



**Bramalea Radio Control Flyers, Inc.**

## **MEMBER'S HANDBOOK**

Rev.3 Jan 2009

P.O. Box 51011  
25 Peel Centre Drive  
Brampton, Ontario  
L6T 5M2

**Club Website:** [www.brcfi.ca](http://www.brcfi.ca)



*A member of the Model Aeronautics Association of Canada*

## Introduction

Welcome to our r/c flying club! As a Bramalea Radio Control Flyers Inc. (brcfi) member we encourage you to attend each monthly club meeting to remain up-to-date with club business and events. Each month you will receive a club newsletter via e-mail or Canada Post (member's preference) containing club information, reminders and articles relating to our club and hobby. Our r/c club also has a dedicated website located at [www.brcfi.ca](http://www.brcfi.ca) where current information, weather briefing links, images, and article links can be found. Your fellow members will be the greatest resource available to you in learning all the aspects of this great hobby and to help you to fly "solo" as soon as possible. The purpose of this handbook is to help acquaint new members with general club information like the locations of our general meetings and flying fields, club safety rules and field etiquette, and to provide a comprehensive flight training program to support your flying lessons.

The brcfi flight training program as outlined in this handbook is designed to give the student pilot and any instructor a framework to follow from the first engine start to the first solo flight. Using this program a student pilot will be better prepared for each flight lesson at the field by having a resource to refer to prior to flying. This training program can also be a helpful guide for a student at home to practice more effectively with an r/c simulator (if available). Note: model r/c helicopter training is not currently within the scope of this program. Until a student pilot attains solo status, this handbook should be brought to each flying lesson for the instructor to review and enable him to assess the student's level. The handbook also serves as a quick reference for instruction elements found within each flight lesson.

## B.R.C.F.I. Club History

The foundations and early history of the Bramalea Radio Control Flyers Inc. is directly linked to the development of radio-controlled aircraft activities in the Toronto area during the late 1940's through the 1960's. As radio equipment became more reliable, and commercial companies started producing equipment, the hobby of r/c flying became very popular. In the late 1950's the Toronto Radio Control Club came into existence and supported the activity across the city. It also initiated the requirement of a dedicated R/C field for flying with some form of runway facility. The Toronto Club, with a large membership of east-enders eventually set up a site on Pharmacy Avenue, just north of the in-construction highway 401. This entailed considerable traveling for the club's west-enders, so a breakaway was inevitable, and the makings of the Bramalea Club was initiated. The West End Toronto R/C Club group initially set up a dedicated field in about 1964 on the north side of Britannia Road, west of highway 10 and just south of the 401. We operated there until "noise" issues with local residents (where have we heard that before) and safety concerns with the 401 required us to move on. For a short time period we operated on a farm on the east side of Dixie Rd. just north of Eglinton Avenue and close to Etobicoke Creek. A member's aircraft had an uncontrolled fly-away, not an unusual event at this time, and finished up over the Malton airport where it collided with an inbound Trans Canada Airlines (now Air Canada) Vickers Viscount. Minimal damage occurred to the Viscount but the Club member was taken to court and eventually had to pay for the damage. During the following spring of 1966 in our search for a flying site, it was suggested that an approach be made to the new town of Bramalea. This was the initiating event of our association with the Bramalea/Brampton Parks and Recreation Department and the establishment of our Club. A bond was formed which exists today. The town of Bramalea provided us with a site on the west side of Dixie Road behind what is now the NORTEL facility. Our presence in the area created an influx of new members from the Brampton/Bramalea area, one of whom is now the second longest term Club Member, John Rossetti. Other new members from this era include Al Smith and Frank Vierra. This site provided us with an established base for a number of years. Eventually plant construction and radio interference problems from Nortel required us to move on. In the winter of 1966/7 the Club adapted the name BRAMALEA RADIO CONTROLLED FLYERS. Incorporation came a few years later, but that's another story. Over the years the Club has become more recognized, by the City of Brampton, M.A.A.C. and flyers in Southern Ontario and into New York State as members participated in Open Houses, Contests and Rallies. I am proud to have been a part of the Club's past and hope it will continue to prosper into the future.

*A summary from Douglas Moore, one of the club's Lifetime Members.*

## Meeting Locations

During September through May inclusive the club holds an indoor monthly meeting on the second Monday of each month beginning at 7:30pm. The location is usually at the Bramalea Civic Centre in the Music Room. Club business is reviewed and an interesting form of entertainment usually follows such as:

- Guest speakers and demonstrations
- annual indoor r/c electric model flying
- Annual model plane beauty contest
- annual glider contest
- Annual auction sale
- DVD presentations of members' flying bloopers

During June, July and August a less formal "outdoor" meeting is held on the second Monday of each month (7:00pm) at the Main Flying Field (Bramalea Rd. & Countryside Dr.) during a break from the evening flying.

- Indoor meeting may have refreshments provided and usually the Executive holds a raffle ticket sale / draw for a number of prizes. Guests and potential new members are encouraged and always welcome to any meeting.

