stops spinning or you will spiral into the ground!

Lesson 6: Landing Approach

Purpose:
To develop the judgment, skill and ability necessary for the student to make his first landing.

Objective:
- To teach the student how to control altitude, approach direction and speed with throttle, elevator, aileron and rudder from both east and west approaches.
- To develop an awareness of the model's position relative to direction and altitude.

Elements:
- Determine approach direction based on wind direction and established circuit direction.
- Student flies in a rectangular pattern as in Lesson 3 to align the model over the center of the runway.
- Reduce speed with throttle, control altitude with elevator and keep wings level with ailerons.
- Adjust approach angle with rudder and correct with aileron if required.
- Perform a controlled low pass initially at about 20 feet over the runway. Gradually reduce altitude to 10 feet as proficiency improves.
- How to recognize and correct runway undershoot (add throttle) and overshoot (abort landing, add throttle and turn away from the flight line for another circuit).
- The student will perform multiple approaches from both directions following the verbal commands of the instructor to correct approach angle, altitude and speed.
- The student will correct undershoot and overshoot conditions following verbal commands of the instructor.

Lesson 6 Test:
The student will perform successful landing approaches from both directions without verbal coaching from the instructor. Overshoots and undershoots are OK as long as the student is able to recognize and correct on his own.

Evaluation:
The lesson is complete when the student can successfully fly slow speed approaches about 10 feet off the runway. Student does not fly south of the flight line or north of the runway.

Lesson 7: Landing

Purpose:
To land safely and reliably.

Objective:
To develop the student's skill and confidence in performing a stable and controlled approach and landing.

Elements:

- Review of Lesson 6 – Landing Approach.
- Discussion of proper landing techniques including cutting power to idle and introducing flare with elevator (avoiding over controlling and ballooning effect) just above the runway at about 10 feet.
- Discuss the impact of ground effect on landing.
- 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.
- Instructor provides verbal commands to adjust throttle and evaluates the approach. Instructor will provide verbal permission cut throttle, flare and continue to land or ask the student to power up and go around for another attempt.
- Student will repeat landing attempts to gain experience and confidence until he can land without verbal commands from the instructor.

Lesson 7 Test:
Student will fly a rectangular pattern, perform landing approach and land successfully on two successive attempts without assistance from the instructor.

Evaluation:
The lesson is complete when the student has successfully landed the model several times and is comfortable with the maneuver.

Lesson 8: Take-off

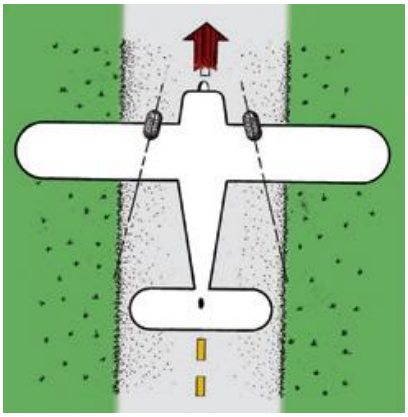
Purpose:
To teach the student how to make a safe take-off.

Objective:
To teach the student how to control the model during take-off.

Elements:

- Discussion of the effects of torque during take-off and initial climb out including:
- Use of rudder to track straight on take-off (see lesson reference information below).
- Use of throttle.
- Use of elevator.
- Student makes a normal take-off into the wind, demonstrates gradual climb out to altitude and first turn away from the flight line.

Lesson Reference Information



If a model is hard to keep tracking straight in take-off, it could be caused by incorrect landing gear alignment. For tail draggers, main gear wheels should toe in slightly toward the center line. Two to 5 degrees is usually enough. However, for tricycle gear, wheels should toe out slightly.

Lesson 8 Test:
Student takes off without assistance from the instructor.

Evaluation:
The lesson is complete when the student has successfully taken off and established a normal climb with adequate airspeed. He must also demonstrate adequate directional control during take-off.

Lesson 9: Trimming in Flight

Purpose:
To be able to adjust model for straight and level flight.

