RECREATIONAL AVIATION AUSTRALIA INC

SYLLABUS OF FLIGHT TRAINING

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1 PRINCIPLES OF FLIGHT

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SYLLABUS OF RECREATIONAL FLIGHT TRAINING

LEVELS OF KNOWLEDGE AND APPLICATION

The following syllabi specify the **MINIMUM** standard of knowledge required. The competency codes outlined below specify the levels required for each individual item within a particular subject, as follows:

- **5** requires further **instruction** specific to the lesson. The student did not reach the required standard to move onto the next lesson, or requires further instruction of a specific activity within the lesson, or sections of the lesson could not be completed.

- **4** outlines the need for further **practice**. The student demonstrated an understanding of the content of the lesson but has not met the requirements of competency code 3. The student will benefit from further practice gained during the normal progression though the syllabus. They can progress onto the next lesson, or may benefit from a refresh of multiple activities across multiple lessons.

- **3** is the required competency for **solo** conduct of the intended operation. This code represents the competency of the member to perform the activity correctly without instructional assistance under carefully supervised conditions in a safe environment.

- **2** is the competency required for the operation to be safely completed at a **Pilot Certificate** level. This represents the student's ability to be able to competently and without instructional assistance, perform the activity correctly and adjust actions to cope with emergencies under uncontrolled environments.

- **1** is the requirement for **Instructors** wishing to teach the endorsement. This standard represents the Instructor's ability to competently perform the required activity with a high degree of accuracy and in a professional and competent manner in uncontrolled environments and adjust actions to cope with emergencies in a highly consistent manner, facilitating the instruction of the activity to a student.

These codes are the basis of assessing competency in the required fields of the syllabus. In order to establish consistency, accuracy must be witnessed by the instructor on greater than two occasions to ascertain proficiency in the required exercise. Attainment of these competency standards is required to be recorded in the student training records.

UNIT 1.01 – GROUP A (3-AXIS) SYLLABUS

ELEMENT: 1. FLIGHT PREPARATION AND GROUND HANDLING

CODE: FP	Before Solo	Pilot Certificate	Inst Rating
1.1 Complete pre and post flight administration			
• Daily and pre-flight inspection conducted including checking of fluid levels and aeroplane serviceability	3	2	1
• Aeroplane is prepared for flight-untied or moved to appropriate start up area	3	2	1
• Equipment and documentation as required by legislation is identified and secured in the aeroplane, and internal and external checks are completed in accordance with approved checklist	3	2	1
• Aeroplane take-off and landing performance and weight and balance is calculated in accordance with the aeroplane Flight Manual for the proposed operation and ambient conditions	3	2	1
• Pre and post flight logbook and flight administration is completed in accordance with Technical manual and/or Operations manual	3	2	1
1.2 Cockpit familiarisation			
• Aeroplane instruments, use of adjustable items and emergency equipment use	3	2	1
1.3 Fuel System.			
• Components of fuel system	3	2	1
1.4 Plan Fuel Requirements			
• Flight, (holding and alternate – when appropriate) fuel determined.	3	2	1
• Fuel reserves determined.	3	2	1
• Total fuel requirement determined.	3	2	1
1.5 Refuel aeroplane			
• Aeroplane is refuelled in accordance with Flight Manual, health and safety and local requirements.	3	2	1
1.6 Perform checks as appropriate			
• Pre-start, after start, taxiing and run-up checks	3	2	1
• Vital actions before take-off, checks during and after take-off, climb or descend checks	3	2	1
• Pre-landing and after landing checks	3	2	1
• Pre-shut down and after shut down checks	3	2	1
• Aeroplane secured after flight, post-flight checks	3	2	1
1.7 Taxiing aeroplane			

• Lookout and situational awareness	3	2	1
• Directional control and turning, including manoeuvring in confined spaces	3	2	1
• Effect of wind with regard to positioning of controls	3	2	1
• Propeller care and consideration of prop wash and slipstream	3	2	1
• Ground surface and slope considerations	3	2	1
• Appropriate taxiing speed	3	2	1
• Emergency situations including loss of steering, brakes or other emergencies are managed in accordance with Flight Manual.	3	2	1
1.8 Procedures			
• Taxi clearance or call is obtained or broadcast as applicable	3	2	1
• Correct airmanship demonstrated	3	2	1
• Approved marshalling signals are utilised	3	2	1

ELEMENT: 2. RADIO EQUIPMENT AND PROCEDURES

CODE: FR	Before Solo	Pilot Certificate	Inst Rating
2.1 Radio equipment			
• Familiarisation with radio equipment	3	2	1
• Familiarisation with intercom	3	2	1
• Familiarisation with transponder (if applicable)	3	2	1
2.2 Procedures			
• Radio use and procedures	3	2	1

ELEMENT: 3. EFFECT OF CONTROLS

CODE: EC	Before Solo	Pilot Certificate	Inst Rating
3.1 Airmanship considerations			
• Lookout	3	2	1
• Situational awareness	3	2	1
• Handover and take over procedures	3	2	1
• Follow me through procedures	3	2	1
3.2 Primary effects			
• Elevator	3	2	1
• Aileron	3	2	1
• Rudder	3	2	1
3.3 Secondary and further effects			
• Further effect of elevator	3	2	1
• Secondary effect of aileron	3	2	1
• Secondary effect of rudder	3	2	1
3.4 Ancillary controls and additional effects			
• Effect of airspeed	3	2	1
• Effect of slipstream	3	2	1
• Effect of power	3	2	1
• Control response at varying speeds and power settings	3	2	1
• Control response relative to aeroplane axis at any attitude	3	2	1
• Trim system	3	2	1
• Effects of flap (if fitted)	3	2	1
• Instrument indications			

ELEMENT: 4. STRAIGHT AND LEVEL

CODE: SL	Before Solo	Pilot Certificate	Inst Rating
4.1 Airmanship considerations			
• Lookout	3	2	1
• Use of clock code	3	2	1
• Situational awareness	3	2	1
• Scanning and work cycle to ensure correct management of S & L	3	2	1
• Identification of training area boundaries	3	2	1
4.2 Maintain straight and level flight			
• Straight and level - normal cruise (adjusting for heading or height deviations, or by instructor's direction)	3	2	1
• Straight and level - varying airspeeds (adjusting for heading or height deviations, or by instructor's direction)	3	2	1
• Balance technique	3	2	1
• Trim technique	3	2	1
• Stability considerations - lateral and longitudinal	3	2	1

ELEMENT: 5. CLIMBING AND DESCENDING

CODE: CD	Before Solo	Pilot Certificate	Inst Rating
5.1 Airmanship			
• Lookout prior to entering climb or descent	3	2	1
• Lookout and engine monitoring during climb or descent manoeuvres	3	2	1
• Situational awareness	3	2	1
5.2 Climbing aeroplane			
• Correct technique for climb entry	3	2	1
• Maintenance of required climb performance	3	2	1
• Return to straight and level	3	2	1
• Effect of flap	3	2	1
• Normal/cruise climb	3	2	1
• Best rate of climb	3	2	1
• Best angle of climb	3	2	1
5.3 Descending aeroplane			
• Correct technique for descent entry	3	2	1
• Maintenance of required descent performance	3	2	1
• Return to straight and level	3	2	1
• Effect of flap	3	2	1
• Glide descent	3	2	1
• Cruise descent	3	2	1
• Emergency descent	3	2	1

ELEMENT: 6. TURNING

CODE: TN	Before Solo	Pilot Certificate	Inst Rating
6.1 Airmanship			
• Lookout prior to entering turn, during turn and prior to exit	3	2	1
• Airframe limitations	3	2	1
• Situational awareness	3	2	1
6.2 Level Turns			
• Entry / exit technique with due regard to adverse aileron yaw	3	2	1
• Maintenance of turn performance	3	2	1
• Exit technique to specific geographic feature or compass heading	3	2	1
• Turns (30° AoB)	3	2	1
• Turns (45° AoB)	3	2	1
• Turns (60° AoB as appropriate)	3	2	1
6.3 Climbing turns			
• Climbing turns (15° AoB)	3	2	1
• Climbing turns - effect on climb rate at bank angles >15° AoB	3	2	1
6.4 Descending turns			
• Medium descending turns (30° AoB)	3	2	1
• Steep descending turns (45° AoB)	3	2	1

ELEMENT: 7. STALLING

CODE: ST	Before Solo	Pilot Certificate	Inst Rating
7.1 Airmanship			
• Pre manoeuvre checks carried out including height considerations / limitations	3	2	1
• Airspace cleared prior to each stall	3	2	1
• Airframe limitations	3	2	1
• Appropriate orientation	3	2	1
• Situational awareness	3	2	1
7.2 Stall and recover aeroplane with or without flaps (if fitted)			
• Correct entry technique from straight & level with and without flap	3	2	1
• Recognise symptoms of approaching stall and pre-stall recovery (all configurations)	3	2	1
• Recognise developed stall and post-stall recovery (all configurations) - with and without power	3	2	1
• Minimum height loss during recovery	3	2	1
• Correct recovery technique when wing drops	3	2	1
7.3 Stall and recover aeroplane in various attitudes with or without flaps and with various power settings			
• Correct entry technique for stall in nominated configuration	3	2	1
• Recognise symptoms of approaching stall and pre-stall recovery (all configurations)	3	2	1
• Correct recovery technique - with power (if available)	3	2	1
• Minimum height loss during recovery	3	2	1
7.4 Demonstration of stall entry at greater than 1G			
• Critical angle of attack is exceeded at a higher airspeed	-	-	1

ELEMENT: 8. CIRCUITS

CODE: CT	Before Solo	Pilot Certificate	Inst Rating
8.1 Airmanship			
• Effects of ambient weather conditions and fly neighbourly matters	3	2	1
• Circuit traffic levels and appropriate spacing	3	2	1
• Situational awareness - including circuit / inbound / outbound traffic	3	2	1
• Appropriate entry and exit runway procedures	3	2	1
8.2 Conduct circuits			
• Normal circuit	3	2	1
• Low level circuit	3	2	1
8.3 Take-offs and approaches / landings			
• Normal take-off	3	2	1
• Crosswind take-off	3	2	1
• Short field take-off	3	2	1
• Soft field take-off	3	2	1
• Glide approach and landing	3	2	1
• Powered approach and landing	3	2	1
• Cross wind approach and landing	3	2	1
• Short field approach and landing	3	2	1
• Full stop landing	3	2	1
• Touch and go landing	3	2	1
• Stop and go landing	3	2	1
• Flapless approach and landing (as applicable)	3	2	1
8.4 Short field circuits			
• Take off with due regard for short field procedures	3	2	1
• Appropriate circuit profile and procedures	3	2	1
• Powered approach and landing	3	2	1
• Brakes applied and controlled as appropriate	3	2	1
8.5 Emergencies and precautions in the circuit			
• Aborted take off	3	2	1
• Engine failure after take off	3	2	1
• Engine failure elsewhere in circuit	3	2	1
• Partial power failure and abnormal instrument indications	3	2	1
• Ancillary control failures including flaps, trim, etc.	3	2	1
• Flight instrument failures	3	2	1
• Undercarriage or tyre problems	3	2	1
• Considerations due to animal hazards	3	2	1
• Engine management considerations	3	2	1

8.6 Go-around procedures			
• Procedure from base leg	3	2	1
• Procedure from final approach	3	2	1
• Recovery from an unstable approach	3	2	1
• Procedure from overshoot or undershoot position	3	2	1
• Procedure after bounce or balloon	3	2	1
• Recognition and appropriate procedure from pilot induced oscillation	3	2	1
• Awareness of engine management considerations	3	2	1