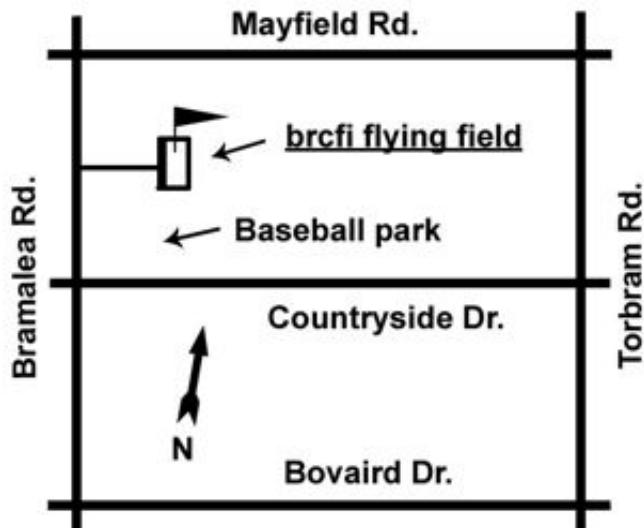
## Main Flying Field Location (open all year round)

### Hours of Operation

Monday - Saturday: -dawn to dusk  
\*Sunday: -10:00am to dusk

\*On Sundays from dawn to 10:00am only non-internal combustion engines are allowed to operate. (High-start gliders have flying priority from 1:30p – 3:30p on Sunday)

- Entrance is on the east side of Bramalea Rd, just north of Countryside Dr. (beside baseball park)
- Entrance gate is locked. The combination code is for members use only **0885** (note that the by-law# on the Bramalea Rd. sign is the lock code number)
- 'Members and escorted guests only' are permitted beyond the spectator fence at the field
- **The last member to vacate the flying field is responsible to lock up the gate before leaving**
- Model Heli low hovering only behind the S/E fence
- **No r/c flying during grass cutting operations**



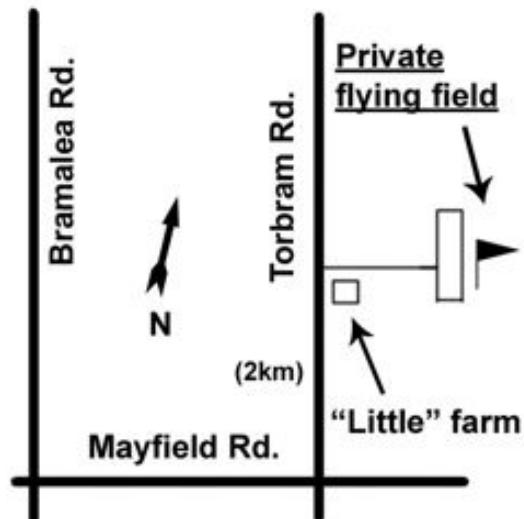
## North Flying Field Location \*(open seasonally)

### Hours of Operation

Monday - Friday: -9:00am to dusk  
Saturday & Sunday: -10:30am to dusk

\*April to November dependant on ground conditions

- The *private* r/c flying field is on a farm/airstrip on Torbram Rd. about 2km north of Mayfield Rd.
- **As a courtesy please drive very slowly along the property to the flying field and take all garbage with you off the site**
- If a 'closed' sign is posted near the entrance, the r/c flying field is unavailable for the day



## Flying Field Procedures & Etiquette

*\* For reasons of safety and as a courtesy to other members, it is important to be familiar with and abide by the established rules, procedures and practices of our club.*

- First priority is to ensure all 72Mhz transmitters are off and placed on the transmitter impound rack.
- All members must display their brcfi club membership card and MAAC card above the impound rack.
- Standard channel# tags for 72Mhz radios must be used on the respective Ch# hook before use.
- If the transmitter is needed during the model's pre-flight inspection, remember to first tag the appropriate channel# before turning on the transmitter. (72Mhz radios)
- If there are other flyers sharing the same radio channel number as you, communicate this with them to enhance safety and usage courtesy. (72Mhz radios)
- **Transmitter and receiver battery voltages should be checked prior to every flight.**
- Fueling and starting of model aircraft engines should only be accomplished on the starting pads.
- When flying, communicate (by calling out loud enough) to the other flyers on the flight pads when you are preparing to take-off, land, walk onto the runway, or perform maneuvers which could interfere with traffic in the landing pattern. All "dead-stick" glides must be called out and will have priority to land in either direction on the runway. Other flyers must give way.
- Do not take-off, land or fly inside the "flight line" (as delineated 7m in front of the pilot stations on the runway). Only taxiing aircraft are allowed on the pilot side of this line.
- After completing each flight, return your transmitter to the impound racks (confirm it is switched off) and remove your channel# tag from the frequency control board. Remove your aircraft and equipment from the starting pad to allow others to setup.
- It is each member's responsibility to ensure that all safety rules are followed by **every** member. If unsafe operation is observed politely remind the flyer or contact any member of the Executive.
- **As per the no-fly zones illustrated below, avoid flight beyond the normal flying pattern around the runway. Do not fly beyond the large isolated trees on the left edge of the pattern or over the baseball field (with floodlight poles) beyond the right edge of the pattern. The enforcement of a safe flying pattern away from the restricted areas around our field must have a high priority to protect the club's interests. Consistent violations by any member will be reviewed by the Club's Executive and the possible consequence is summed up in the last line of the Club's Membership application.**



