

Multi-Engine and IFR Syllabus

- Prior to starting the Multi-IFR training the student should have finished their CPL flight test and have accumulated a minimum of 50 hours PIC cross-country experience.
- The Simulator sessions and INRAT should be completed before starting training in the aircraft.
- The student s will need the **IFR Course Manual**, **Multi-Engine Training Manual** and the **DA42 Pilot Operating Handbook**.
- It is recommended that students attend the 3 Day IFR Seminar in preparation for the INRAT

IFR Simulator Syllabus

Lesson	Exercises	Completion standards/Objective	SIM
1	U-Tracks PGI : 1-1: IFR Introduction PGI : 1-2: Standard Calls PGI : 1-3: Basic Instrument Scan This lesson will be the introduction to the "U Track" pattern departing out of CZBB.	-Altitude within 200' -Headings within 20 degrees -Maintain Situation Awareness within the "U-Track" procedure	BE76
2	VOR Intercepts PGI : 2-1 The PRO System PGI : 2-2 Clearance Copying PGI : 2-3 VOR Operations This lesson will depart from CZBB off runway 12. The student will practice intercepting radials "to" and "from" the YVR VOR.	-Student is familiar with the Take Off Profile (climb, descents, and GUMPS) -Student maintains the Altitude within 200' -Headings within 20 degrees -Proper understanding of how to set up the VOR for radio navigation	BE76
3	VOR Approaches PGI : 3-1 The VOR Approach PGI : 3-2 Standard Procedure Turn PGI : 3-3 Procedure Turn Options This lesson will depart from Boundary Bay (CZBB) and proceed to conduct multiple VOR full procedure approaches at CZBB. Final VOR Approach to CZBB circle to runway13.	-Student is familiar with the Take Off Profile (climb, descents, and GUMPS) -Student maintains the Altitude within 200' -Headings within 20 degrees -Proper understanding of how to set up the VOR for radio navigation -½ scale deflection on the VOR -Proper usage of the "T" and "GUMPS" sequence as per "Pro training" system	BE76
4	NDB (Non-Directional Beacon) PGI : 4-1 Radio Magnetic Indicator-RMI PGI : 4-2 ADF-RMI Holds PGI : 4-3 Fixed Card ADF This lesson will depart from Boundary Bay (CZBB), via the CZBB SID Departure to WC NDB, proceed direct to the XX NDB, Holds will be conducted at WC, initially with no wind, and then progressing into holds with wind. Then track to AP NDB. Complete a standard entry full procedure NDB approach at Nanaimo, hold at YCD NDB, and then complete a race track procedure turn approach to Nanaimo. Wind will be incorporate throughout the lesson.	-Altitude control within 200' -Heading within 20 degrees -Tracking within +/- 20 degrees	BE76
5	NDB Approach PGI : The NDB Approach This lesson will depart from Abbotsford (CYXX) for multiple traditional full procedure NDB approaches.	-Altitude control within 150' -Airspeed within 10 knots -Tracking within +/- 15 degrees	BE76