ELEMENT: 9. FORCED LANDING AND PRECAUTIONARY SEARCH

CODE: FL	Before Solo	Pilot Certificate	Inst Rating
9.1 Airmanship			
• Lookout	3	2	1
• Situational awareness	3	2	1
• Engine clearing / warming	3	2	1
9.2 Forced landings			
• Initial actions	3	2	1
• Best glide speed selected and trim	3	2	1
• Landing area general selection	3	2	1
• Radio broadcast (mayday)	3	2	1
• Detailed trouble checks	3	2	1
• Engine restart (if applicable) and management considerations	3	2	1
• Activation of PLB/ELT	3	2	1
• Passenger brief	3	2	1
• Shutdown checks (as appropriate)	3	2	1
• Go-around height when undertaking training	3	2	1
9.3 Sideslip aeroplane			
• Aerodynamic or airframe limitations considered and complied with	3	2	1
• Correct entry technique utilised	3	2	1
• Slip conducted with or without flaps (subject to Flight Manual limitations)	3	2	1
• Slip is maintained and monitored throughout manoeuvre	3	2	1
• Slipping turns	3	2	1
• Correct exit technique utilised	3	2	1
9.4 Precautionary search and landing			
• Determine need	3	2	1
• Advice to ATS or other aeroplanes (as applicable)	3	2	1
• Field selection	3	2	1
• Inspection runs	3	2	1
• Go-around height for training purposes	3	2	1

ELEMENT: 10. OPERATIONS IN THE TRAINING AREA

CODE: TA	Before Solo	Pilot Certificate	Inst Rating
10.1 Airmanship			
• Approval and duration of flight is determined	3	2	1
• Situational awareness of traffic and weather requirements	3	2	1
• Fuel requirements	3	2	1
• Lost procedures (if appropriate)	3	2	1
• Training area boundaries	3	2	1
10.2 Transit to and from training area			
• Circuit departure procedures	3	2	1
• Circuit joining procedures	3	2	1
• Transit to and from training area	3	2	1

ELEMENT: 11. MANAGE ABNORMAL SITUATIONS AND EMERGENCIES

CODE: EO	Before Solo	Pilot Certificate	Inst Rating
11.1 Control systems			
• Procedures for flight control loss or malfunction	3	2	1
• Procedures for ancillary control loss or malfunction	3	2	1
• Airframe including flaps or hatches, etc.	3	2	1
11.2 Other abnormal or emergency situations			
• Fire, smoke or fumes	3	2	1
• Recovery from unusual attitudes	3	2	1
• Spiral dive recognition and recovery	3	2	1
• Collision avoidance / controllability checks after a collision	3	2	1
• Loss of radio or intercom transmissions	3	2	1
• Airspeed indicator, altimeter or other instrument malfunction	3	2	1
• Ditching (type specific)	3	2	1

-End of Group A Syllabus-

UNIT 1.02 – GROUP B (WEIGHT SHIFT) SYLLABUS

ELEMENT: 1. FLIGHT PREPARATION

Standard	Before Solo	Pilot Certificate	Inst Rating
1.1 Aeroplane Stability and Control			
• Provide a thorough explanation of the design and forces that provide stability and control of a Weight Shift aeroplane	3	2	1
1.2 Complete pre & post flight administration			
• Daily and pre-flight inspection conducted including checking of fluid levels and aeroplane serviceability	3	2	1
• Aeroplane is prepared for flight-untied or moved to appropriate start up area	3	2	1
• Equipment and documentation as required by regulations is identified and secured in the aeroplane, and internal and external checks are completed in accordance with approved checklist	3	2	1
• Aeroplane take-off and landing performance is calculated in accordance with performance and weight and balance charts with due regard to the operation to be conducted	3	2	1
• Pre and post flight logbook and flight administration is completed in accordance with Technical Manual and/or Operations Manual	3	2	**1**
1.3 Perform Daily and Pre-flight Inspection			
• Wing examination conducted as per approved checklist	3	2	1
• Trike examination conducted as per approved checklist	3	2	1
1.4 Certify Daily Inspection			
• Record and certify required details of daily inspection in accordance with regulations	3	2	1

ELEMENT: 2. THE CONTROLS

Standard	Before Solo	Pilot Certificate	Inst Rating
Flight Controls			
2.1 Pitch			
• Pitch control achieved by moving control bar outwards and inwards	3	2	1
2.2 Roll			
• Roll control achieved by moving control bar sideways	3	2	1
2.3 Trim			
• Trim control achieved by use of trim mechanism (if fitted)	3	2	1
Engine Controls			
2.4 Master / Ignition			
• Operation of master switch, ignition switch/s, starter system.	3	2	1
2.1 Throttle			
• Operation of foot and hand throttle to increase and decrease engine power.	3	2	1 1
2.6 Start and Stop engine			
• Pre start checks are completed and engine is started in accordance with Flight Manual	3	2	1
• After start checks are completed in accordance with Flight Manual	3	2	1
• Emergencies are managed in accordance with Flight Manual	3	2	1
• Pre and after shutdown checks are completed in accordance with Flight Manual	3	2	1

ELEMENT: 3. INSTRUMENTS

Standard	Before Solo	Pilot Certificate	Inst Rating
3.1 Engine management instruments			
• Identification, understanding, operation and monitoring of all engine instrumentation	3	2	1
3.2 Fuel management instruments			
• Identification, understanding, operation and monitoring of fuel management instruments	3	2	1
3.3 Flight instruments			
• Identification, understanding, operation and monitoring of aeroplane flight instruments	3	2	1

ELEMENT: 4. FUEL SYSTEM, USE AND MANAGEMENT

Standard	Before Solo	Pilot Certificate	Inst Rating
4.1 Fuel System			
• Components of fuel system	3	2	1
4.2 Plan Fuel Requirements			
• Duration of flight determined • Fuel reserves determined • Total fuel requirement determined	3 3 3	2 2 2	1 1 1
4.3 Refuel aeroplane			
• Aeroplane is refuelled in accordance with Flight Manual, health and safety and local requirements	3	2	1

ELEMENT: 5. TAXIING

Standard	Before Solo	Pilot Certificate	Inst Rating
1.5 Taxi Aeroplane			
• Steering is accomplished by the use of feet on nose wheel steering mechanism (billy cart style)	3	2	1
• Forward movement is accomplished by use of engine power (thrust)	3	2	1
• Brakes are used to arrest or control forward movement	3	2	1
• Wing controls (pitch and roll) are used to assist in directional control, aeroplane safety and pilot visibility	3	2	1

ELEMENT: 6. CARRY OUT PRE TAKE-OFF CHECKS

Standard	Before Solo	Pilot Certificate	Inst Rating
6.1 Carry out pre take-off checks			
• Stop at holding point and perform pre take-off checks.	3	2	1

ELEMENT: 7. TAKE-OFF AEROPLANE

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
7.1 Line-up Aeroplane			
• Aeroplane lined up in the centre of the runway in take-off direction and line-up checks carried out	3	2	1
7.2 Take-off			
• Take-off power is applied, aeroplane maintained on runway centreline and lift off established at manufacturers recommended airspeed	3	2	1
• Climb, airspeed and take-off direction maintained as required	3	2	1
7.3 Perform after take-off checks			
• After take-off checks performed	3	2	1

ELEMENT: 8. OPERATION OF CONTROLS / STRAIGHT AND LEVEL FLIGHT

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
8.1 Demonstration of Stability			
• Lookout	3	2	1
• Situational awareness	3	2	1
• Handover and takeover procedures	3	2	1
• Follow me through procedures	3	2	1
• Demonstration of stability in trim	3	2	1
8.2 Operation of Controls			
• Primary effects	3	2	1
• Secondary effects	3	2	1
• Effect of airspeed	3	2	1
• Effect of slipstream	3	2	1
• Effect of power	3	2	1
• Control response at varying speeds and power settings	3	2	1
• Instrument indications	3	2	1
8.3 Maintain Straight and Level Flight			
• Straight and level at normal cruise (adjusting for minor heading and height corrections)	3	2	1
8.4 Maintain Straight and Level Flight At Various Airspeeds			
• Attitude and power are adjusted to achieve a constant height, heading and airspeed and other nominated airspeeds. (adjusting for minor heading and height corrections)	3	2	1
• Trim technique	3	2	1

ELEMENT: 9. CLIMBING AND DESCENDING

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
9.1 Climbing			
• Lookout prior to entering climb or descent	3	2	1
• Lookout during climb or descent manoeuvres	3	2	1
• Situational awareness	3	2	1
• Correct technique for climb entry	3	2	1
• Maintenance of required climb performance	3	2	1
• Engine management considerations	3	2	1
• Correct technique for levelling off	3	2	1
• Cruise climb	3	2	1
• Best rate climb	3	2	1
• Best angle climb	3	2	1
9.2 Descending			
• Lookout	3	2	1
• Situational awareness	3	2	1
• Correct technique for descent entry	3	2	1
• Maintenance of required descent performance	3	2	1
• Engine management considerations	3	2	1
• Correct technique for levelling off	3	2	1
• Cruise descent	3	2	1
• Glide descent	3	2	1
• Emergency descent	3	2	1

ELEMENT: 10. TURNING FLIGHT (maximum 45° AoB)

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
10.1 Level, Climbing and Descending Turns			
• Lookout prior to entering turn, during turn and prior to exit	3	2	1
• Situational awareness	3	2	1
• Entry technique	3	2	1
• Maintenance of turn performance	3	2	1
• Exit technique to specific geographic feature or compass heading	3	2	1
• Turns are performed at varying angles of bank	3	2	1
• Aeroplane is turned during level, climbing, descending and gliding manoeuvres	3	2	1
10.2 Billow Shift			
• Consideration of the effect on turning	3	2	1

ELEMENT: 11. STALL ENTRY AND RECOVERY

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
11.1 Approach Stall			
• Pre manoeuvre checks carried out	3	2	1
• Airspace cleared prior to each stall	3	2	1
• Appropriate orientation	3	2	1
• Situational awareness	3	2	1
• Correct entry technique	3	2	1
• Recognition of symptoms for approaching stall	3	2	1
11.2 Stall Entry			
• Recognition of stalled condition	3	2	1
11.3 Stall Recovery			
• Recovery technique for stall - without power	3	2	1
• Recovery technique for stall - with power	3	2	1
• Minimum height loss	3	2	1
11.4 Stall Recovery While Turning			
• Aeroplane attitude and power settings adjusted to correctly and safely recover from stall and resume normal flight	3	2	1

ELEMENT: 12. CIRCUITS

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
12.1 Perform Circuits and Approach For Landing			
• Assessment of weather conditions and the associated effects on the circuit and appropriate spacing.	3	2	1
• Situational awareness including traffic	3	2	1
• Appropriate entry and exit runway procedures	3	2	1
• Take off-controlled and aligned with runway centreline	3	2	1
• Normal circuit profile and procedures	3	2	1

ELEMENT: 13. LANDING

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
13.1 Normal Landing			
• Glide approach and landing	3	2	1
• Powered approach and landing	3	2	1
• Touch and go landing	3	2	1
• Stop and go landing	3	2	1
• Full stop landing	3	2	1
• After landing checks completed	3	2	1
13.2 Cross Wind Landing			
• Take off with due regard for crosswind effect	3	2	1
• Crosswind circuit profile and procedures	3	2	1
• Glide approach and landing	3	2	1
• Powered approach and landing	3	2	1
• Touch and go landing	3	2	1
• Stop and go landing	3	2	1
• Full stop landing	3	2	1
• Drift and cross wind effect are controlled	3	2	1
• After landing checks completed	3	2	1

ELEMENT: 14. MISSED APPROACHES

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
14.1 Missed Approach and Go Around			
• Procedure from base	3	2	1
• Procedure from final	3	2	1
• Recovery from an unstable approach	3	2	1
• Procedure from overshoot or undershoot position	3	2	1
• Procedure after bounce or balloon	3	2	1
• Recognition and appropriate procedure from pilot induced oscillation	3	2	1
• Awareness of engine management considerations	3	2	1
• Control of aeroplane and situational awareness of circuit pattern and traffic is maintained	3	2	1

ELEMENT: 15. ENGINE FAILURE ON TAKE-OFF

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
15.1 Manage Engine Failure on Take-Off			
• Aborted take off	3	2	1
• Engine failure on take off	3	2	1
• Partial power failure	3	2	1
• Control failures - throttle, etc. (simulated if required)	3	2	1
• Undercarriage or tyre problems	3	2	1
• Animal hazards	3	2	1
• Engine management considerations	3	2	1