## BRCFI Flying and Safety Rules

1. All M.A.A.C. Safety Rules are to be followed. Should there be a conflict between these Club Safety Rules and the M.A.A.C. Safety Rules; the M.A.A.C. Safety Rules shall prevail.
2. All cars shall be parked in the provided parking lot or designated parking area away from the flying site.
3. All power flying at the Countryside site may start during normal operating hours of the park with the exception that no internal combustion engines are allowed prior to 10:00 am on any Sunday. High-start glider flying at the Countryside site will have priority over power flying 1:30pm to 3:30pm on Sundays. i.e. No power flying if high start gliders are present.

Power flying at the North (Little Farm) field is not permitted prior to 10:30am on Saturdays and Sundays and 9:00am on any other day.
4. Upon arrival at the flying field, all transmitters are to be placed in the impound. When the radio frequency you wish is clear, a proper channel tag, (as described on page 8) displaying your radio channel number with your current membership card and M.A.A.C. membership cards or copies thereof attached must be hung on the appropriate location on the frequency board before the transmitter is retrieved from the impound and switched on.
5. Members' pre-flight activities shall take place in the designated pit area, and the following shall govern conduct in the pit area.
  - No engine shall be started in the pit area.
  - Prolonged running, or breaking in, of engines shall be accomplished in the designated area.
  - Spectators, for their own safety, are not permitted in the pit area.
  - A member may invite a visitor into the pit area for a specific reason, but the visitor must not remain for a prolonged period.
6. When a position on the flight line is available and you are ready to fly, secure (i.e.: tag) the appropriate frequency and move into the ready area behind the flight stone for the proper engine starting procedures.
7. Rules of conduct when flying shall be as follows:
  - No aircraft shall be permitted to fly if it emits a sound level greater than 88dbA, (see note below), and, if required, all engines must be equipped with an efficient muffler system to achieve this requirement.

Note: Noise levels will be enforced by use of the Club's sound level meter to determine output at a measured distance of 7 meters and 1 meter above the ground. The method of measurement shall be as prescribed by the Executive and all decisions relative to testing shall remain final.
  - A maximum of five pilot positions are available, designated by the spaced pads provided and pilots must stay in the pad area when flying.
  - Use of the runway by pilots or helpers, e.g. for viewing take-offs or retrieval of landed aircraft, shall be as brief as possible, and clearance to access runway must be obtained from pilots already flying.
  - All turns after take-off must be beyond the flight line and away from the pit area and be kept clear of restricted areas.
  - Flying is prohibited behind the flight line, or over the spectator and car park areas.
  - Flying is not allowed over inhabited dwellings.
  - No aircraft, while in flight, shall fly closer to the pilot positions than the "flight line" which is clearly delineated on the runway.
8. A guest may be permitted to fly at the Club's facilities when accompanied by a current Club member; the guest must be in possession of a current M.A.A.C. membership card. Guest appearances must be limited and shall not interfere with the rights of Club members to fly.
9. Safety and adherence to these resolutions is the responsibility of all Club members and as such must be enforced by all members. Continued violations must be brought to the attention of the Executive who are responsible to review and assess appropriate action, which may include suspension of or outright removal of Club rights and privileges from a member.

### Pilot Certification

All new pilots or new members must pass a Flight Evaluation Test. The test may be conducted by any instructor using the Club's Pilot Evaluation Report (last page of Member's Handbook). New pilots or new members will be issued a beginners membership card until they have successfully passed the test and until such time, a qualified pilot must monitor a beginner card member during any flights. The instructor will sign off the beginner membership card thus allowing full flight privileges. The completed Pilot Evaluation Report shall be submitted to the Club President who will then issue the full membership card.

## BRCFI Model Helicopter Flying Rules

1) New r/c model helicopter pilots should receive dual training and supervision from a competent r/c helicopter pilot before attempting hover practice and forward flight. Hover practice shall occur only in the designated model helicopter "hover training area". Forward flight and circuits with a model helicopter is permitted only beyond the flightline. Initial forward flight practice should be under supervision from a competent r/c helicopter pilot until the student has demonstrated the ability to safely fly solo.

2) The designated model helicopter "training area" is for low altitude hover and hover taxiing only. Maximum permitted height of model helicopter flying is 6 feet above the ground. (The proximity of the pit area and the adjacent baseball diamond prohibits high / fast model flying in this area) The pilot should fly with his back to the pit area keeping the model helicopter a safe distance from the fences. Hovering should not occur near the runway edge which may conflict with aircraft conducting take-offs and landings.

