Instrument Rating
Flight Syllabus

#	Lesson	Sim	Dual	Inst.
1	Instrument Flight Review	1.5		
2	RNAV Approaches	1.2		
3	ILS Approaches	1.2		
4	Holds	1.2		
5	Full Procedure Approaches	1.5		
6	Circling	1.2		
7	Holds & Approaches		1.5	1.2
8	Holds & Approaches		1.5	1.2
9	IFR Cross Country		3.0	2.7
10	Emergencies	1.2		
11	Emergencies		1.5	1.2
12	Review		1.5	1.2
13	Pre-Flight Test		1.5	1.2
	TOTAL	**9.0**	**10.5**	**8.7**

Syllabus assumes 20 hrs from CPL training + 5 from PPL and student is proficient in instrument flight to the CPL level (navaid & GPS intercept & tracking).

<u>Costs – Group 1 (Multi-IFR)</u>

10.5 hr * $545/hr dual	→	$ 5722
9 hr * $195/hr dual sim	→	$ 1755
11.5 hr * $95/hr ground brief	→	$ 1093
Total		**$ 8,570**

<u>Costs – Group 3 (Single-IFR)</u>

10.5 hr * $280/hr dual	→	$ 2940
9 hr * $195/hr dual sim	→	$ 1755
11.5 hr * $95/hr ground brief	→	$ 1093
Total		**$ 5,788**

Lesson 1 Instrument Flight Review

Date:_____ Instructor:_____ PGI 1.0h

Sim 1.5h

Aim: To review instrument flight manoeuvres covered during the commercial pilot training.

Exercise	PGI	Demonstration	Student Performance	Review	Evaluate
Instrument Checks				*	
Straight and Level Flight	*			*	
Turns	*			*	
Climbs/Descents/Turns	*			*	
Partial Panel	*			*	
VOR intercepts	*			*	
GPS tracking	*			*	

Post-Flight Debriefing:

Lesson 2 RNAV Approaches

Date:_____ Instructor:_____ PGI 1.0h
Sim 1.2h

Aim: To learn how to fly an RNAV approach.

Exercise	PGI	Demonstration	Student Performance	Review	Evaluate
Approach Plates	*				
GPS Tracking	*			*	
RNAV Approach (SCDA)	*		*		
RNAV Approach (LPV)	*		*		
Missed Approach	*		*		

Post-Flight Debriefing:

Lesson 3 ILS Approaches

Date:_____ Instructor:_____ PGI 1.0h
Sim 1.2h

Aim: To learn how to fly an ILS approach.

Exercise	PGI	Demonstration	Student Performance	Review	Evaluate
RNAV App. (SCDA)				*	
RNAV App. (LPV)				*	
LOC Approach (SCDA)	*		*		
ILS Approach	*		*		
Missed Approach			*		

Post-Flight Debriefing:

Lesson 4 Holding

Date:_____ Instructor:_____ PGI 1.0h

Sim 1.2h

Aim: To learn how to enter and maintain a holding pattern.

Exercise	PGI	Demonstration	Student Performance	Review	Evaluate
Hold Entry	*		*		
Holding	*		*		
Electrical Failure	*		*		
Communications	*				

Post-Flight Debriefing:

Lesson 5 Full Procedure Approaches

Date:_____ Instructor:_____ PGI 1.0h
Sim 1.5h

Aim: To learn how to fly an approach incorporating a procedure turn.

Exercise	PGI	Demonstration	Student Performance	Review	Evaluate
ILS Approach (FP)	*		*		
BC Approach (FP)_	*		*		
LOC Approach (FP)	*		*		
Gyro Failure	*		*		

Post-Flight Debriefing:

Lesson 6 Circling

Date:_____ Instructor:_____ PGI 1.0h
Sim 1.2h

Aim: To learn how to circle and transition for a landing.

Exercise	PGI	Demonstration	Student Performance	Review	Evaluate
ILS Approach				*	
ILS Approach (FP)				*	
LOC Approach				*	
RNAV Approach				*	
Circling	*		*		

Post-Flight Debriefing:

Lesson 7 Holds & Approaches

Date:_____ Instructor:_____ PGI 0.5h
Dual 1.5h

Aim: To review all material learned to date.