6	Holds PGI : VOR Holding Patterns This lesson will depart from Abbotsford (CYXX) at night, and complete VOR holds with no winds first then with winds at the HUH VOR.	-Use "Pro" system to calculate hold entry procedure, and complete hold procedure -Aircraft to be flown to flight test standards for headings, altitude and tracking. -Determine where the wind is coming from, and apply appropriate corrections.	BE76
7	ILS Approaches PGI : 7-1 The ILS Approach PGI : 7-2 Straight in Approach This lesson will depart from Abbotsford runway 07. You will practice multiple full procedure and straight in ILS approaches to runway 07.	-Localizer and Glide Slope deflections within ½ scale deflection -"Pro" SOP Adherence	BE76
8	Localizer Approach PGI : 8-1 The Loc Approach PGI : 8-2 Circling Approaches & Procedures This lesson will depart from Abbotsford (CYXX) off runway 07, and will include multiple radar vectored Localizer only approaches into runway 07.	-Localizer and Glide Slope deflections within ½ scale deflection	BE76
9	Garmin 1000 PGI : 9-1 Garmin 1000 Operations PGI: Multi – Systems – Autopilot KAP 140 This lesson will introduce the student to GPS usage, specifically with the Garmin 1000 device. Depart from CZBB to CYXX for the ILS RWY 07 full stop. If time permits Departure only from CYCD, and departure only from CAT4.	-Familiarization with the Garmin 1000 -Student is able to load FPL, fly approach with minimal assistance from the Instructor.	DA42
10	GPS Full Route CYXX (no wind) PGI : IFR Trip Sequence - CYXX This lesson will depart from Boundary Bay (CZBB), on the CZBB SID departure, hold at HUH VOR, complete a full procedure ILS runway 07 at CYXX, and return to CZBB for the RNAV 31 approach. OR This lesson will depart from Boundary Bay (CZBB), on the CZBB SID departure, hold at HUH VOR, Radar vectored S/I ILS runway 07 at CYXX, and return to CZBB for the RNAV 31 approach.	-Altitude control within 100' -Heading within 10 degrees -Tracking within +/- 10 degrees, and ½ scale deflection on the ILS/ LOC -Proper usage of the WxCAAP sequence	DA42
11	GPS Full Route CYYJ (with wind) PGI : IFR Trip Sequence – CYYJ RWY 09 This lesson will depart from Boundary Bay (CZBB), proceed into CYYJ via the Apass STAR arrival procedure, hold at KELKU and complete the straight in ILS 09 approach to CYYJ. Return to CZBB for the RNAV runway 31 approach into CZBB.	-Altitude control within 100' -Heading within 10 degrees -Tracking within +/- 15 degrees -Basic understanding of the WxCAAP sequence -Complete simulator session with minimal assistance from instructor.	DA42



12	GPS Full Route CYYJ (with Emergencies) PGI : IFR Trip Sequence – CYYJ RWY 27 This lesson will depart from Boundary Bay (CZBB), proceed into CYYJ via the Apass STAR arrival procedure, hold at OBSOP and complete the straight in RNAV 27 approach to CYYJ. Return to CZBB for the RNAV runway 31 approach into CZBB. Emergency procedures will be incorporated into the training session.	-Altitude control within 100' -Heading within 10 degrees -Tracking within +/- 15 degrees -Basic understanding of the WxCAAP sequence -Complete simulator session with minimal assistance from instructor.	DA42
13	GPS Full Route 100nm PGI : 100 NM Cross-Country -SID 4 CZBB -RNAV 29 CAT4 -RNAV 16 CYCD -RNAV 30 CZBB (circling if required) OR -SID 4 CZBB -RNAV 16 KORS -VECTORS ILS 16 KBLI - HOLD HUH -VECTORS ILS 07 CYXX -BLKLY RNAV 30 CZBB (circling if required)	Route Planning should be completed and weather package obtained to determine on the day if the flight could actually be conducted. The objective is to maintain the flight test standard and show proficiency with the Garmin 1000.	DA42
14	GPS Flight Test Ride PGI : IFR Flight Test Prep This lesson will depart from Boundary Bay (CZBB) for a hold at HUH, 2 approaches into Abbotsford (CYXX), and 1 hold. Emergency procedures will be incorporated into the training session.	-Altitude control within 100' -Heading within 10 degrees -Tracking within +/- 10 degrees, and ½ scale deflection on the ILS/ LOC -Proper usage of the WxCAAP sequence	DA42



Multi-Engine Rating

-Prior to starting the Multi-Engine Training in the aircraft the student should have completed Mission #21 of the Simulator syllabus