3) Model helicopter flying in forward flight and circuits shall be flown beyond the designated flightline. Communicating with other pilots is the most effective way of integrating helicopter circuits with the fixed wing aircraft circuits. As a courtesy consideration can be made to allow a brief session of helicopter only flights.

4) Reducing conflicts in all phases of flight between model helicopters and fixed wing model aircraft is the goal. Communicating intentions with other flyers is important for enhancing awareness and flying safety.

- Stationary hovering or prolonged hover taxiing is not permitted outside of the hover training area when other model aircraft are flying. If no other models are flying, hovering and hover taxiing is permitted beyond the centerline of the runway.

## Proof of Club and MAAC Membership Cards

Club and MAAC Membership cards must be displayed on the Frequency Control board at the flying field. A clear plastic luggage tag is a common card holder.

Members using 2.4Ghz Spektrum type transmitters must display their Membership cards on an available hook on the Frequency Control board at the flying field.

Members using 72Mhz transmitters must display their Membership cards with a Channel# Tag on the Frequency Control Board. In the interest of r/c flying safety, all members must comply with the club's Channel# Tag Standard. A tag that clearly identifies the user's radio channel number and is attached to his current club membership card and MAAC card is to be used on the Frequency Control Board at the flying fields at all times. The tag may be constructed of any suitable material and have the dimensions of 2.5" x 7/8" with a hole at the top end for the board hook. The other end is attached using suitable means (i.e. binder ring or similar) to the membership cards holder (*clear plastic luggage tag*). Please do not hang from the hook another substitute like a name tag, empty strap or anything that does not clearly indicate which Channel# you are using. This is a club safety rule intended to reduce the potentially serious consequence of placing a tag on the incorrect channel hook. Having the channel number displayed clearly while hanging on the respective channel number hook enables a visual confirmation that the channel tag was not hung on the incorrect hook which could cause a radio frequency accident.





## Flight Training Program Introduction

All club members are eligible for flight instruction by any of our volunteer flight instructors. There are two methods available for members to coordinate training flights with an instructor.

1. Come to the main flying field with your aircraft and club handbook *on any day* and place your radio Channel# tag & membership cards on the 'yellow training board'. This will put you in queue for the next available flight instructor if there is one at the field at the time. Be forthright and ask other flyers if they can help you with a flying lesson. When it is your turn to fly, remember to hang your Channel# tag on the Frequency Control Board.
2. Instructor Mentor: As a new member student pilot becomes acquainted with the membership he may choose to ask a particular instructor or two to be his regular instructor. An exchange of contact information will aid in coordinating flying times at the field.

Training can take place at either the Main Flying Field and/or the North Flying Field however; any training at the Main Field must be done using a transmitter buddy box system. The North Field does not require a buddy box arrangement but its use is strongly recommended. Please be advised that most instructors will instruct using only the buddy box system. Some students choose to purchase a buddy box transmitter from a hobby store (~\$50) for use during their training and then sell it later to another student. Otherwise a second compatible transmitter must be borrowed from another member (possibly the instructor).

**The lessons as outlined in the Member's Handbook have been designed to provide guidance for both students and instructors. In order to have a basic understanding of what to expect in each flight training session, students should read each relevant lesson and ask any questions before flying. The better prepared a student pilot is before the flying lesson, the more productive the time in the air will be.**

**This Member's Handbook should always be brought to the flying field during training to be used as a reference for the lessons. Check off each box as instruction elements are completed after the lesson. This will help each successive instructor in understanding the level of the student prior to getting airborne and result in a much more productive flying lesson.**

Do not fly your model aircraft alone until you have successfully completed the training program and/or the Flight Evaluation Test.

When a student has completed all the flying lessons and has passed the Flight Evaluation Test with an independent instructor (not the student's instructor) the instructor will complete the Flight Evaluation Report (last page of the Member's Handbook). This certifies the member to fly r/c solo at a club field.

Any new club member who considers himself a qualified solo flyer must demonstrate so by performing the Flight Evaluation Test.

## **Lesson 1: Aircraft and Flight Control Familiarization**

### **Purpose:**

To teach the student how to properly pre-flight his aircraft and to understand basic flight control principles