ELEMENT: 16. ENGINE FAILURE IN CIRCUIT

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
16.1 Manage Engine Failures in all Areas of the Circuit			
• Immediate actions are performed in accordance with Flight Manual	3	2	1
• Emergency procedures are performed according to Flight Manual	3	2	1
• Engine management considerations	3	2	1

ELEMENT: 17. FIRST SOLO

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
17.1 Perform Solo Flight			
• Fly one circuit (as briefed) and conduct a full stop landing	3	/	/

ELEMENT: 18. STEEP TURNS

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
18.1 Steep Turns (>45° AoB)			
• Lookout prior to entering turn, during turn and prior to exit	3	2	1
• Situational awareness	3	2	1
• Maintenance of turn performance	3	2	1
• Level steep turns achieved without altitude change	3	2	1
18.2 Steep Descending Turns (max 45° AoB)			
• Lookout prior to entering turn, during turn and prior to exit	3	2	1
• Situational awareness	3	2	1
• Maintenance of turn performance	3	2	1
18.3 Spiral Dive Recovery			
• Recognition of a spiral dive	3	2	1
• Recovery from a spiral dive is performed	3	2	1

ELEMENT: 19. FORCED LANDING

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
19.1 Perform a Forced Landing			
• Situational awareness	3	2	1
• Initial actions	3	2	1
• Best glide speed selected and trimmed	3	2	1
• Landing area general selection	3	2	1
• Detailed trouble checks	3	2	1
• Engine restart (if applicable) and management considerations	3	2	1
• Passenger brief	3	2	1
• Shutdown checks (as appropriate)	3	2	1
• Go-around height when undertaking training	3	2	1

ELEMENT: 20. MANAGE ABNORMAL SITUATIONS

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
20.1 Recover from Unusual Attitudes			
• Return aeroplane to normal flight after experiencing an unusual attitude	3	2	1
20.2 Tuck/Tumble Avoidance			
• Considerations of Tuck/Tumble avoidance	3	2	1
20.3 Manage In-Flight Abnormal Situations			
• Appropriate emergency action and procedures are carried out in accordance with Flight Manual while maintaining control of the aeroplane	3	2	1
• Fire, smoke or fumes in engine bay	3	2	1
• Collision avoidance	3	2	1
• Correct engine management for engine type in all flight modes	3	2	1

ELEMENT: 21. PRECAUTIONARY SEARCH AND LANDING

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
21.1 Conduct Precautionary Search and Landing			
• Determine need - weather, light, passenger, etc.	3	2	1
• Advice to ATS or other aeroplanes (as applicable)	3	2	1
• Field selection	3	2	1
• Inspection runs	3	2	1
• Go-around height for training purposes	3	2	1

ELEMENT: 22. OFF-AIRFIELD OPERATIONS

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
22.1 Short Field Take-off			
• Take off with due regard for short field procedures	3	2	1
• Correct engine management for engine type in all flight modes	3	2	1
• Directional control maintained	3	2	1
22.2 Short Field Landing			
• Aeroplane touches down on or within 10M beyond the nominated touchdown point	3	2	1
• Maximum braking applied to stop aeroplane (without wheel lockup)	3	2	1
• Directional control maintained	3	2	1
• Ballooning, bouncing and pilot induced oscillation is recognised and controlled	3	2	1
22.3 Soft Field Take-off			
• Take off with due regard for soft field procedures	3	2	1
• Correct engine management for engine type in all flight modes	3	2	1
• Directional control maintained	3	2	1
22.4 Soft Field Landing			
• Aeroplane touches down on or within 10M beyond the nominated touchdown point using soft field landing technique.	3	2	1
• Braking used as required.	3	2	1
• Directional control maintained.	3	2	1
• Ballooning, bouncing and pilot induced oscillation is recognised and controlled.	3	2	1

ELEMENT: 23. LOW LEVEL OPERATIONS (100FT-1000FT AGL)

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
23.1 Safety and Navigation			
• Lookout	3	2	1
• Situational awareness	3	2	1
• Forced landing considerations	3	2	1
• Join circuit safely with consideration of other traffic and circuit levels	3	2	1

ELEMENT: 24. DEPART AND REJOIN CIRCUIT

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
24.1 Depart Circuit			
• Circuit departure procedures	3	2	1
• Situational awareness of traffic and weather requirements	3	2	1
24.2 Rejoin Circuit			
• Circuit joining procedures	3	2	1
• Situational awareness and sequencing with traffic	3	2	1

ELEMENT: 25. FIRST TRAINING AREA SOLO

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
25.1 Perform Solo Flight in Training Area			
• Transit to and from training area	3	2	1
• Fly for a defined time and perform approved manoeuvres in the training area.	3	2	1
• Return to airfield and perform a full stop landing.	3	2	1

-End of Group B Syllabus-

UNIT 1.03 – GROUP D (POWERED PARACHUTE) SYLLABUS

ELEMENT: 1. THE AEROPLANE (Daily inspection)

Standard	Before Solo	Pilot Certificate	Inst Rating
1.1 Complete pre & post flight administration			
• Flight briefing and planning according to current regulations and Recreational Aviation Australia Inc. Operations Manual	3	2	1
• Aeroplane performance and loading limitations calculated using the Flight Manual	3	2	1
• Aeroplane maintenance serviceability determined	3	2	1
• Canopy types, characteristics and performance considerations	3	2	1
1.2 Perform daily and pre-flight inspection			
• Canopy examination conducted as per approved checklist	3	2	1
• Base examination conducted as per approved checklist	3	2	1
1.3 Certify daily inspection			
• Record and certify required details of daily inspection in accordance with regulations	3	2	1
• Canopy type and performance endorsement requirements complied with	3	2	1

ELEMENT: 2. THE CONTROLS

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
Flight controls			
2.1 Pitch			
• Pitch control achieved by power application/reduction	3	2	1
2.2 Yaw			
• Yaw control achieved by flaring canopy in the direction of turn	3	2	1
Engine Controls			
2.3 Master / Ignition			
• Operation of master switch, ignition switch/s, starter system	3	2	1
2.4 Throttle			
• Operation of throttle to increase and decrease engine power	3	2	1
2.5 Fuel supply			
• Operation of aeroplane fuel containment tank/s, fuel delivery system to engine, quantity indicator/s, auxiliary fuel pump/s, fuel flow indicators, refuelling procedures	3	2	1
2.6 Start and stop engine			
• Pre start warm up checks are completed and engine is started in accordance with Flight Manual	3	2	1
• After start warm up checks are completed in accordance with Flight Manual	3	2	1
• Emergencies are managed in accordance with Flight Manual	3	2	1
• Pre and after shutdown checks are completed in accordance with Flight Manual	3	2	1
2.7 Base operations			
• Familiarisation of features specific to the base	3	2	1

ELEMENT: 3. INSTRUMENTS

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
3.1 Engine management instruments			
• Identification, understanding, operation and monitoring of all engine instrumentation	3	2	1
3.2 Fuel management instruments			
• Identification, understanding, operation and monitoring of fuel management instruments	3	2	1
3.3 Flight instruments			
• Identification, understanding, operation and monitoring of aeroplane flight instruments	3	2	1

ELEMENT: 4. FUEL SYSTEM, USE AND MANAGEMENT

Standard	Before Solo	Pilot Certificate	Inst Rating
4.1 Fuel system			
• Components of fuel system	3	2	1
4.2 Plan fuel requirements			
• Duration of flight determined • Fuel reserves determined • Total fuel requirement determined	3 3 3	2 2 2	1 1 1
4.3 Refuel aeroplane			
• Aeroplane is refuelled in accordance with Flight Manual, health and safety and local requirements.	3	2	1

ELEMENT: 5. TAXIING

Standard	Before Solo	Pilot Certificate	Inst Rating
5.1 Taxi aeroplane			
• Ground control (fixed or steerable steering) • Forward movement is accomplished by use of engine power (thrust) • Brakes are used to arrest or control forward movement • Canopy controls are used to assist in directional control, and canopy position	3 3 3 3	2 2 2 2	1 1 1 1

ELEMENT: 6. ENGINE WARM UP AND CARRY OUT PRE TAKE-OFF CHECKS

Standard	Before Solo	Pilot Certificate	Inst Rating
6.1 Carry out Pre Take-off checks			
• Engine warm up and perform pre take-off checks	3	2	1
• Aircraft correctly configured for intended operation	3	2	1

ELEMENT: 7. TAKE-OFF AEROPLANE

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
7.1 Line-up aeroplane			
• Aeroplane lined up in the centre of the runway in take-off direction and line-up checks carried out	3	2	1
• Preparation of canopy on ground for inflation	3	2	1
7.2 Canopy transition			
• Canopy inflation	3	2	1
• Canopy transition from ground to flying position	3	2	1
• Pre take-off checks on canopy	3	2	1
7.3 Take-off			
• Take-off power is applied, aeroplane direction on runway centre is maintained, canopy position observed and lift off established at manufacturers recommended airspeed	3	2	1
• Climb, airspeed and take-off direction maintained as required	3	2	1
7.4 Perform after take-off checks			
• After take-off checks performed	3	2	1
7.5 Short field take-off			
• Perform a short field take-off	3	2	1

ELEMENT: 8. STRAIGHT AND LEVEL FLIGHT

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
8.1 Maintain straight and level flight			
• Power is adjusted to achieve a constant height, heading and airspeed	3	2	1

ELEMENT: 9. CLIMBING AND DESCENDING

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
9.1 Climbing			
• Power is adjusted to achieve an increase in altitude at a range of rates of climb (maximum climb, cruise climb and gentle climb)	3	2	1
• Aeroplane is levelled off from climb at a nominated altitude	3	2	1
9.2 Descending			
• Power is adjusted to achieve a decrease in altitude at a range of rates (from glide/idle descent through to powered descent)	3	2	1
• Aeroplane is levelled off from descent at nominated altitude	3	2	1

ELEMENT: 10. TURNING FLIGHT

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
10.1 Level, climbing and descending turns			
• Clear airspace procedure carried out	3	2	1
• Aeroplane is turned during level, climbing, descending and gliding manoeuvres	3	2	1
• Turns are performed at varying angles of bank	3	2	1
• Turns to nominated headings or geographical features are achieved	3	2	1

ELEMENT: 11. CANOPY STALL RECOVERY PROCEDURES

Intentional canopy stalling not permitted; recovery procedures to be practiced

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
11.1 Canopy stall			
• Verbally explain canopy stall and causal factors	3	2	1
• Pre stall recognition and recovery	3	2	1
11.2 Canopy collapse			
• Verbally explain canopy collapse and causal factor	3	2	1
• Practically demonstrate canopy collapse recovery actions	3	2	1

ELEMENT: 12. ENGINE FAILURE ON TAKE-OFF

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
12.1 Manage engine failure on take-off			
• Immediate actions are performed in accordance with Flight Manual	3	2	1
• A landing area is selected within gliding distance; emergency procedures are performed in accordance with the Flight Manual	3	2	1

ELEMENT: 13. ENGINE FAILURE IN CIRCUIT (GLIDE APPROACH)

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
13.1 Manage engine failure on crosswind, downwind, base and final circuit legs			
• Immediate actions are performed in accordance with Flight Manual	3	2	1
• The most suitable landing area within gliding distance is selected	3	2	1
• Emergency procedures are performed according to Flight Manual	3	2	1

ELEMENT: 14. CIRCUITS

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
14.1 Perform circuits and approach for landing			
• Circuits are conducted in accordance with appropriate regulations including RA-Aus Operations Manual and local approved procedures	3	2	1
• Circuit checklists are carried out in accordance with Flight Manual and approved training procedures	3	2	1
• Circuit radio procedures carried out in accordance with appropriate regulations including RA-Aus Operations Manual and local approved procedures	3	2	1
• Conflict with other traffic in the circuit area is avoided	3	2	1