Exercise	PGI	Demonstration	Student Performance	Review	Evaluate
Holds				*	
GPS App. (LPV)				*	
RNAV App. (SCDA)				*	
ILS Approach				*	
Missed Approach				*	
Circling				*	

Post-Flight Debriefing:

Lesson 8 Holds & Approaches

Date:_____ Instructor:_____ PGI 0.5h

Dual 1.5h

Aim: To review all material learned to date in the aircraft.

Exercise	PGI	Demonstration	Student Performance	Review	Evaluate
Holds					/3
RNAV App. (LPV)					/3
RNAV App. (SCDA)					/3
ILS Approach					/3
Holds					/3
Missed Approach					/3
Circling					/3

Post-Flight Debriefing:

Lesson 9 IFR Cross Country

Date:_____ Instructor:_____ PGI 1.5h

Dual 3.0h

Aim: To learn how to complete an IFR cross country.

Exercise	PGI	Demonstration	Student Performance	Review	Evaluate
Weather	*				
Flight Planning	*		*		
IFR Departure	*		*		
Enroute Procedures	*		*		
Arrival Procedures	*		*		
ILS Approach				*	
RNAV Approach				*	

Post-Flight Debriefing:

Lesson 10 Emergencies

Date:_____ Instructor:_____ PGI 1.0h

Sim 1.2h

Aim: To review emergency procedures in instrument flight.

Exercise	PGI	Demonstration	Student Performance	Review	Evaluate
ILS Approach				*	
RNAV Approach				*	
Engine Failure	*		*		
SE Landing	*		*		
Engine Fire	*		*		
Electrical Failure	*		*		
Gyro Failure	*		*		
Comm Failure	*		*		

Post-Flight Debriefing:

Lesson 11 Emergencies

Date:_____ Instructor:_____ PGI 0.5h

Dual 1.5h

Aim: To review emergency procedures in instrument flight.

Exercise	PGI	Demonstration	Student Performance	Review	Evaluate
ILS Approach				*	
RNAV Approach				*	
Engine Failure			*		
SE Landing			*		
Engine Fire			*		
Electrical Failure			*		
Gyro Failure			*		
Comm Failure			*		

Post-Flight Debriefing:

Lesson 12 Review

Date:_____ Instructor:_____ PGI 0.5h
Dual 1.5h

Aim: To review all material learned to date.

Exercise	PGI	Demonstration	Student Performance	Review	Evaluate
Pre-Flight Preparation	*				
Holds					
RNAV Approach (LPV)					
RNAV App. (SCDA)					
ILS Approach					
Engine Failure					
SE Landing					

Post-Flight Debriefing:

Lesson 13 Pre-Flight Test

Date:_____ Instructor:_____ PGI 1.0h
Dual 1.5h

Aim: To ensure the student is ready for the instrument rating flight test.

Exercise	PGI	Demonstration	Student Performance	Review	Evaluate
Flight Planning					3/
IFR Operational Know.					3/
ATC Clearance					3/
Departure					3/
Enroute					3/
Arrival					3/
Holding					3/
Precision Approach					3/
RNAV Approach					3/
Missed Approach					3/
Transition to Landing					3/
Engine Failure					3/
Emergency Procedures					3/
SE Landing					

Post-Flight Debriefing:

Extra Lesson _____
Date:_____ Instructor:_____ Dual _____

Aim: To allow a student to achieve satisfactory results in one or more exercises to be able to proceed to the next lesson with adequate skills.

Exercise	PGI	Demonstration	Student Performance	Review	Evaluate

Post-Flight Debriefing:

Extra Lesson _____
Date:_____ Instructor:_____ Dual _____

Aim: To allow a student to achieve satisfactory results in one or more exercises to be able to proceed to the next lesson with adequate skills.