### **Instruction Elements:** (check off each box when completed)

- Review MAAC and club safety rules / field etiquette, including transmitter impound procedures
- Instructor will aid the student with his model aircraft inspection and “maiden flight” preparation
- Complete inspection of model aircraft structure and confirm center of gravity location
- Complete inspection of radio installation with a range check and confirming battery charge levels
- Complete inspection of all linkages and control surfaces for proper throw, direction, hinge security and freedom of movement
- Complete inspection of engine, propeller mounting and fuel system installation
- On the ground, (to help prepare for the next lesson) the instructor will familiarize the student with the aircraft’s control surfaces and movements using the transmitter. Describe what control affect they have on the aircraft in flight. (changing aircraft attitude with pitch, roll, yaw, and controlling level speed with throttle)
- Practice safe engine starting and adjustment of carburetor fuel/air mixtures to attain reliable engine performance throughout the throttle range. Set the high speed mixture setting slightly rich of top rpm. Set the low speed mixture setting to allow a reliable, smooth acceleration of rpm without hesitations. A reliable idle should be adjusted low enough so that the model will not roll forward on level grass.
- Instructor will perform the “maiden flight” of the student’s aircraft to become familiar with its performance and to flight trim the model in preparation for the student’s training flights
- Complete the readjustment of control throws and neutralize control trims mechanically if required
- Instructor synchronizes the training system (buddy box) and reviews the “you have control, I have control” principle
- Instructor to review some basic instructing principles
  - > Student should determine which style of gimbal control is more comfortable (using the thumb on the control stick crown or using thumb and finger with a neck strap)
  - > Instructor should demonstrate most maneuvers first then the student will practice them
  - > Instructor should take control of model before attempting long explanations because it can be difficult for a student to listen well while trying to control the model aircraft simultaneously
  - > Instruction Element boxes should be checked off after every lesson

### **Evaluation:**

The student should understand the club’s flying field procedures and etiquette (i.e. radio impound, start pad usage, radio range checks, etc.) and club safety rules. He should be able to conduct a pre-flight inspection of his model and identify any deficiencies that could cause a malfunction or safety hazard. He should be able to start and adjust the model’s engine safely. The student should have a basic understanding of how to make the correct control inputs to achieve a desired change in the model’s attitude when flying

## **Lesson 2: Basic Flight Maneuvers**

### **Purpose:**

To teach the student basic flight control including turns and the maintaining of level flight

### **Instruction Elements:** (check off each box when completed)

- Student should be able to conduct a proper pre-flight check and start/adjust his model engine safely. Student should have a basic understanding of flight control principles
- Instructor will perform the take-off and subsequent landing emphasizing good field etiquette

**\*Before every take-off, 4 safety items should be confirmed in a pre-taxi check (T.A.C.T.)**

Throttle.....ensure the engine has been cleared with full power and transitions/idles reliably  
Antennae....ensure the transmitter antennae is fully extended  
Controls.....ensure all flight controls move correctly (no reversals or servo failures)  
Trims.....ensure all flight control trims are in their correct positions (centered)

- Instructor demonstrates then student will practice maintaining level altitude** with elevator control at about a half throttle cruising speed. The aircraft should already be trimmed for the set cruising speed
- Instructor demonstrates then student will practice maintaining level turns**
  - \*Three steps to start and finish a turn*
    - 1) roll to about a 30 degree bank angle with aileron input
    - 2) maintain level altitude with slight up elevator input as required
    - 3) level out the wings with opposite aileron input
- Note: opposite aileron input is required when the aircraft is flying towards the pilot**  
*(hint: to raise the low wing, apply corrective aileron input in the direction of the low wing)*
- Review disorientation dangers:**
  - Silhouette factor when the model is flying near a low sun makes orientation very difficult
  - Applying incorrect aileron input when leveling wings after a steep turn can cause an over-roll which may lead to a spiral dive. hint: be aware of the last turn direction to aid in leveling wings
  - Allowing the model to fly too far away from pilot can quickly result in loss of control
- Practice straight ahead climbs:** Adding power with throttle and raising nose attitude
- Practice straight ahead descents/glides:** Reducing throttle (partially and to idle)
- Practice combining turns with gentle climbs and descents**

### **Evaluation:**

The student is ready for the next lesson when he can make turns to the left and right while maintaining a safe altitude without instructor intervention. Should understand how to control roll when the model is flying towards pilot (opposite aileron inputs). The student should be able to add or reduce throttle as required to regain a safe altitude and have an understanding of the disorientation dangers while flying

## **Lesson 3: Accuracy Maneuvers (Set and Hold Headings)**

### **Purpose:**

To prepare the student pilot for the Approach and Landing phase of flight training (next lesson) by developing more accurate control of aircraft heading. To develop accurate flight trimming skills at various throttle (speed) settings while maintaining heading and altitude