ELEMENT: 15. LANDING

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
15.1 Normal landing			
• Aeroplane is landed from a controlled descent and aligned with the runway centre line	3	2	1
• Aeroplane is landed into wind	3	2	1
• Ballooning and bouncing controlled	3	2	1
• Directional control is maintained during landing and roll out phase	3	2	1
• Aeroplane is stopped within the available runway length or touch and go manoeuvre is initiated	3	2	1
• After landing checks completed	3	2	1
15.2 Cross wind landing			
• Aeroplane landed within the cross wind and pilot capabilities	3	2	1
• Ballooning and bouncing controlled	3	2	1
• Aeroplane is landed from a controlled descent and aligned with the runway centre line	3	2	1
• Drift and crosswind effect are controlled. Aeroplane is stopped within the available runway length or a touch and go manoeuvre is initiated	3	2	1
• After landing checks completed	3	2	1
15.3 Short field landing			
• Aeroplane touches down on or within 40M beyond the nominated touchdown point	3	2	1
• Maximum braking applied to stop aeroplane (without wheel lockup, if applicable)	3	2	1
• Directional control maintained.	3	2	1
• Ballooning and bouncing controlled	3	2	1
• Full stop landing, canopy deflation, engine shutdown	3	2	1
15.4 Soft field landing			
• Aeroplane touches down on or within 40M beyond the nominated touchdown point using soft field landing technique	3	2	1
• Braking used as required(if applicable)	3	2	1
• Directional control maintained	3	2	1
• Ballooning and bouncing controlled	3	2	1

ELEMENT: 16. MISSED APPROACH AND GO-AROUND

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
16.1 Missed approach and go around			
• Decision to perform a missed approach procedure is made when a safe landing cannot be achieved	3	2	1
• Control of aeroplane and situational awareness of circuit pattern and traffic is maintained	3	2	1

ELEMENT: 17. FIRST SOLO CIRCUIT

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
17.1 Perform solo flight circuit			
• Fly one circuit (as briefed) and conduct a full stop landing	3	-	-

ELEMENT: 18. FORCED LANDING

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
18.1 Perform a forced landing on take-off			
• Immediate actions are performed in accordance with Flight Manual	3	2	1
• A suitable landing area is selected within gliding distance, all emergency checks are carried out in accordance with the Flight Manual and if engine restart is not successful, a controlled landing is achieved	3	2	1
18.2 Perform a forced landing in the circuit			
• Immediate actions are performed in accordance with Flight Manual	3	2	1
• A suitable landing area is selected within gliding distance, all emergency checks are carried out in accordance with the Flight Manual and if engine restart is not successful, a controlled landing is achieved	3	2	1
• Correct engine management for engine type in all flight modes	3	2	1
18.3 Perform a forced landing in training area			
• Immediate actions are performed in accordance with Flight Manual	3	2	1
• A suitable landing area is selected within gliding distance, all emergency checks are carried out in accordance with the Flight Manual and if engine restart is not successful, a controlled landing is achieved	3	2	1
• Correct engine management for engine type in all flight modes	3	2	1

ELEMENT: 19. MANAGE ABNORMAL SITUATIONS

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
19.1 Unusual Canopy inflation			
• Return aeroplane to normal flight attitude and undertake a simulated forced landing keeping the aeroplane under control	3	2	1
• Loss of directional control on take-off managed appropriately	3	2	1
• Horseshoe inflation managed appropriately	3	2	1
19.2 Steering line failure			
• Return aeroplane to normal flight attitude and undertake a simulated forced landing keeping the aeroplane under control	3	2	1
19.3 Manage in-flight abnormal situations			
• Abnormal situations occurring with fuel, electrical, airframe, flight instrument, flight control, engine, navigation, communication equipment, passenger, fire, smoke or fumes are identified	3	2	1
• Appropriate emergency action and procedures are carried out in accordance with Flight Manual while maintaining control of the aeroplane	3	2	1
• Correct engine management for engine type in all flight modes	3	2	1

ELEMENT: 20. PRECAUTIONARY SEARCH AND LANDING

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
20.1 Conduct precautionary search and landing			
• Acknowledgement of need to conduct a precautionary search and landing	3	2	1
• Radio broadcast with advice of intentions	3	2	1
• A landing area is selected and inspected for suitable approach, landing distance, surface, and go around clearance	3	2	1
• The aeroplane is landed	3	2	1

ELEMENT: 21.TRAINING AREA SOLO

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
21.1 Perform solo flight in training area			
• Fly for a defined time and perform defined manoeuvres in the training area	3	2	1
• Return to airfield and perform a full stop landing	3	2	1

NOTE: In accordance with Section 2.01 Paragraph 2, a Pilot Certificate holder endorsed with Group D must only act as PIC of Powered Parachute recreational aeroplanes fitted with canopy types and performance characteristics for which they hold a valid logbook endorsement. Accordingly, the RA-Aus Examiner must endorse a Group D Pilot Certificate holder's logbook with relevant information of the canopy type and performance characteristics they have been trained to operate. For type endorsement purposes, all elements of this syllabus are required to be completed.

The logbook endorsement must state whether the canopy type is Box (rectangular), Semi-elliptical or Elliptical and also state the performance characteristic of each type as being Low or High performance. A logbook endorsement must be sought for each combination of type and performance characteristic.

Only certified low performance canopies matched to a certified base by an approved manufacturer are to be used for initial flight training.

-End of Group D Syllabus-

UNIT 1.04 – PASSENGER CARRYING ENDORSEMENT SYLLABUS

ELEMENT: 1. PASSENGER CARRYING ENDORSEMENT

Flying Standard	Pilot Certificate	Instructor Rating
1.1 Brief passenger		
• Passenger is thoroughly briefed and prepared for flight	2	1
1.2 Seat and secure passenger		
• Passenger secured in passenger seat, operation of seatbelt/harness , emergency egress, non-interference with controls, operation of door (if applicable)	2	1
1.3 Monitor and manage passenger		
• Passenger is regularly checked • Nervous or anxious passenger • Turbulence • Airsick passenger • Passenger grabs pilot or aeroplane controls • Passenger faints or becomes unconscious	2 2 2 2 2 2	1 1 1 1 1 1
1.4 Pilot the aeroplane		
• Fly the aeroplane with the extra weight and changed handling characteristics	2	1
1.5 Emergency situations		
• Incorporate passenger briefing and passenger management into normal and emergency procedures	2	1
1.6 Legal considerations		
• Pilot briefs passenger on legal requirements for flight	2	1

-End of Passenger Carrying Endorsement Syllabus-

UNIT 1.05 – CROSS COUNTRY ENDORSEMENT SYLLABUS

ELEMENT: 1. CROSS COUNTRY FLIGHT

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
1.1 Prepare flight plan and comply with airspace requirements			
• Appropriate current charts and documentation are selected and prepared	3	2	1
• Applicable information obtained, analysed and applied to produce a detailed flight plan	3	2	1
1.2 Notification and SARWATCH			
• Flight plan and SARWATCH details are given to a competent person to activate SAR if required	3	2	1
1.3 Navigate aeroplane			
• Departure track is intercepted within 1NM of departure aerodrome and departure time recorded	3	2	1
• Planned route maintained	3	2	1
• In flight recording is completed	3	2	1
• Waypoint ETA's are checked and revised if required.	3	2	1
• Fuel use is monitored and fuel planning revised if required	3	2	1
• Waypoint or pre descent checks completed	3	2	1
• Track maintenance and adjustments or corrections made as required in accordance with 1 in 60 rule	3	2	1
1.4 Low level navigation			
• Navigate at low level in accordance with CAO 95.55, 95.32, 95.10 -Flight Conditions	3	2	1
1.5 Perform lost procedure			
• Position is fixed, new track to destination or diversion point determined within fuel and daylight limitations. Revised ETA calculated. Radio is used to obtain assistance. Navigation aids used for assistance	3	2	1
• Use of landmarks and tracking features are used	3	2	1
1.6 Plan and perform diversion			
• Diversion to an alternative landing or waypoint	3	2	1
1.7 Execute arrival procedures			
• Applicable destination information obtained and applied	3	2	1
• Radio communication established	3	2	1
• Arrival at destination aerodrome in accordance with airspace requirements	3	2	1
• SARWATCH cancelled	3	2	1
1.8 Use of electronic devices as a supplement to navigational procedures			
Advice on the use of GPS to supplement DR procedures, and limitations of non-TSO instruments and electronic devices	3	2	1

-End of Cross Country Endorsement Syllabus-

UNIT 1.06 – FORMATION ENDORSEMENT SYLLABUS

ELEMENT: 1. AIRMANSHIP

FLYING STANDARD	Pilot Certificate	Inst Rating
1.1 Airmanship considerations		
• Understand all legislative requirements with regard to formation flight	2	1
• Understand noise abatement procedures in relation to formation flight	2	1
• Consideration of suitability of aeroplanes	2	1

ELEMENT: 2. FLYING LEAD

FLYING STANDARD	Pilot Certificate	Inst Rating
2.1 Brief and lead a formation		
• Briefing	2	1
• Leadership responsibilities	2	1
• Planning and execution	2	1
• Mixed aeroplane types	2	1
• Communications	2	1
• Hand signals	2	1
• Start up	2	1
• Taxiing.	2	1
• Take-off	2	1
• Forming up.	2	1
• Emergency procedures	2	1
• Collision actions	2	1
• Loss of contact actions	2	1
• Relinquish lead / lead change	2	1

ELEMENT: 3. FLYING NON-LEAD

FLYING STANDARD	Pilot Certificate	Inst Rating
3.1 Maintain station while taxiing		
• Line astern	2	1
• Echelon right or left	2	1
3.2 Stream Take-off		
• Line astern	2	1
• Echelon right or left	2	1
3.3 Maintain station in flight		
• Line astern	2	1
• Echelon left	2	1
• Echelon right	2	1
• Line abreast	2	1
3.4 Conduct join-up and breakaway manoeuvres		
• Formation join up	2	1
• Breakaway and rejoin	2	1
• Initial and pitch	2	1
3.5 Formation signals		
• Interpret standard formation hand signals	2	1
• Interpret standard formation radio signals	2	1
3.6 Change of leader		
• Change of leader procedure	2	1
3.7 Approach and landing		
• Initial and pitch	2	1
• Stream landing	2	1
• Pairs landing	2	1
• Missed approach if inadequate separation	2	1

ELEMENT: 4. EMERGENCY PROCEDURES

FLYING STANDARD	Pilot Certificate	Inst Rating
4.1 Engine problems		
• Formation breakup	2	1
• Radio procedures (Lead)	2	1
• Emergency procedure followed by PIC as per Aeroplane Operating Handbook	2	1
• SAR assistance	2	1
4.2 Collision		
• Formation breakup	2	1
• Visual inspection from another aeroplane or from the ground	2	1
• Controllability check	2	1
4.3 Radio failure		
• Radio failure procedure	2	1
• Return to base procedure	2	1

-End of Formation Endorsement Syllabus-

UNIT 1.07 – ADVANCED PILOT AWARD SYLLABUS

ELEMENT: 1. AIRMANSHIP

Flying Standard	Pilot Certificate	Inst Rating
1.1 General Airmanship		
• Lookout is maintained during operations on both the ground and in the air	2	1
• Scan technique is used to promote lookout	2	1
• Decision making is consistent with good aeronautical practice and all normal operating practices and rules are adhered to	2	1
• Engine handling is conducted in a manner that is conducive with good aeronautical practices and is consistent with aeroplane Flight Manual	2	1
• Ground handling is conducted in a safe manner conducive with good aeronautical practice and its operation prevents damage to it or other aeroplanes or persons on the ground	2	1
• A candidate shall not be recommended for the issue of an APA should the testing officer have to take control to prevent a potential airframe or engine exceedance, or for any other safety reason	2	1