Exercise	PGI	Demonstration	Student Performance	Review	Evaluate

Post-Flight Debriefing:

Extra Lesson _____
Date:_____ Instructor:_____ Dual _____

Aim: To allow a student to achieve satisfactory results in one or more exercises to be able to proceed to the next lesson with adequate skills.

Exercise	PGI	Demonstration	Student Performance	Review	Evaluate

Post-Flight Debriefing:

1 Pre-Flight

Procedure

Weather: you must review weather information for departure, enroute, destination and alternate airports.

- Look at METAR's, TAF's, GFA, SIGMET, NOTAM's, F/D's

Flight Planning: you must conduct an IFR flight log and plan

- This is the same as the VFR, but airways and air routes are included
- You must also plan for the alternate route

Cockpit Checks: you must ensure all instruments and navaids are serviceable.

- Check pitot/static, compass and gyro instruments as for VFR
- Set ILS to dept return, VOR and NDB to departure airdrome
- Tune and ident VOR's, and NDB's and ensure function

2 IFR Operational Knowledge

- You must be sufficiently knowledgeable about IFR operations to conduct a safe IFR flight.
- Know how to read weather, LO and CAP charts
- Basically, know everything on the INRAT study and reference guide.

3 ATC Clearances

- Need IFR clearance whenever in controlled airspace (this includes class E!!)
- Read back all IFR clearances
- For departure clearances, only need to read back SID, runway, transponder code

4 Departure

Background Theory

- Used to standardize the flow of departure traffic to enroute sector
- Standard Instrument Departures (SID) can be RNAV or pilot navigation
- Most common SID is runway heading to certain altitude
- Busy airports (ATL) or mountainous airports (CYLW) have RNAV SID's

Procedure

- Follow instructions on the departure plate
- If RNAV equipped, load SID into GPS and track CDI

5 Enroute

Background Theory

- Remember how to track VOR, NDB and RNAV tracks

Procedure

- Remember how to track VOR, NDB and RNAV tracks
- Check fuel over each waypoint
- Make position report if required

6 Arrival

Background Theory

- Some airports have Standard Terminal Arrival Routes (STAR's)
- Follow STAR's if cleared
- Clearance for a STAR only is a route clearance; you still need an altitude clearance from ATC to follow STAR altitudes
- Program GPS for STAR

Procedure

- Plan approach early, use AABC

A ATIS

A Approach

- Tune and identify navaids
- Set track bars
- Program GPS and check RAIM

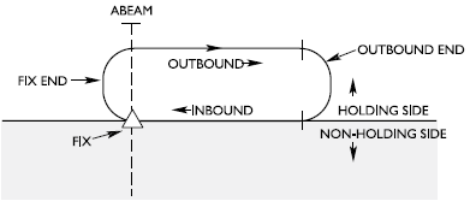
B Brief the approach

C Checklist – complete the descent and/or before landing checklist

7 Holding

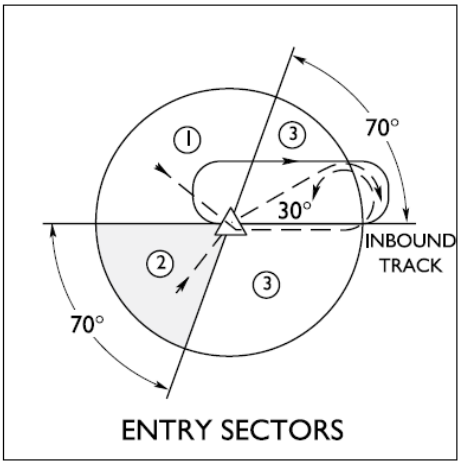
Background Theory

- Used for a variety of reasons – usually ATC has too much traffic to handle
- Usually 1 minute inbound, adjust outbound leg to achieve inbound time
- Entry may be teardrop, direct, or parallel



Procedure

- Plan entry early
- Brief hold and ensure you are turning the right way (TTSAFE- Type, Turn, Speed, Altitude, Fuel, EFC)
- Sector 1 – parallel, Sector 2 – offset, Sector 3 - direct