### **Instruction Elements:** (check off each box when completed)

- Review maintaining straight and level altitude flight and entering/exiting level turns
- Practice turning accuracy** with the goal of rolling out on a desired set heading after a turn. Focus on judging *when* to begin applying opposite aileron to level the wings. The steeper the bank angle is in a turn, the earlier opposite aileron will be required to accurately roll out onto a desired heading. *The more gradual and less steep a turn is the more accurate and less aggressive the exiting of the turn will need to be*
- Review the 5 legs of the rectangular traffic pattern (circuit).** *Upwind take-off leg, crosswind leg, downwind leg, base leg, and final approach leg.* Practice accurately rolling out on each leg of the traffic pattern on the required heading and suitable altitude. Fly the upwind leg (take-off & landing direction over the runway length) at the same pattern altitude tracking along the centerline of the runway (this is practice for landing approach accuracy). Make small heading changes to maintain the track along the runway centerline. As other traffic permits, practice flying the traffic pattern in both directions with left and right hand turns respectively
- Instructor demonstrates then student practices a “Figure 8” pattern** within the bounds of the rectangular traffic pattern as other flying traffic permits. Practice accurately setting and maintaining each heading of the “figure 8” while maintaining altitude
- Practice free form turns.** The student can be given specific directions to fly (i.e. “180 degrees left” or “45 degrees right”) to further practice flying in uncommon directions and attitudes
- Practice re-trimming for roll and pitch.** Instructor moves the aileron trim (on the student’s transmitter) to an out of trim position and has the student maintain wings level while readjusting the aileron trim to achieve neutral rolling forces. Instructor then moves the elevator trim out of position and has the student maintain altitude while readjusting the pitch trim to achieve neutral pitching forces
- Different throttle setting will result in a different airspeed while in straight and level flight.** Practice flight at a faster cruising speed followed by flight at a slower cruising speed. Full throttle/high speed flight will cause the model aircraft to naturally climb. Down elevator trim adjustment will be required to neutralize the pitch force if sustained cruising at the higher speed is desired. Low throttle/slow speed flight will cause the aircraft to naturally descend. Up elevator trim adjustment will be required to neutralize the pitch force if sustained cruising at the slower speed is desired. An aircraft should always be flown in a trimmed state when at the desired airspeed so as to minimize corrective applications of elevator and aileron. This will allow the pilot to fly much more smoothly and accurately while maintaining straight and level flight

### **Evaluation:**

The student is ready for the next lesson when he can consistently roll out of turns (from both directions) on a specific heading and maintain the set heading with accuracy. The student should be able to trim the model aircraft accurately for straight and level flight at various cruising speeds. A rectangular traffic pattern should be flown accurately with a consistent track maintained (using heading adjustments) over the centerline of the runway on the upwind leg

## **Lesson 4: Approach and Landing**

**Purpose:** (Lesson 5 can be combined with Lesson 4 if student & instructor are comfortable enough)  
To teach the student how to setup consistent approaches (from both traffic pattern directions) and to land safely

**Instruction Elements:** (check off each box when completed)

- Instructor should demonstrate a descending / slowing approach and a safe landing from the traffic pattern. Also demonstrate an idle power glide, slow speed characteristics and an approaching stall & recovery
- From a high altitude, practice idle power gliding descents using a (landing approach) speed while trying to maintain a set heading.** Practice a descending slow glide while performing a 90 degree turn, then maintain the new heading (as in a turn from base to final) Practice a full throttle climb back up to a safe altitude to recover
- From a high altitude, set up a slow glide with idle power then attempt to maintain the altitude as long as possible with as much as **'full up' elevator control to approach a stall. Recover from the slow flight / stall with full throttle while releasing the up elevator to around the neutral position.** Then accelerate while slowing raising the nose attitude with elevator to perform a climb back to a safe altitude
- Instructor demonstrates then student practices approaches and “go-arounds”:**
  - Instructor should demonstrate the landing approach by slowing and descending the aircraft on the base leg and final leg then assessing *with the student* before committing to a landing about the quality of the final approach. Demonstrate that if the approach appears too high/fast or too low/slow, a decision to abort and “go-around” must be made quickly to avoid landing long or short and possibly damaging the model.
  - Practice the slowing / descending approach with the aircraft lined up on the final leg along the centre of the runway and beyond the marked “flight line”. Use the previously practiced skill of maintaining a heading on final which will keep the aircraft tracking the centerline of the runway. A consistently well flown low speed approach with elevator and throttle adjustments for height/airspeed control and aileron adjustments for centerline tracking will result in a well placed touchdown and low speed, “flared” landing.
  - Before student tries his first landing, practice making several approaches at the correct descent rate and airspeed that will place the aircraft near the ground in the first half of the landing runway. Don’t land yet; practice a “go-around” (aborted landing) with full throttle and a straight ahead initial climb back to pattern altitude. It is very important for the safety of the model and people near the flight line that a timely “go-around” is performed before the aircraft is too low & slow (if the approach is not ideal or stable).
  - The base turn before final approach will require the throttle to be closed to idle or to partial throttle depending on how well the student’s trainer aircraft inherently slows down (with or without landing flaps) and how much headwind will be present on final approach. If the trainer has little drag and does not slow down quickly with partial throttle reduction, and/or there is little headwind on the final leg, anticipate requiring a throttle closed descent from the base leg turn. If the model has too much airspeed remaining on short final the landing may be too long, high, and/or result in bouncing as the aircraft has too much energy in the form of airspeed or height as it crosses the landing threshold. If there is a strong headwind or the base turn was from a lower altitude than normal, anticipate that some power above idle will be required on the final approach leg to maintain a suitable descent rate and airspeed to reach the landing area of the runway
- Instructor demonstrates then student practices landings:**
  - If the student can consistently control the aircraft heading through the base leg and final leg while smoothly slowing and descending towards a point in the first half of the runway, then a safe landing is accomplished by simply allowing the model to continue to drift down for a “flared” touchdown.
  - As the aircraft approaches a couple of feet from the ground, ensure idle power is set with the throttle stick fully aft, keep the wings level (or make very small adjustments to maintain the centerline track) and “flare” by applying increasing back pressure on the elevator stick to allow the model to ‘fly as long as possible as low as possible’ which should result in a smooth, nose-up attitude landing. Touching down with nearly full up elevator in many trainers is normal and indicative of a slow, properly executed, flared landing which can be compared to a gentle stall onto the main wheels
- After touchdown the rudder / nosewheel steering is the primary directional control. Maintain the runway centerline with small rudder / nosewheel inputs using the left stick. Beware of the sensitivity of the movements and of the input reversal as the model is rolling towards the pilot. High speed rudder steering will be practiced in the next lesson during the take-off training