Objective:
The student learns how to adjust his model following any changes or repairs or changes in weather conditions.

Elements:

- Instructor explains how trim settings are used to make minor adjustments while in flight. A model may go out of trim due to changes in servo installations after repairs. Extremely hot or cold weather conditions may also affect flight trim due to expansion and contraction of linkages and pushrods.
- On the ground, student and instructor test that trim changes can be made either by master transmitter or slave transmitter and remain in effect when control is passed between instructor and student.
- Instructor takes off and flies to high altitude and half throttle and sets trims for straight and level flight.
- Instructor intentionally adds 5 clicks of trim and passes control to the student. Initially instructor will inform the student that he will need to adjust for left or right aileron or up or down elevator. On subsequent attempts, the instructor will not inform the student which axis is out of trim.
- Instructor passes control to student who must re-adjust the offending trim to achieve straight and level flight at half throttle.

Lesson 9 Test:

- Instructor puts model out of trim without telling student which axis needs correction and passes control back to the student.
- Student determines which axis needs correction and adjusts trim for straight and level flight at half throttle.

Evaluation:
The lesson is complete when the student is able to adjust trim without instructor assistance.

NOTE:
Good trim skills improve over time with experienced pilots. Students who achieve at least a “B” grade on this lesson may take their wings test. “B” grade means the student needs very little supervision and is usually proficient in performing the maneuver.

Lesson 10: Simulated Dead Stick Landing

Purpose:
To prepare the student for an unexpected loss of power.

Objective:
To acquaint the student with procedures to be used in emergencies.

Elements:

- Discussion of protocol if someone calls out “DEAD STICK” while you are flying. Priority is given to the airplane performing the emergency landing. Other pilots should remain at high altitude and out of the way. Members not flying should attempt to assist the emergency pilot with altitude and position information of other aircraft.
- What to do if you lose power in flight; call out “DEAD STICK” and land as soon as possible.
- Student flies his model to high altitude and cuts throttle to off or idle position (piston engines).
- Student calls out “DEAD STICK” and glides back to field for landing.

Lesson 10 Test:
Student performs a simulated dead stick landing.

Evaluation:
Student is able to land successfully without power or at idle setting (piston engines).

NOTE:
Good dead stick landing skills improve over time with experienced pilots. Students who achieve at least a “B” grade on this lesson may take their wings test. “B” grade means the student needs very little supervision and is usually proficient in performing the maneuver.

Lesson 11: Basic Aerobatics (Optional)

Purpose:
To introduce students to basic aerobatic maneuvers that can be used as the building blocks of future advanced aerobatic and sport flying.

Objective:
To learn how to perform a flat turn, controlled loop and roll.

NOTE:
This lesson may be given at the request of the student. Not all trainer aircraft are capable of performing these maneuvers. Your Instructor will assess your model's aerobatic capability before attempting this optional lesson. However, most advanced aerobatic maneuvers are variations or combinations of these elements. Examples are Flat Figure Eight, Outside Loop, Stall Turn, Immelmann Turn, Cuban Eight, Slit "S" and more.

Elements:
- Instructor will explain the stick inputs needed for flat turn (rudder input plus aileron and elevator used to maintain level flight), demonstrate a flat turn and then pass control to the student.
- Student will attempt a flat turn rectangular circuit while instructor provides verbal assistance.
- Instructor will explain the stick inputs needed for a loop using elevator and throttle, demonstrate a controlled loop and then pass control to the student.
- Student will attempt a controlled loop while instructor provides verbal assistance.
- Instructor will explain the stick inputs needed for a roll using aileron and elevator, demonstrate a controlled roll and then pass control to the student.
- Student will attempt a controlled roll while instructor provides verbal assistance.

Lesson 11 Test:
Student performs a flat turn, loop and roll.

Evaluation:
This lesson is optional at the student's request and is not graded.

Lesson 12: MAAC Wings Level “A” Test

Purpose:
To allow the student to demonstrate flight proficiency.