ELEMENT: 2. TAKE-OFF SAFETY BRIEF

Flying Standard	Pilot Certificate	Inst Rating
2.1 Engine failure safety brief		
• Candidate' pre take-off safety brief to include engine failure on take-off, whilst still on ground	2	1
• Engine failure on take-off after the aeroplane is airborne but with runway remaining	2	1
• Engine failure on take-off after the aeroplane is airborne and must land outside the aerodrome boundary	2	1
• Engine failure on take-off after the aeroplane is airborne and is at a height that is consistent with a safe significant turn from runway heading or execution of a turn back	2	1
• The turn back is described by direction and is consistent with aeroplane performance and safe aeronautical practice given the topography and the current wind	2	1

ELEMENT: 3. STEEP LAZY EIGHTS

Flying Standard	Pilot Certificate	Inst Rating
3.1 Entry		
• Pre-manoeuvre checks completed	2	1
• Reference point established	2	1
• Entry into the manoeuvre is initiated from straight and level in balanced flight and altitude and airspeed noted	2	1
3.2 Maintenance		
• Climbing turn is initiated through 90 degrees at nominated bank angle	2	1
• Turn is continued through 180 degrees and descent is initiated, wings are level through reference point at previous altitude and airspeed	2	1
• Climbing turn is initiated through 90 degrees at nominated bank angle	2	1
• Turn is continued through 180 degrees and descent is initiated, wings are level through reference point at previous altitude and airspeed	2	1
3.3 Airmanship		
• Lookout is maintained at all times during manoeuvre	2	1
• Aeroplane bank angle does not exceed 60 degrees	2	1

ELEMENT: 4. MAINTAIN BALANCED FLIGHT

Flying Standard	Pilot Certificate	Inst Rating
4.1 Co-ordination		
• Co-ordination is maintained during all operations with the exception of side slipping and aeroplane is flown smoothly and safely	2	1

ELEMENT: 5. STEEP 360 DEGREE GLIDING TURNS

Flying Standard	Pilot Certificate	Inst Rating
5.1 Entry		
• Pre-manoeuvre checks completed	2	1
• Entry from straight and level at pre-determined angle of bank greater than 45 degrees	2	1
• Control movements are smooth and co-ordinated	2	1
5.2 Maintenance		
• Lookout is maintained prior to entry and during the descending turn	2	1
• Angle of bank is maintained	2	1
• Co-ordination is maintained	2	1
• Airspeed is maintained	2	1
• Any pre-stall buffet or symptoms of an impending stall are rectified before stall occurs	2	1
5.3 Exit		
• Lookout is maintained on recovery back to straight and level	2	1
• Recovery back to straight and level is demonstrated	2	1
• Control movements are smooth and co-ordinated	2	1

ELEMENT: 6. SIDESLIPPING

Flying Standard	Pilot Certificate	Inst Rating
6.1 Entry		
• Lookout is performed before manoeuvre is initiated	2	1
• Controls are crossed to initiate manoeuvre in a smooth manner	2	1
• Aiming point is selected	2	1
6.2 Maintenance		
• Aeroplane is manoeuvred to maintain aiming point	2	1
• Pre-determined speed is maintained during manoeuvre	2	1
• Lookout continues to be performed	2	1
6.3 Exit		
• Aeroplane controls are uncrossed in a controlled and smooth manner	2	1
• Aeroplane is recovered back to straight and level at a pre-determined height	2	1

ELEMENT: 7. SLIPPING TURNS

Flying Standard	Pilot Certificate	Inst Rating
7.1 Entry		
• Lookout is performed before manoeuvre is initiated	2	1
• Controls are crossed to initiate manoeuvre in a smooth manner	2	1
7.2 Maintenance		
• Aeroplane is manoeuvred to maintain turn to a pre-determined height, left and right	2	1
• Lookout continues to be performed	2	1
7.3 Exit		
• Aeroplane controls are uncrossed in a controlled and smooth manner	2	1
• Aeroplane is recovered back to straight and level at a pre-determined height and heading / direction	2	1

ELEMENT: 8. PRE-STALL RECOGNITION AND RECOVERY IN A CLIMBING TURN

Flying Standard	Pilot Certificate	Inst Rating
8.1 Entry		
• Pre-manoeuvre check is completed	2	1
• Controls are used to initiate manoeuvre in a smooth manner to the desired bank angle in the climb	2	1
8.2 Maintenance		
• Aeroplane is eased into the stall by applying back pressure on the controls	2	1
• Lookout continues to be performed	2	1
8.3 Exit		
• Aeroplane is recovered at point of stall using normal recovery procedure	2	1
• Aeroplane is recovered back to straight and level with minimum height loss conducive with aeroplane type	2	1

ELEMENT: 9. PRE-STALL RECOGNITION AND RECOVERY FROM A STEEP GLIDING TURN

Flying Standard	Pilot Certificate	Inst Rating
9.1 Entry		
• Pre-manoeuvre check is completed	2	1
• Controls are used to initiate manoeuvre in a smooth manner	2	1
• Aeroplane is rolled to achieve pre-determined angle of bank	2	1
9.2 Maintenance		
• Aeroplane is eased into the stall by applying back pressure on the controls	2	1
• Lookout continues to be performed	2	1
9.3 Exit		
• Aeroplane is recovered at point of stall using normal recovery procedure	2	1
• Aeroplane is recovered back to straight and level with minimum height loss conducive with aeroplane type	2	1

ELEMENT: 10. GROUND REFERENCE MANOEUVRES (Constant Altitude/ Radius Turns)

Flying Standard	Pilot Certificate	Inst Rating
10.1 Entry		
• Lookout is performed before manoeuvre is initiated	2	1
• Controls are used to initiate turn in a smooth manner	2	1
10.2 Maintenance		
• Aeroplane is turned to describe a constant radius ground track adjusted for wind	2	1
• Altitude is maintained	2	1
• Lookout continues to be performed	2	1
10.3 Exit		
• Aeroplane is recovered back to straight and level	2	1

ELEMENT: 11. GLIDE FROM OVERHEAD THE FIELD

Flying Standard	Pilot Certificate	Inst Rating
11.1 Aeroplane positioning		
• Aeroplane is positioned appropriately for the intended landing area at 1000FT AGL (or on downwind as traffic / regulations require)	2	1
11.2 Glide		
• Power is reduced to idle with aeroplane in balance, best glide speed is selected and maintained	2	1
11.3 Touchdown point nominated		
• Touchdown point is selected on landing area • Aeroplane is manoeuvred to touchdown on or after nominated point	2 2	1 1
11.4 Lookout		
• Lookout is maintained during manoeuvre and all required radio calls are correctly made	2	1

ELEMENT: 12. CROSSWIND TAKE-OFF AND LANDING

Flying Standard	Pilot Certificate	Inst Rating
12.1 Take-off		
• Candidate conducts a smooth take-off • Maintains track of runway extended centreline on climb out	2 2	1 1
12.2 Circuit		
• Aeroplane maintains normal circuit parameters allowing for wind speed and direction	2	1
12.3 Approach		
• Aeroplane maintains track over extended centreline on final	2	1
12.4 Lookout		
• Lookout is maintained during manoeuvre and all required radio calls are correctly made	2	1

ELEMENT: 13. SHORT FIELD APPROACH

Flying Standard	Pilot Certificate	Inst Rating
13.1 Pre-Landing Checks		
• Pre-landing checks are correctly carried out	2	1
13.2 Airspeed maintenance		
• Airspeed maintained on final at a nominated approach speed consistent with aeroplane type and prevailing weather conditions	2	1
13.3 Use of Power		
• Pilot recognises overshoot / undershoot conditions and adjusts power / attitude to correct	2	1
13.4 Touchdown Point		
• Aeroplane touches down on or within 30M beyond the nominated touchdown point • Application of brake to minimise ground run	2 2	1 1

ELEMENT: 14. WEIGHT AND BALANCE

Flying Standard	Pilot Certificate	Inst Rating
14.1 Loading, and Weight and Balance		
• Explain the loading and weight and balance limitations of the aeroplane to be used. List ways the aeroplane may be loaded that may affect its safety	2	1

ELEMENT: 15. PERFORMANCE FIGURES

Flying Standard	Pilot Certificate	Inst Rating
15.1 MTOW		
• Quote aeroplane MTOW as per Flight Manual	2	1
15.2 Normal Approach		
• Quote aeroplane normal approach speed	2	1
15.3 Vs		
• Quote aeroplane stall speed at MTOW	2	1
15.4 Va		
• Quote aeroplane manoeuvring speed	2	1
15.5 Vne		
• Quote aeroplane never exceed speed	2	1
15.6 Short Field Approach Speed		
• Quote recommended aeroplane short field approach speed	2	1

-End of Advanced Pilot Award Syllabus-

UNIT 1.08 – LOW LEVEL ENDORSEMENT SYLLABUS

ELEMENT: 1. LEGAL REQUIREMENT

Flying Standard	Pilot Certificate	Inst Rating
1.1 RA-Aus Operations Manual (OM)		
• Pilot demonstrates knowledge of the OM requirements in regard to low flying	2	1
1.2 CAR, CASR, CAO 95.55, 95.32, 95.10		
• Pilot demonstrates knowledge of the legal requirements in regard to low flying	2	1

ELEMENT: 2. AEROPLANE HANDLING

Flying Standard	Pilot Certificate	Inst Rating
2.1 General aeroplane handling at altitude		
• Level turns up to 60° AoB	2	1
• Climbing turns beyond 15° AoB for terrain obstacle clearance	2	1
• Descending turns up to and including 60° AoB	2	1
2.2 Stall symptoms and recovery at altitude		
• Stall symptom recognition and recovery straight and level	2	1
• Stall symptom recognition and recovery up to 60° AoB	2	1
2.3 Advanced manoeuvres at altitude		
• Slow flight	2	1
• Use of flaps for improved visibility and effects of changing flap setting in flight	2	1
• Methods of losing height	2	1
• Manoeuvring at varying airspeeds and angle of bank	2	1
• Visual lookout and scan technique – not to fixate on target objects	2	1

ELEMENT: 3. FACTORS AFFECTING SAFETY DURING LOW LEVEL FLIGHT

Flying Standard	Pilot Certificate	Inst Rating
3.1 The effects of wind		
• Turning to downwind into wind – apparent slip and skid	2	1
• Maintaining balance	2	1
• Power control	2	1
• Effect of drift	2	1
• Wind gradient	2	1
• Effect of wind circulating over undulating country	2	1
• Avoidance of dust devils	2	1
• Additional caution required when adverse weather approaching	2	1
3.2 The effects of turbulence		
• Mechanical turbulence	2	1
• Convection Turbulence	2	1
• Frontal turbulence	2	1
3.3 Effect of light on hazard sighting		
• Poor light – no shadows – easier to hit obstacles	2	1
• Flying into sun – vision affected	2	1
3.4 Lookout		
• Scan technique used	2	1
• Lookout conducted before turns with regard to obstacles	2	1
• Keep head out of cockpit	2	1
3.5 Obstacles		
• Power lines, visual identification from the air, pre-flight large scale map checks, talk to property owners	2	1
• Dangers of new wires and obstacles	2	1
• Types of power lines	2	1
• Pre-construction test towers for wind farms & wind farms	2	1
• Coal gas burn off chimneys - avoid	2	1
3.6 Bird Behaviour		
• Individual	2	1
• Flocks of Birds	2	1
• Understand migratory patterns	2	1

ELEMENT: 4. LOW FLYING

Flying Standard	Pilot Certificate	Inst Rating
4.1 Low level flight over flat terrain		
• Use of power	2	1
• Use of airspeed – avoid slowing down when flying downwind	2	1
• Use of trim	2	1
• Lookout and scan techniques – avoid target fixation	2	1
• Recognition of height at low level – less stress when flying slightly higher	2	1
• False horizons	2	1
• Dangers of flying over calm bodies of water	2	1
4.2 Low level flight over undulating terrain		
• Anticipating the change in airspeed and power required	2	1
• Recognition of anticipation at higher aeroplane weights	2	1
• Effects of high density altitudes	2	1
• Assessment of the wind	2	1
• Always having an escape route	2	1
4.3 Low level medium turns <45° AoB		
• Lookout with reference to changing contours, obstructions and bird hazards	2	1
• Use of power	2	1
• Aeroplane balance	2	1
• Wind drift	2	1
• Consistent Height	2	1
4.4 Low level steep turns 45°- 60° AoB		
• Lookout	2	1
• Use of power	2	1
• Aeroplane balance	2	1
• Wind drift	2	1
• Consistent height	2	1
4.5 Max rate / min radius turns at MTOW		
• Effects of Density Altitude on performance	2	1
• Pre-stall recognition and recovery	2	1
• Use of power	2	1
4.6 Slow flight		
• Use of flaps and effects of changing flap setting in flight	2	1
• Maintaining adequate airspeed above the stall during manoeuvres	2	1
• Use of trim	2	1