Lesson	Exercises	Completion standards	Aircraft
G/B	Ground Briefing 1 – Pre-Aircraft PGI : Multi – Theory – Walk around PGI : Multi – Theory - Vspeeds -Overview of the Syllabus -Pre-Flight Planning worksheet -Filing a Flight Plan -Pre-Flight Inspection	-Student can complete flight preparation and will be able to have the Pre-Flight Planning worksheet completed for the Instructor to review. -As well as complete the walk around with supervision from the Instructor	DA42
1	Multi 1 PGI : Multi – Flight – Flight 1 – Upper Airwork -Pre-Flight Inspection (supervised) -Run-up -Basic aircraft handling -Flight at reduced airspeed -Stalls -Steep turns	-The student should be able to complete all necessary pre-flight preparations without the instructors assistance -Guidance will still be required during the run-up and checklist portion before Take-off -The student should be comfortable enough with handling the aircraft and controls to move into the Circuit.	DA42
2	Multi 2 PGI : Multi – Flight – Flight 2 - Circuits -Circuits -Touchdown on a predetermined spot -Possible review of Multi 1 Exercises	-The Student must complete 3 successful landings targeting a touchdown zone (+300/-100) -If time permits then a review of the previous exercises can be completed	DA42
G/B	Ground Briefing 2 PGI : Multi – Systems – Primary Controls PGI : Multi – Systems – Electrical PGI : Multi – Systems – Fuel PGI : Multi – Systems – Hydraulic PGI : Multi – Systems – Prop & Governor -Review Multi-Engine Theory -Aircraft Systems	-The student should have several notes on each aircraft system by the end of the briefing as reference for the flight test day	DA42
3	Multi 3 PGI : Multi – Flight – Flight 3 - Engine Failures -Review of Multi 1 and 2 -Engine failure in cruise -Single Engine Overshoot -Pilot initiated Shutdown -Single engine landing	-This flight will familiarize the student with engine failures and allow them to operate the aircraft under pressure -Procedural issues can be fixed on the ground after the flight but the aircraft control should be within flight test standards of a 2	DA42
G/B	Ground Briefing 3 PGI: Multi – Systems – Performance Charts PGI: Multi – Systems – Navigation Log -Performance Charts -Weight and Balance -Brief Exercises for Multi 4	-The student should be comfortable with the Pilot Operating Handbook and all the necessary charts and calculations for flight test day	DA42
4	Multi 4 PGI: Multi – Flight – Flight 4 - Full ride -Review Multi 1-3 -Single engine overshoot -Pilot initiated shutdown -Emergencies	-This flight puts all the exercises together to get the student familiar with a flight test. -Procedural issues can be fixed afterwards with a static run in the aircraft -All flight test standards for aircraft manoeuvres should be a 3 or greater -All engine out standards require a 2 or greater	DA42
G/B	Ground Briefing 4 PGI: Multi – Systems – Flight Test Guide -Review G/B 1-3 -Brief all flight test exercises	-The student and instructor should work together on re-briefing any weak areas noticed in prior training or clarify any questions the student may have	DA42



		-Also the students documents should be checked for validity for the flight test	
5	Multi 5 -Review all Multi-Engine Flight Test exercises (if necessary, repeat Multi 5 until the student has reached Flight Test Standards)	-Minor procedural issues will be acceptable -All flight test standards require a 3 or higher on all exercises	DA42
G/B	Ground Briefing 5 - Pre-Multi Ride -Simulated Multi-Engine Ground Test	-TP 219 - Flight Test Guide - Multi-Engine Class Rating – Aeroplane should be used in the briefing and the student needs to be familiar with all the topics	DA42
6	Multi 6 - Pre-Multi Ride -Simulated Multi-Engine Flight Test	-Consistency and flight test performance will dictate if a flight test recommend is signed -All Aviation Documents need to be checked	DA42
7	Multi 7 – Multi-Engine Flight Test	-Pass	DA42



Instrument Rating

- Prior to starting the Instrument Rating in the aircraft the student should have **completed the Multi-Engine flight test** and **finished the simulator sessions #22 through #25**
- By this time the student should have **completed a total of 50 hours PIC cross-country** experience
- The student should have completed sufficient instrument training to **reach 40 hours of instrument experience** by the end of this training (Note: the student will gain approximately 10 hours of additional instrument experience during the IFR flight training)