8a Non-Precision Approach

Background Theory

- NPA gives lateral guidance only (no vertical guidance)
- Can be LOC, LOC(BC), VOR, NDB, RNAV, or combination

Procedure

- Most approaches are vectored to a straight in, however you may need to do a full procedure approach with a procedure turn
- Fly towards IAF (usually same as FAF)
- Entry to approach is similar to hold entry, but entry can be direct, racetrack, modified racetrack or hockey stick
- Outbound is usually 2 minutes for race track or 1 min oubount+45sec on angle for modified racetrack or hockey stick
- Every time you pass a fix, do "5 T's"
  Time – start time
  Turn – rate 1 turn to desired heading
  Track – set HSI track to desired track
  Throttle – set power to desired setting and descend if necessary
  Talk – call ATC if needed
- Continue descents to altitudes as depicted on charts
- Be configured (flaps, gear, etc) prior to FAF
- At FAF, begin rapid descent to MDA
- Continue to Missed Approach Point (MAP)

8b ILS Approach

Background Theory

- Consists of LOC signal giving lateral guidance (0.5°/dot) + glide slope (0.7° from centre to end)
- Usually need ADF, DME or radar vectors to get on LOC

Procedure

- Commence approach same as full procedure NPA
- Intercept LOC below GS
- Continue following LOC and GS to DH
- If no visual at DH, immediate MA must be done

8c RNAV Approach

Background Theory

- RNAV approach usually based on GPS signals
- GPS uses triangulation from satellites to give 3D position
- Need 4 satellites for 3D position
- Random Anonymous Integrity Monitoring (RAIM) ensures integrity of satellite signal
- Most approaches are NPA

Procedure

- Program GPS approach
- Continue GPS approach following lateral guidance and fly altitudes as depicted
- Must have approach mode armed no later than crossing the FAF
- If approach not armed, there is insufficient precision on CDI and missed approach must be conducted

9 Missed Approach

Background Theory

- Sometime you see the runway at minimums, sometimes you don't
- Also, out may be out of position

Procedure

- Apply full power
- Raise nose
- Clean up airplane (flaps up, gear up)
- Follow procedure on approach plate
- Advise ATC

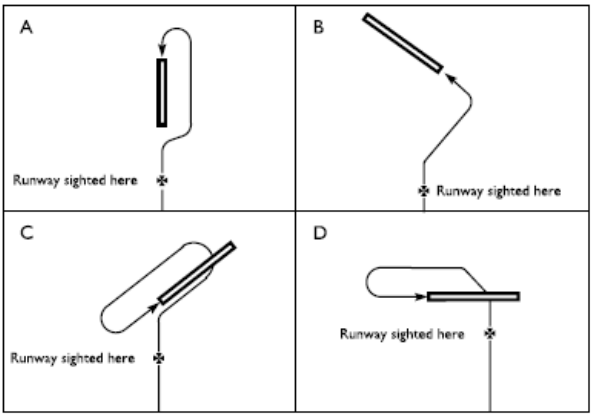
10 Transition to Landing (Circling)

Background Theory

- If runway is 30° off from final course, or MDA is too high above the HAT, the approach requires circling
- Approach designated with a letter ie NDB X
- During circling procedure, you must remain within designated circling distance (A 1.3NM, B 1.5NM, C 1.7NM, D 2.3NM)

Procedure

- Descend to **circling** MDA
- Start circling procedure
- There is no fixed circling procedure, examples are shown, but PDM prevails
- Don't descend until turning final
- If you lose ground contact, start a missed approach, turn to the center of the airport and conduct the MA for the approach you just did (not for the landing runway)



11 Emergency Procedures

Background Theory

- FLY THE AIRPLANE FIRST
- Determine what emergency you have
- Take appropriate action (checklists)
- Notify ATC

Procedure

- Follow procedures as listed in POH
- For gyro failures, you will have to time your turns (30 sec/90 °)
- For pitot static failures, you may need to improvise – you can use GPS for rudimentary altitude
- For ASI failure, just fly known attitudes and power settings