4.7 Methods of losing height		
• Use of flap and power • Use of sideslip	2 2	1 1
4.8 Emergency procedures		
• Engine failure at low level • Bird strike / obstacle strike - immediate actions • Loss of visual reference	2 2 2	1 1 1

-End of Low Level Endorsement Syllabus-

UNIT 1.09 – GLIDER TOWING (GT) SYLLABUS

ELEMENT: 1. NORMAL PROCEDURE

Flying Standard	Pilot Certificate	Inst Rating
1.1 Ground Preparation		
• Know the GFA Operational Regulations in relation to glider aero- towing.	2	1
• Prepare towing aeroplane (pre-flight)	2	1
• Check release mechanisms, mirrors, ropes, release rings and weak links	2	1
• Aware of the glider's aero-towed maximum and minimum speeds	2	1
• Glider towing fuel consumption accounted for	2	1
• Minimum rope length requirements	2	1
• Weak link requirements	2	1
• Ground signals	2	1
• Assess take-off performance for aerodrome length requirements	2	1
1.2 Take-off		
• Interpret ground signals	2	1
• Monitor take-off performance and instigate aborted take-off procedure if not optimal	2	1
• Demonstrate ability to handle crosswind take-off	2	1
• Use mirrors to determine glider position	2	1
1.3 Climb		
• Maintain accurate speed and attitude for the climb regardless of low or high tow position	2	1
• Correct engine handling procedures followed	2	1
• Maintain lookout and minimise into sun towing for increased visibility	2	1
• Towing pattern selected close to out landing areas	2	1
• Avoidance of other traffic	2	1
• Recognise high-tow and low-tow and transition between the two	2	1
• Control tug attitude during 'boxing of the slipstream'	2	1
• Ensure tug attitude and heading are controlled during 'out of position training'	2	1
1.4 Release		
• Confirm glider release	2	1
• Ensure glider clear	2	1
1.5 Descent		
• Good lookout performed	2	1
• Engine management	2	1

1.6 Approach and Landing		
• Correct circuit entry	2	1
• Normal aeroplane checks	2	1
• Consideration of trailing rope and drop rope procedure	2	1
• Go-around procedure	2	1
1.7 Cruising on tow		
• Manage tug and glider inertia	2	1
• Select speed applicable to glider being towed	2	1
1.8 Descending on tow		
• Manage tug and glider inertia	2	1
• Obstacle avoidance and usable runway requirements for glider if landing on tow	2	1
• Maintain adequate lookout	2	1

ELEMENT: 2. ABNORMAL PROCEDURES

Flying Standard	Pilot Certificate	Inst Rating
2.1 Take-off run aborted		
• Glider release	2	1
• Monitor glider position	2	1
• Conduct avoidance turn to clear glider	2	1
2.2 Partial Power Failure		
• On ground, release glider, avoid glider by using partial power or avoidance turn	2	1
• In air, if not past point of no return, release glider and conduct landing on remaining runway	2	1
• If past the point of no return, release glider with regard given to glider landing area	2	1
• Carry out forced landing if required	2	1
2.3 Glider airbrakes open during climb		
• Glider release if required	2	1
• Release signal	2	1
2.4 Order to glider pilot, release glider		
• Give glider release signal	2	1
2.5 Glider unable to release		
• Recognise glider unable to release signal	2	1
2.6 Glider and Tug unable to release		
• Recognise glider and tug unable to release signal	2	1
• Conduct a landing in tow (Optional)	2	1

-End of Glider Towing Syllabus-

UNIT 1.10 – HANG GLIDER TOWING (HGT) SYLLABUS

ELEMENT: 1. NORMAL PROCEDURE

Flying Standard	Pilot Certificate	Inst Rating
1.1 Ground Preparation		
• Know the HGFA Operational Regulations in relation to hang glider aero- towing	2	1
• Prepare towing aeroplane (pre-flight)	2	1
• Check release mechanisms, mirrors, ropes, release rings and weak links	2	1
• Aware of the hang glider aero-towed maximum and minimum speeds	2	1
• Hang glider towing fuel consumption accounted for	2	1
• Minimum rope length requirements	2	1
• Weak link requirements	2	1
• Ground signals	2	1
• Assess take-off performance for aerodrome length requirements	2	1
1.2 Take-off		
• Interpret ground signals	2	1
• Monitor take-off performance and instigate aborted take-off procedure if not optimal	2	1
• Demonstrate ability to handle crosswind take-off	2	1
• Use mirrors to determine glider position	2	1
1.3 Climb		
• Maintain accurate tug position with respect to the hang glider - high, low, left or right position	2	1
• Correct engine handling procedures followed	2	1
• Maintain lookout and minimise into sun towing for increased visibility	2	1
• Towing pattern selected close to out landing areas	2	1
• Avoidance of other traffic	2	1
1.4 Release		
• Confirm hang glider release	2	1
• Ensure hang glider clear	2	1
1.5 Descent		
• Good lookout performed	2	1
• Engine management	2	1
1.6 Approach and Landing		
• Correct circuit entry	2	1
• Normal aeroplane checks	2	1
• Consideration of trailing rope and drop rope procedure	2	1
• Go-around procedure	2	1

ELEMENT: 2. ABNORMAL PROCEDURES

Flying Standard	Pilot Certificate	Inst Rating
2.1 Take-off run aborted		
• Hang glider release	2	1
• Monitor hang glider position	2	1
• Conduct avoidance turn to clear hang glider	2	1
2.2 Partial Power Failure		
• On ground, release hang glider, avoid hang glider by using partial power or avoidance turn	2	1
• In air, if not past point of no return, release hang glider and conduct landing on remaining runway	2	1
• If past the point of no return, release hang glider with regard given to hang glider landing area	2	1
• Carry out forced landing if required	2	1
2.3 Order to hang glider pilot, release hang glider		
• Give hang glider release signal	2	1
2.4 Hang glider unable to release		
• Recognise hang glider unable to release signal	2	1
2.5 Hang glider and Tug unable to release		
• Recognise hang glider and tug unable to release signal	2	1
• Knowledge of forced weak link breakage technique	2	1
• Knowledge of limitations of landing in tow	2	1

-End of Hang Glider Towing Syllabus-

UNIT 1.11 – TYPE TRAINING SYLLABUS

ELEMENT: 1. TAKE-OFF AEROPLANE

Flying Standard	Pilot Certificate	Inst Rating
1.1 Take off aeroplane		
• Aeroplane type handling characteristics in regard to high power applications	2	1
• Directional control maintained throughout take off	2	1
• Aeroplane is accelerated and appropriate climb performance is achieved	2	1
• Due regard for aeroplane limitations regarding flap speeds	2	1

ELEMENT: 2. CONTROL AEROPLANE IN NORMAL FLIGHT

Flying Standard	Pilot Certificate	Inst Rating
2.1 Climb aeroplane		
• Slipstream effect and asymmetric blade effect controlled and nominated climb profile achieved	2	1
• Aeroplane is levelled off from climb at nominated altitude	2	1
2.2 Maintain straight and level flight		
• Straight and level - normal cruise (adjusting for minor heading and height corrections)	2	1
• Straight and level - varying airspeeds (adjusting for minor heading and height corrections)	2	1
2.3 Descend aeroplane		
• Appropriate airspeed is achieved and stabilised throughout the descent	2	1
• Aeroplane is levelled off from descent at nominated altitude	2	1
2.4 Turn aeroplane		
• Aeroplane is maintained at appropriate AoB	2	1
• Turn is stabilised	2	1
• Turns to nominated headings or geographical features are achieved.	2	1

2.5 Control aeroplane at slow speed		
• Pre-manoeuvre checks are completed	2	1
• Aeroplane is flown at landing configuration approach speed as specified in Flight Manual in balanced flight	2	1
• Recovery to straight and level flight	2	1
2.6 Steep turns		
• Aeroplane is maintained at appropriate AoB	2	1
• Turn is stabilised	2	1
• Turns to nominated headings or geographical features are achieved	2	1
2.7 Stall and recover aeroplane-clean, no power		
• Correct entry technique for straight and level stall	2	1
• Approaching stall recognised and recovered-without power	2	1
• Approaching stall recognised and recovered-with power	2	1
• Minimum height loss	2	1
• Recovery when wing drops	2	1
2.8 Stall and recover aeroplane-flaps (if fitted)		
• Correct entry technique for straight and level stall with flap	2	1
• Approaching stall recognised and recovered-without power	2	1
• Approaching stall recognised and recovered-with power	2	1
• Minimal height loss	2	1
• Recovery when wing drops	2	1
2.9 Stall and recover aeroplane in turns with or without flaps and with various power settings		
• Correct entry technique for stall in nominated configuration	2	1
• Approaching stall recognised and recovered-without power	2	1
• Approaching stall recognised and recovered-with power	2	1
• Minimal height loss	2	1
• Recovery when wing drops	2	1

ELEMENT: 3. CIRCUITS

Flying Standard	Pilot Certificate	Inst Rating
3.1 Conduct circuits		
• Take off-controlled and aligned with runway centreline	2	1
• Aeroplane Type appropriate circuit profile and procedures	2	1
• Glide approach and landing	2	1
• Powered approach and landing	2	1
• Touch and go landing	2	1
• Stop and go landing	2	1
• Full stop landing	2	1
3.2 Cross-wind circuits		
• Take off with due regard for crosswind effect	2	1
• Crosswind circuit profile and procedures	2	1
• Glide approach and landing	2	1
• Powered approach and landing	2	1
• Touch and go landing	2	1
• Stop and go landing	2	1
• Full stop landing	2	1
3.3 Short Field circuits		
• Take off with due regard for short field procedures	2	1
• Assessment of landing, go-around and decision making considerations	2	1
• Appropriate circuit profile and procedures	2	1
• Powered approach and landing	2	1
• Brakes applied and controlled as appropriate	2	1

ELEMENT: 4. EMERGENCIES

Flying Standard	Pilot Certificate	Inst Rating
4.1 Emergencies and precautions in the circuit		
• Aborted take off	2	1
• Engine failure on take off	2	1
• Engine failure elsewhere in circuit	2	1
• Partial power failure	2	1
• Control failures including flaps, trim, etc. (simulated if required)	2	1
• Undercarriage or tyre problems	2	1
• Animal hazards	2	1
• Engine management considerations	2	1
4.2 Go-around procedures		
• Procedure from base	2	1
• Procedure from final	2	1
• Recovery from an unstable approach	2	1
• Procedure from overshoot or undershoot position	2	1
• Procedure after bounce or balloon	2	1
• Recognition and appropriate procedure from pilot induced oscillation	2	1
• Awareness of engine management considerations	2	1

ELEMENT: 5. FORCED LANDINGS

Flying Standard	Pilot Certificate	Inst Rating
5.1 Forced landings		
• Initial actions	2	1
• Best glide speed selected and trim	2	1
• Landing area general selection	2	1
• Radio broadcast (mayday)	2	1
• Detailed trouble checks	2	1
• Engine restart (if applicable) and management considerations	2	1
• Activation of PLB/ELT	2	1
• Passenger brief	2	1
• Shutdown checks (as appropriate)	2	1
• Go-around height for training purposes	2	1
5.2 Sideslip aeroplane		
• Aerodynamic or airframe limitations considered and complied with	2 2	1 1
• Correct entry technique utilised	2	1
• Slip conducted with or without flaps (subject to Flight Manual limitations)	2 2	1 1
• Slip is maintained and monitored throughout manoeuvre	2	1
• Slipping turns		
• Correct exit technique utilised		