**Evaluation:**

The student is ready for the next lesson when he can consistently setup up a stable approach to land and execute a safe landing flare to touchdown. Student must develop good judgment in making a timely decision to abort a landing attempt by “going around” if the aircraft is not in a safe position or at a proper airspeed to land

## Lesson 5: Taxi and Take-Off

### Purpose:

To teach the student how to taxi and takeoff safely from any runway direction

### Instruction Elements: (check off each box when completed)

- Ensure the ground tracking of the nosewheel steering is as straight as possible with the rudder stick and trim centered. Readjust if required (recheck after each hard landing on the nosewheel)
- Review taxiing rules (no taxiing in or near the pit area, only out from the runway edge. Remember the importance of the pre-taxi safety checks. T.A.C.T. (Throttle, Antennae, Controls, Trim)
- Practice taxiing around the runway when other model aircraft are well clear.** Notice the sensitivity of steering as the taxi speed increases, very small inputs of rudder/steering is required. More throttle is required to *start* from a stop than to *Maintain* a walking pace taxi speed. Close throttle to idle if speed is increasing to a run. Practice taxiing the model in a direction approaching the pilot. Focus on the required reversal of the rudder/steering input
- Practice ‘into-wind’ high speed taxi runs:** Taxi the model to the take-off position facing the wind and power up to about a half throttle “high speed taxi” to practice runway centerline tracking as in a take-off. Be prepared to quickly throttle back to idle once the model has passed about half the length of the runway. This also simulates a rejected take-off attempt. (This practice maneuver can also be accomplished with a high-wing trainer’s wing removed to avoid a lift-off)
- Normal propeller induced left turning tendencies will usually pull the aircraft to the left as increased power is applied during a take-off roll and climb. Be prepared to apply corrective rudder input to counter any turn away from the runway centerline track. The key is to move the rudder stick with small movements and to possibly apply constant rudder stick pressure in the appropriate direction rather than pulsing type movements (if there is a crosswind or excessive left turning tendencies)
- Instructor demonstrates then student practices take-offs:** Always take note of the wind direction before preparing to take-off. Taxi the model to the take-off position at the beginning of the runway facing into the wind. For the first few take-offs some students find it easier to stand on the runway with the instructor, directly behind the model. (if it is safe to do so with respect to coordinating with any other flyers) Gradually apply full throttle and focus on using the rudder (left stick) to make small but quick inputs to maintain the take-off track along the runway centerline. Anticipate holding some rudder input as required to counter any left-turning tendencies or crosswind. During the take-off roll add some back pressure to the elevator to gently raise the nose attitude. The aircraft will lift off smoothly once it reaches flying speed. Release some of the up elevator and reduce some of the rudder input which was off-setting any left turning tendencies on the ground. (most aircraft still have some left turning tendencies in the air under a full power nose up climb so some right rudder correction should still be held during the climb out if required)
- After take-off, try to maintain a track over the extended runway centerline until about half the altitude of a normal traffic pattern before turning towards the downwind. **The first turn is always away from the pits.** Once reaching the pattern altitude, another left turn onto the downwind leg will establish the aircraft in the landing pattern. Lower the nose for level flight and reduce the throttle for a normal cruising speed (about half throttle)
- Remember that if the take-off roll becomes directionally unstable or confusion/panic occurs, **abort the take-off immediately** by quickly throttling back to idle and continue using the rudder / nose-steering to remain on the runway centerline. The ability to make a quick decision to abort a take-off is as important as making the timely decision to abort a landing

### Evaluation:

The student is ready for the next lesson when he can repeat the takeoff safely with adequate directional control while maintaining the runway centerline (and can recognize when to abort take-offs). The take-off is accomplished straight ahead with adequate airspeed and the first turn made away from the flight line

## Lesson 6: Supplemental Manoeuvres

### Purpose:

To teach the student how to perform cross-wind take-offs and landings, to turn without ailerons using the rudder only, and how to handle different engine-failure scenarios