Objective:
Student becomes a “cleared” pilot and is permitted to fly solo without instructor supervision.

NOTE:
Before taking the MAAC WINGS Level “A” test, the prospective pilot must have previously demonstrated through this training program and as evidenced in the Student Flight Log entries in this booklet, that he is capable of flying the test from either direction. While not all lesson material in this Training Program is demonstrated in the test, all elements of the program (except for optional lessons) are considered to be mandatory skills for competent pilots that should improve even further with experience.

MAAC Wings Level “A” Test:
The student must demonstrate on two successive attempts his ability to:

- Take off and land unassisted.
- Maintain straight and level flight parallel to the runway.
- Perform a figure eight.
- Perform a rectangular approach.
- Land under power.

Evaluation:

- The student has completed all required training program lessons and achieved at least an “A” grade for Lessons 3 to 8 and at least a “B” grade for Lessons 9 and 10 as evidenced by the Student Training Log at the end of this booklet.
- The student is able to perform the Level “A” flight sequence on two successive attempts to the satisfaction of the Chief Instructor or any two qualified instructors who were present to witness the test.

Congratulations!

This certifies that _____ passed the MAAC Wings Level "A" flight test and is hereby "cleared" as a regular pilot and may fly his aircraft at the Humber Valley club field without supervision.

_____ _____ _____
Instructor’s Name Signature Date

Student Training Log

This log should be completed by the instructor at the end of each training day. As lessons are completed, they should be graded according to the table below regardless of whether or not the student has gained full proficiency in a particular lesson. In this way, students and instructors can review the log before each training day, to see which lessons have been completed successfully (i.e. show an "A" grade), and which lessons need more practice. When the student has achieved at least an "A" grade for Lessons 3 to 8 and at least a "B" grade for Lessons 9 and 10, the student is ready to take his MAAC Wings Level "A" test.

NOTE TO INSTRUCTORS:

Instructors should explain and demonstrate each step of the particular lesson to be learned. When the student understands the control input sequences and reasons for them, then give him control.

Lessons 1 and 2 deal with rules and procedures and must be graded once as a "Pass" before actual flight lessons can begin. Grading applies to actual flight lessons 3 through 10. Instructors should use the following grade chart to complete the Student Training Log. Lesson 11 is optional and is not graded. Lesson 12 is the wings test and is signed off on the previous page.

Grade	Description
A	Does not require supervision; student is very proficient in performing the maneuver.
B	Needs very little supervision; student is usually proficient in performing the maneuver.
C	Additional practice needed; student is sometimes successful but inconsistent in performing the maneuver.
D	Further training required; student cannot perform the maneuver successfully.

NOTE TO STUDENTS:

Make sure you ask the instructor to grade each lesson you have attempted on each training day. If multiple lessons are practiced on a single day, they can all be graded on a single row as shown in the sample log entry below. Instructors must initial and date each row and grade each lesson attempted on that particular day. Before each training day, review your progress with your instructor so that you can pick up where you left off. You should expect your grades to start off with "D"s and "C"s and improve to "B"s and "A"s. Good Luck!

Student Training Log Student's Name: _____

Lesson 1: Field Operations and Safety

Passed on: _____ By:_____
Date Instructor's Signature

Lesson 2: Aircraft Familiarization & Pre-flight Check

Passed on: _____ By:_____
Date Instructor's Signature

NOTE:
Flight Lessons 3 through 10 may only start after the student passes the above Lessons 1 and 2.

Date mmm/dd/yy	Instructor's Initials	3: Rectangular Circuits	4: Figure Eight	5: Stalls and Recovery	6: Landing Approach	7: Landing	8: Take-off	9: Trimming in Flight	10: Dead Stick Landing
Jul 22/17 (Sample)	TG	B	C	C	D				

Date mmm/dd/yy	Instructor's Initials	3: Rectangular Circuits	4: Figure Eight	5: Stalls and Recovery	6: Landing Approach	7: Landing	8: Take-off	9: Trimming in Flight	10: Dead Stick Landing