ELEMENT: 6. MANAGE ABNORMAL SITUATIONS

Flying Standard	Pilot Certificate	Inst Rating
6.1 Control systems		
• Procedures for flight control loss or malfunction	2	1
• Procedures for ancillary control loss or malfunction	2	1
• Airframe including flaps or hatches, etc.	2	1
6.2 Other abnormal or emergency situations		
• Fire, smoke or fumes	2	1
• Recovery from unusual attitudes	2	1
• Collision avoidance including controllability checks	2	1
• Loss of radio or intercom transmissions	2	1
• Airspeed indicator, altimeter or other instrument malfunction	2	1
• Ditching (type specific)	2	1

-End of Type Training Syllabus-

UNIT 1.12 – TAIL WHEEL UNDERCARRIAGE AEROPLANE SYLLABUS

ELEMENT: 1. PRE-FLIGHT

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
1.1 Considerations before start up			
• Difference in centre of gravity handling with tail wheel aeroplanes	3	2	1
• Pre-flight conducted with consideration to the tail wheel structure, condition and serviceability and the main wheel fuselage attachment points	3	2	1
• Suitable start up area	3	2	1

ELEMENT: 2. GROUND HANDLING

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
2.1 Considerations on the ground			
• Directional control maintained whilst taxiing	3	2	1
• Consideration of required control column position when taxiing with headwinds, tailwinds or strong crosswinds	3	2	1

ELEMENT: 3. TAKE-OFF AND LANDING

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
3.1 Normal Operations			
• Directional control maintained during power application	3	2	1
• Directional control maintained during transition from 3 point to wheeled take-off position	3	2	1
• Tail wheel authority is regained with elevator during three point landings	3	2	1
• Directional control is maintained during landing and through the roll out	3	2	1
• Directional control is maintained during touchdown in wheeler attitude	3	2	1
• Bouncing, ballooning and pilot induced oscillation is minimised, recognised and controlled during wheeler landing	3	2	1
• Directional control is maintained during transition from wheeled to 3 point landing position	3	2	1
• Weight is held on the tail wheel during the roll out with special consideration to braking	3	2	1
3.2 Rough or Soft Field Operations			
• 3 point take-off utilised for short and rough field operations	3	2	1
• Use of brake is minimised to avoid main wheel bogging on soft field during operation	3	2	1
• Short field 3 point landing is used for rough or soft landing grounds	3	2	1

-End of Tail Wheel Undercarriage Aeroplane Syllabus-

UNIT 1.13 – TWO STROKE ENDORSEMENT SYLLABUS

ELEMENT: 1. Two Stroke Engines

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
1.1 Theory and Pre-flight			
• Basic theory of two stroke motors	3	2	1
• Describe the use of CHT and EGT gauges with relation to two stroke aeroplane operation	3	2	1
• Describe the difference between oil injection and pre-mixed two stroke fuel and lubrication	3	2	1
• Conduct pre-flight on engine with respect to fluid levels, type of oil and quantity in rotary valve lubrication system	3	2	1
1.2 In Flight Operation			
• Conduct start up with or without choke and/or primer	3	2	1
• Conduct engine idle at appropriate RPM to avoid engine rough running	3	2	1
• Conduct warm up and run up procedures IAW engine manufacturers' manual	3	2	1
• Conduct in-flight operation with special reference to in-flight monitoring of EGT, CHT and water temperature instruments	3	2	1
• Conduct high powered RPM operations with awareness of engine power band and immediate power delay in go–around situation	3	2	1
• Conduct low powered descents with regard to appropriate engine management practices	3	2	1
1.3 Refuelling			
• Conducts refuelling operation with due regard to engine's lubrication system. (Oil injected versus pre-mixed)	3	2	1
• Consideration of fuel colour differences (Oil injected versus pre-mixed)	3	2	1

-End of Two Stroke Endorsement Syllabus-

UNIT 1.14 - IN FLIGHT ADJUSTABLE PROPELLER ENDORSEMENT SYLLABUS

ELEMENT: 1. THEORETICAL UNDERSTANDING

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
1.1 Theoretical Understanding			
• Propeller pitch changes in flight	3	2	1
• The effect of changes in propeller pitch on an aeroplane in flight	3	2	1
• The effect of changes of propeller pitch on engine performance and limitations	3	2	1
• Different types of in-flight adjustable propellers	3	2	1
• Advantages and disadvantages of fixed pitch and adjustable pitch propellers	3	2	1

ELEMENT: 2. NORMAL OPERATIONS

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
2.1 Pre-flight Inspection			
• Pre-flight inspection carried out with considerations to the specifics of the in-flight adjustable propeller fitted	3	2	1
• Pre-start checks as required per propeller and aeroplane Flight Manual	3	2	1
2.2 Fine pitch and climb performance			
• Pre-take-off checks completed	3	2	1
• Propeller pitch governor/actuator checked as per aeroplane Flight Manual	3	2	1
• Pitch selected full fine for take-off	3	2	1
• Maximum rate and maximum angle take-off and climb demonstrated	3	2	1
• Demonstration of technique (fine pitch to coarser pitch) for transition from cruise to climb	3	2	1
• Transition from coarse pitch cruise to fine pitch for maximum performance climb	3	2	1
2.3 Coarse pitch and cruise performance			
• Transition from climb with full power and fine pitch to coarse pitch cruise	3	2	1
• Transition from cruise climb with full power and coarse pitch to normal cruise	3	2	1

2.4 Landing and circuit operation			
• Demonstrate appropriate pre-landing checks with regard to pitch check on final approach	3	2	1
• Understand the requirements, and demonstrate appropriate technique, for reduction of pitch on final to full fine	3	2	1
• Demonstrate pitch increase on transition to cruise	3	2	1
2.5 Engine instrumentation and limitations			
• Demonstrate practical interpretation of instrument indications relating to the operation of in-flight adjustable propeller	3	2	1
• Demonstrate sound engine handling and care with regard to manifold pressure and rpm	3	2	1

ELEMENT: 3. EMERGENCY OPERATIONS

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
3.1 Engine Failure			
• Theoretical aspects of propeller pitch alteration on glide performance understood	3	2	1
• Recognition of engine failure (simulated as required) and adjustment of propeller pitch to improve glide performance	3	2	1
• Correct pitch settings used for attempted engine restart	3	2	1
3.2 Engine Failure Simulation			
• Instructor simulates engine failure with due regard to change of propeller pitch	-	-	1
• Instructor understands emergency restart procedures in case of genuine engine failure during simulation with regard to propeller pitch	-	-	1
3.3 Fully Feathered Operations			
• Theoretical aspects of use of full feather (if applicable)	3	2	1
• Use of the full feather option (if applicable to type) and sound ability to activate and deactivate full feather option	3	2	1
• Engine restart from full feather engine inoperative flight (only with CFI)	3	2	1
3.4 Pitch System Malfunction			
• Pitch system malfunction identified and aeroplane is operated safely with regard to Aviate, Navigate, Communicate (ANC) principles	3	2	1
• Appropriate actions as per aeroplane Flight Manual	3	2	1
• Checklist actions carried out before returning to land in the event of propeller malfunction	3	2	1

-End of In Flight Adjustable Propeller Endorsement Syllabus-

UNIT 1.15 - RETRACTABLE UNDERCARRIAGE ENDORSEMENT SYLLABUS

ELEMENT: 1. THEORETICAL UNDERSTANDING

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
1.1 Theoretical Understanding			
• Use of retractable undercarriages relevant to recreational aeroplanes	3	2	1
• The retraction system mechanics and type of retraction mechanism	3	2	1
• Specific system requirements for particular types	3	2	1
• Significance of cockpit gear light indicators	3	2	1

ELEMENT: 2. NORMAL OPERATIONS

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
2.1 Gear Extension			
• Checklist item for gear extension added	3	2	1
• Gear actuation system to extend landing gear from retracted position understood	3	2	1
• Visual check of indication system conducted and if possible, physical position of landing gear confirmed	3	2	1
• Final approach check conducted to confirm 'three greens' or visual confirmation of physical position of gear	3	2	1
2.2 Gear Indication System			
• Understanding of gear indication lights or visual checking mechanism and items peculiar to type as stated in the aeroplane Flight Manual	3	2	1
2.3 Gear Retraction			
• Checklist item for gear retraction added	3	2	1
• Gear actuation system to retract landing gear from extended position understood	3	2	1
• Visual check of indication system conducted and if possible, physical position of landing gear confirmed	3	2	1
• Safe height after take-off for retraction of the gear and appropriate checks as per the aeroplane Flight Manual recommendations	3	2	1

ELEMENT: 3. EMERGENCY OPERATIONS

Flying Standard	Before Solo	Pilot Certificate	Inst Rating
3.1 Gear Retraction Failure			
• Sound judgement in relation to Aviate, Navigate, Communicate (ANC) principles on the initial indication of a gear retraction failure	3	2	1
• Emergency procedure as per aeroplane Flight Manual	3	2	1
• Normal checklist undertaken before returning for a landing to confirm gear down and locked	3	2	1
3.2 Gear Indication Failure			
• Visual check of gear conducted, as applicable, prior to concluding that the gear indication system has failed	3	2	1
• Reset breaker/fuse on gear indication circuit as appropriate	3	2	1
• Determine the gear indication bulb/LED is unserviceable	3	2	1
3.3 Gear Extension Failure			
• Sound judgement in relation to ANC principles on initial indication of a gear extension failure	3	2	1
• Emergency procedure as per aeroplane Flight Manual	3	2	1
• Use of emergency gear actuation system (simulated as required)	3	2	1
• Normal checklist undertaken prior to returning for landing to ensure confirmation of gear down and locked	3	2	1
• Describe the procedure for undercarriage retracted landing as per aeroplane Flight Manual	3	2	1
3.4 Partial Extension/Retraction			
• Sound judgement in relation to ANC principles on initial indication of a partial gear extension or retraction failure	3	2	1
• Emergency procedure as per aeroplane Flight Manual	3	2	1
• Use of emergency gear actuation system (simulated as required)	3	2	1
• Normal checklist conducted prior to landing to ensure gear down and locked	3	2	1
• Describe the procedure for undercarriage retracted landing as per aeroplane Flight Manual in the event of an engine failure	3	2	1

-End of Retractable Undercarriage Endorsement Syllabus-

UNIT 1.16 - WATERBORNE FLOAT AND HULL (WF/WH) SYLLABUS

ELEMENT: 1. MANAGE PRE AND POST FLIGHT ACTIONS

Flying Standards	Before Solo	Pilot Certificate	Inst Rating
1.1 Complete pre and post flight administration			
• Pre-flight planning and documentation is completed in accordance with appropriate procedures	3	2	1
• Aeroplane take-off and landing performance is calculated in accordance with performance and weight and balance charts	3	2	1
• Pre and post flight logbook and flight administration is completed in accordance with appropriate procedures	3	2	1
• Aeroplane serviceability, with due regard for float and hull integrity, is determined by daily inspection, and certification of daily inspection in maintenance record is completed in accordance with appropriate procedures	3	2	1
1.2 Perform pre-flight inspection			
• Equipment and documentation as required by regulation is identified and secured in the aeroplane, and internal and external checks are completed in accordance with approved checklist	3	2	1
• Ensure lifejackets are in place and have been confirmed as serviceable	3	2	1
1.3 Perform and certify daily inspection			
• A daily inspection of aeroplane is performed in accordance with aeroplane system of maintenance as required by RA-Aus Technical Manual Section 4.4.1	3	2	1
• Bungs and drains	3	2	1
1.4 Launch waterborne aeroplane			
• Deepwater launch	3	2	1
• Beach/ramp launch	3	2	1
1.5 Check for leaks			
• Check float/hull buoyancy	3	2	1
• Check individual compartments for leaks	3	2	1