### Instruction Elements: (check off each box when completed)

- Cross-wind take-off:** Always check the windsock to determine the wind direction before every take-off. If there is a crosswind anticipate the need for greater rudder correction to maintain the runway centerline while accelerating. The wing may also tend to roll with the wind, therefore aileron correction into the crosswind may need to be applied to keep the wings level during the take-off run. Once airborne be ready to adjust the aileron input to maintain the wings level as a roll may quickly occur in the direction of the cross-wind correction. The rudder should also be centered or as required, a small amount of right rudder held to offset the full power nose high left turning tendency
- Cross-wind landing:** The aircraft's heading must be pointing slightly towards the crosswind on final approach for the ground track to remain on the runway centerline. This is called a 'crab'. The stronger the crosswind component, the more the aircraft will need to be "crabbed" into the wind to maintain the runway centerline. The advanced landing technique of flaring in a 'sideslip' with rudder held to keep the nose straight and aileron correction into the wind will ideally result in the upwind mainwheel touching down first as the aircraft continues to track the runway centerline. After touchdown, adequate rudder inputs will be required to maintain the centerline tracking with possibly some aileron input into the wind to keep the wings level. A 'sideslip landing' maneuver can be challenging with a model aircraft. Alternatively, simply fly the model onto the ground from the crabbing attitude then quickly use the rudder to straighten the nose for centerline tracking
- Turning in flight using the rudder only:** Many model aircraft and trainers used to be built and flown without ailerons installed. Turns were accomplished with the rudder only. It is a good confidence building exercise to experience rudder only turns with modern trainers. It is most effective if the aircraft has adequate dihedral in the wings (as most trainers do). To create a roll without using the ailerons, simply add and hold a small amount of rudder input in the direction of the desired turn. Once the required bank angle is reached (about 30 degrees) readjust the amount of rudder to maintain the turn. Elevator correction is required to maintain the altitude during the turn. To roll back to set the new heading, apply a small amount of opposite rudder input until the wings are level again
- Engine failure:** Model aircraft engines can sometimes stop in flight due to fuel mixture or glo-plug problems. How to handle the engine failure or "dead stick" approach and landing depends on where the aircraft is and how much energy it has (airspeed and altitude). You can confirm that your model engine has quit by smoothly applying full throttle and *hoping* for a full thrust response. If your model's single-engine has quit, it is important to gently lower the nose and maintain a glide at about the same airspeed as you would aim for on final approach. Treat the glide to landing as a slightly high final approach to flare (without the option to go around of course) *\*Remember to loudly call out that you are performing a "dead stick" landing in order to have priority to land.*
  - If the engine fails immediately after take-off, it is much safer to attempt a landing straight ahead in a relatively clear area. *\*The model will probably crash if a turn is attempted back to the runway.*
  - If the engine fails on the downwind leg, establish a glide speed, reference any crosswind and judge when to make the turns onto the base leg and final approach leg to make a landing.
  - If the engine fails after just turning onto the downwind in the far upwind corner of the pattern, it may be possible to attempt a downwind landing by turning quickly towards the closer end of the runway and judging how much to square off a base and final leg for landing

### Evaluation:

The student should have a basic understanding of how to handle his model aircraft in crosswind conditions and different engine failure scenarios. He should be prepared to perform the Evaluation test



## Flight Evaluation Report

### **General Notes:**

1. Flight Evaluation Testing can be accomplished at either brcfi club field
2. All persons performing this test must have completed at least two orientation flights at the Main Flying Field (Bramalea Rd. / Countryside Dr.)
3. An independent instructor (not the student's instructor) will complete the Flight Evaluation Test
4. All flying must be performed with the student pilot standing on a flight stone
5. All maneuvers will begin on the upwind leg and are to be performed in a safe manner with the aircraft flown beyond the marked flight line and within the traffic pattern at all times
6. If any part of the test is deemed unsafe, further instruction will be required. The student must then complete a re-test of the applicable part

### **PART A**

- Perform a pre-flight inspection (including radio range test & checking battery charge levels)
- Using appropriate start pad procedures, start the engine
- Taxi to take off position using appropriate calls
- Perform a normal take-off and enter the traffic pattern
- Perform a controlled flat figure eight pattern at pattern altitude (alert other flyers as required)
- Perform straight and level flight for three hundred feet approximately 30 feet above the runway along its centerline (beyond the flight line)
- Perform a proper approach and an overshoot (go-around) at 10ft back to the traffic pattern
- Perform a proper approach and a safe landing on the runway

### **PART B**

- Perform a normal take off and enter the traffic pattern
- From a sufficient height, perform a simulated "dead stick" landing. Aircraft does not necessarily have to touchdown on the runway but it must be demonstrated that a controlled landing within the runway environment would have occurred

### **PART C**

- Perform a normal take off. Instructor will place a flight control slightly out of trim (aileron or elevator) Pilot shall safely re-trim aircraft for straight and level flight
- Perform a proper approach and a safe landing on the runway

### **Passed Flight Evaluation Test:**

Student Pilot Full Name: \_\_\_\_\_

Evaluator Instructor: \_\_\_\_\_

Test date: \_\_\_\_\_