Lesson	Exercises	Completion standards	Aircraft
G/B 1	Ground Briefing 1 – DA42 PGI : Multi – Systems – Autopilot KAP140 -Review Route #1 -Brief how to file IFR Flight plans and get a slot time. -Checking the weather and NOTAMS to ensure a safe flight	The student should be familiar with the route and frequencies. It is expected that the student make competent decision to fly based on the weather and NOTAMS. They should be able to walk around and file the day of the flight.	SR20 or DA42
1	IFR 1 – (CZBB – CYXX – CZBB) -SID 4 CZBB -Hold at HUH -ILS 07 CYXX -RNAV 30 CZBB via PENIN	This flight will stress the use of the SOP's developed in the simulator and the student should be reminded or corrected when one is missed. The communications should be handled by the student with assistance from the instructor. If the student gets lost while programming the GPS it is the instructor should assist to help with their situation awareness.	SR20 or DA42
2	IFR 2 – (CZBB – CYXX – CZBB) PGI: IFR Flight 2 -SID 4 CZBB -Straight in ILS 07 CYXX via WC -Hold at HUH -RNAV 30 CZBB via PENIN	This flight is all about staying ahead of the aircraft and utilizing the PRO SOP's to make that happen. The instructor may assist in unusual ATC requests. The approach into CZBB should be loaded VIA BLKLY then PENIN to allow the student more time to setup.	SR20 or DA42
3	IFR 3 – (CZBB – CYYJ – CZBB) PGI: IFR Flight 3 -SID 4 CZBB -Hold at HUH -V495 to YYJ -ILS/DME 09 or RNAV Z 27 CYYJ -RNAV 30 CZBB via ESVEM	The objective is to maintain flight test standard while challenge the student with emergencies and an engine failure. The student needs to maintain a strong scan while working through a checklist in IMC.	SR20 or DA42
4	IFR 4 – (CZBB – CYYJ – CZBB) PGI: IFR Flight 3 -SID 4 CZBB -Hold at YYJ, AP or RNAV Waypoint -RNAV 09 or 27 CYYJ -RNAV 30 CZBB via ESVEM or IFR 4 – (CZBB – KBLI – CZBB) PGI: IFR Flight 4 -SID 4 CZBB -Hold at HUH -Vectors ILS 16 KBLI -RNAV 30 CZBB via ESVEM	The objective is to maintain flight test standard while challenge the student with emergencies and an engine failure. The student must be able to maintain a strong scan while working through a checklist in IMC.	SR20 or DA42



G/B 2	Pre 100nm -Brief 100nm route -Brief Approaches -Brief Garmin 430	The student should be able to fly the route without any instructor assistance. The time for setup and brief of the approaches is increased so there should be no excuse for the student to get behind the aircraft. All radio calls should be handled by the student.	SR20 or DA42
5	IFR 5 – 100NM IFR-Cross-Country -SID 4 CZBB -RNAV 29 CAT4 -RNAV 16 CYCD -RNAV 30 CZBB (circling if required) OR -SID 4 CZBB -RNAV 16 KORS -VECTORS ILS 16 KBLI - HOLD HUH -VECTORS ILS 07 CYXX -BLKLY RNAV 30 CZBB (circling if required)	The objective is to maintain the flight test standard and show proficiency with the Garmin 430.	SR20 or DA42
6	IFR 6 – (CZBB – KBLI – CZBB) -SID 4 CZBB -Radar vectors ILS 16 KBLI -Hold at HUH -RNAV 30 CZBB via PENIN	The objective is to take the student out of their comfort zone and see if there performance is within standard. Emergencies should also be completed successfully.	DA42
7	IFR 7 – (CZBB – CYXX – CZBB) -Typical flight test route and planning questions - SID 4 CZBB -Hold at HUH -ILS 07 CYXX -Missed Approach -RNAV 30 CZBB (circling if required)	A determination must be made if the student is consistent enough to be recommend for the flight test	DA42
8	IFR 8 – (CZBB – CYXX – CZBB) -Typical flight test route and planning questions - SID 4 CZBB -Hold at HUH -RNAV (GNSS) 07 CYXX -Missed Approach -RNAV 30 CZBB (circling if required)	A determination must be made if the student is consistent enough to be recommend for the flight test	DA42
9	IFR 9 – (CZBB – CYXX – CZBB) -Typical flight test route and planning questions - SID 4 CZBB -ILS 07 CYXX -Missed Approach -Hold at HUH -RNAV 30 CZBB (circling if required)	A determination must be made if the student is consistent enough to be recommend for the flight test	DA42
10	IFR 10 – Pre-IFR Ride		DA42



G/B 3	Pre-IFR Ride Ground		DA42
11	IFR 11 - IFR Flight Test		DA42