ELEMENT: 2. CONTROL WATERBORNE AEROPLANE ON THE WATER

Flying Standards	Before Solo	Pilot Certificate	Inst Rating
2.1 Start and stop engine			
• Pre-start and after start checks are completed in accordance with Flight Manual	3	2	1
• Engine is started and shut down in accordance with Flight Manual	3	2	1
• Emergencies are managed in accordance with Flight Manual	3	2	1
• Pre-and after shutdown checks are completed in accordance with Flight Manual	3	2	1
2.2 Low speed (Displacement) taxiing			
• Water rudders	3	2	1
• Power control	3	2	1
• Inertia control	3	2	1
• Wind effects	3	2	1
• Wake	3	2	1
2.3 Plough Taxiing			
• Water rudders	3	2	1
• Power control	3	2	1
• Wind effects	3	2	1
• Centre of Buoyancy (C of B)	3	2	1
2.4 Step Taxiing			
• Water rudders	3	2	1
• Transition to step	3	2	1
• Stability on step	3	2	1
• Reverse transition to displacement taxi	3	2	1
2.5 Step Turns			
• Floating hull	3	2	1
• Floats	3	2	1
• Wind effects	3	2	1
2.6 Leaks			
• Check float/hull buoyancy	3	2	1
• Check individual compartments for leaks	3	2	1

ELEMENT: 3. TAKE-OFF WATERBORNE AEROPLANE

Flying Standards	Before Solo	Pilot Certificate	Inst Rating
3.1 Carry out pre-take-off procedures			
• Pre take-off checks are completed in accordance with approved checklist	3	2	1
• Waterborne aeroplane is lined up	3	2	1
• Line-up checks completed	3	2	1
3.2 Take-off waterborne aeroplane			
• Take-off power is applied. Waterborne aeroplane is maintained aligned with aiming point with wings maintained level and rotated at recommended speed to achieve water separation	3	2	1
• Climb airspeed attainted	3	2	1
• Waterborne aeroplane is configured for nominated climb profile and track towards aiming point is maintained	3	2	1
3.3 Carry out after take-off procedures			
• After take-off checks are performed from memory in accordance with approved checklist	3	2	1

ELEMENT: 4. LAND WATERBORNE AEROPLANE

Flying Standards	Before Solo	Pilot Certificate	Inst Rating
4.1 Transitional landings			
• Waterborne aeroplane's rate of descent arrested and stabilised above water	3	2	1
• Slight power reduction to allow hull/float contact with water in step taxiing attitude	3	2	1
• Step taxiing attitude maintained	3	2	1
• Power reduced and reverse transition to displacement taxi	3	2	1
• Smooth or glassy water landings	3	2	1
4.2 Conventional landings			
• Conventional circuit approach to water landing area	3	2	1
• Power increased prior to flare point	3	2	1
• Touchdown as per transitional landing	3	2	1
• Glide approach	3	2	1
• Touch and go	3	2	1
4.3 Rough water landings			
• Wind direction and strength accurately attained	3	2	1
• Swell avoidance	3	2	1
• Waterborne aeroplane handling	3	2	1
• Go around	3	2	1
4.4 Perform go-round procedure			
• Decision to perform miss-landing is made when landing standards cannot be achieved	3	2	1
• Control of waterborne aeroplane and situational awareness of circuit and other traffic, airborne and waterborne, is maintained	3	2	1

ELEMENT: 5. EMERGENCY PROCEDURES

Flying Standards	Before Solo	Pilot Certificate	Inst Rating
5.1 Engine failure after take-off (water or land)			
• Immediate actions are performed in accordance with Flight Manual with due regard to low drag/high inertia design	3	2	1
• A landing area within gliding distance is selected, emergency procedures are performed in accordance with Flight Manual and the waterborne aeroplane is landed with due regard to high drag/low inertia design	3	2	1
• Landing gear retracted or extended as required	3	2	1
5.2 Manage engine failure elsewhere in circuit (water or land)			
• Immediate actions are performed in accordance with Flight Manual with due regard to high drag/low inertia design	3	2	1
• A landing area within gliding distance, on the aerodrome or elsewhere, is selected	3	2	1
• Emergency procedures are performed in accordance with Flight Manual and the aeroplane is landed if the engine cannot be restarted	3	2	1
• Landing gear retracted or extended as required	3	2	1
5.3 Manage forced landing en-route (water or land)			
• Immediate actions are performed in accordance with Flight Manual with due regard to high drag/low inertia design	3	2	1
• Landing area within gliding distance is selected, all emergency checks are performed in accordance with the Flight Manual, and if an engine restart is not achieved a controlled landing is performed with due regard to high drag/low inertia design	3	2	1
• Landing gear retracted or extended based on available terrain	3	2	1
5.4 Conduct precautionary search and landing (land or water)			
• Air Traffic Services are advised of intentions if possible	3	2	1
• Landing area is selected and inspected before aeroplane is landed	3	2	1
• Landing gear retracted or extended as required	3	2	1
5.5 Capsize			
• Passenger pre-flight brief conducted	3	2	1
• Harness release briefing conducted	3	2	1
• Exiting the waterborne aeroplane briefing conducted	3	2	1
• Personal flotation equipment briefing conducted	3	2	1

5.6 Manage abnormal situations			
• Abnormal situation involving fuel, electrical, airframe including undercarriage considerations, flight instrument, flight control, engine or radio, fire, smoke and fumes are identified	3	2	1
• Appropriate emergency procedures are conducted in accordance with Flight Manual and published procedures while maintaining control of the waterborne aeroplane	3	2	1

-End of Waterborne Float and Hull Syllabus-

UNIT 1.17 – UTILITY SYLLABUS

Examiners are reminded when assessing competency for certain elements of this syllabus, consideration must be given to the Group of aircraft intending to be utilised for the Utility endorsement. I.e. 60°AoB level or descending turns or use of top rudder as referenced cannot be conducted in Group D aircraft and therefore cannot be assessed.

ELEMENT: 1. FLIGHT PREPARATION AND GROUND ASSESSMENT

Flying Standards	Pilot Certificate	Inst Rating
1.1 RA-Aus Operations Manual (OM)		
Candidate demonstrates knowledge of OM requirements in regards to low flying	2	1
1.2 CAR, CASR, CAO 95.55, 95.32, 95.10		
Candidate demonstrates knowledge of the legal requirements in regard to low flying, use of radio, minimum distances from public roads, persons, property and buildings	2	1
1.3 Aircraft readiness		
Candidate confirms aircraft suitability for proposed operation	2	1
Equipment and documentation as required by legislation is identified and secured in the aeroplane, and internal and external checks are completed in accordance with approved checklist	2	1
Aeroplane take-off and landing performance, weight and balance is calculated in accordance with the aeroplane Flight Manual for the proposed operation and ambient conditions	2	1
Pre and post flight logbook and flight administration is completed in accordance with Technical manual and/or Operations manual	2	1
1.4 Pre-flight assessment of location - Property familiarisation		
Complete a physical assessment of the property, including proposed landing and take-off areas, location of wires, trees, fences, dams, local terrain and other considerations	2	1
Station personnel briefed regarding anticipated operations, expectations of pilot, effective communications, etc.	2	1
Identification of potential dangers, managed appropriately	2	1
Position of yards, personnel, vehicles, stock, fences, dams, etc.	2	1

1.5 Emergency response planning		
Appropriate emergency response actions for accident – ground or air	2	1
Appropriate emergency response plan for fatality –ground or air	2	1
Appropriate SAR processes	2	1
1.6 Fuel management - aeroplane		
Calculation of required fuel (holding and alternate – as appropriate)	2	1
Fuel reserves determined.	2	1
Total fuel requirement determined	2	1
Aeroplane is refuelled in accordance with Flight Manual and health and safety requirements.	2	1
1.7 Taxiing aeroplane		
Lookout and situational awareness	2	1
Directional control and turning, including manoeuvring in confined spaces	2	1
Effect of wind with regard to positioning of controls	2	1
Propeller care and consideration of prop wash and slipstream	2	1
Ground surface and slope considerations – assessment of unprepared areas	2	1
Appropriate taxiing speed	2	1
Emergency situations; loss of steering, brakes or other emergencies are managed in accordance with Flight Manual.	2	1

ELEMENT: 2. RADIO EQUIPMENT AND PROCEDURES

Flying Standards	**Pilot Certificate**	**Inst Rating**
2.1 Radio equipment		
Familiarisation with UHF and VHF radio equipment	2	1
Equipment checked and working correctly	2	1
Confirmed communication protocols with ground personnel	2	1
2.2 Procedures		
Radio use and procedures	2	1
Ensure all personnel involved know the intended frequencies for the operation	2	1

ELEMENT: 3. AEROPLANE HANDLING

Flying Standards	Pilot Certificate	Inst Rating
3.1 General aeroplane handling at altitude		
Level turns up to 60° AoB	2	1
Climbing turns beyond 15° AoB for terrain obstacle clearance	2	1
Descending turns up to and including 60° AoB	2	1
Use of top rudder in turns	2	1
Ensuring minimal G force during manoeuvres	2	1
Procedural turns	2	1
3.2 Advanced stall symptoms and recovery at altitude		
Stall symptom recognition and recovery straight and level	2	1
Stall symptom recognition and recovery up to 60° AoB	2	1
Stall symptom recognition and recovery from slipped or skidding turns	2	1
Stall stick position	2	1
3.3 Advanced manoeuvres at altitude		
Slow flight	2	1
Use of flaps (if fitted) for improved visibility and effects of changing flap setting in flight	2	1
Methods of losing height	2	1
Manoeuvring at varying airspeeds and angle of bank	2	1
Visual lookout and scan technique – no fixation on target objects	2	1

ELEMENT: 4. SAFETY FACTORS DURING LOW LEVEL FLIGHT

Flying Standards	Pilot Certificate	Inst Rating
4.1 The effects of wind		
Turning downwind into wind – apparent slip and skid	2	1
Maintaining balance	2	1
Power control	2	1
Effect of drift	2	1
Wind gradient	2	1
Micrometeorology considerations	2	1
Effects of dust devils or raised dust	2	1
Additional caution required when adverse weather approaching	2	1

4.2 The effects of turbulence		
Mechanical turbulence	2	1
Convection Turbulence	2	1
Frontal turbulence	2	1
4.3 Effect of light on hazard sighting		
Poor light – no shadows – easier to hit obstacles	2	1
Flying into sun – vision affected	2	1
4.4 Lookout		
Scan technique used	2	1
Lookout conducted before turns with regard to obstacles	2	1
4.5 Obstacles		
Power lines, visual identification from the air, confirm with property owner	2	1
Trees, windmills and other obstacles	2	1
Dangers of new wires and obstacles	2	1
Types of power lines	2	1
Assessment of height and distance abeam of fences	2	1
Use of sun/light in relation to fences to confirm wire integrity	2	1
Overlapping fence corners, appropriate safe procedures	2	1
4.6 Fatigue Management		
Effective fatigue management practices	2	1
Ancillary personnel briefed regarding fatigue management practices	2	1

ELEMENT: 5. LOW FLYING

Flying Standards	Pilot Certificate	Inst Rating
5.1 Low level flight over flat terrain		
Use of power	2	1
Use of airspeed – considerations when flying downwind	2	1
Use of trim	2	1
Lookout and scan techniques – avoiding target fixation	2	1
Recognition of height at low level – safer operations at slightly higher altitudes	2	1
False horizons	2	1
5.2 Low level flight over undulating terrain		
Anticipating the change in airspeed and power required	2	1
Effects of high density altitudes	2	1
Assessment of the wind	2	1
Planning for alternate options	2	1

5.3 Low level medium turns <45° AoB		
Lookout with reference to changing contours, obstructions and bird hazards	2	1
Use of power	2	1
Aeroplane balance	2	1
Wind drift	2	1
Consistent height	2	1
5.4 Low level steep turns 45°-60° AoB		
Lookout	2	1
Use of power	2	1
Aeroplane balance	2	1
Wind drift	2	1
Consistent height	2	1
5.5 Max rate / min radius turns at MTOW		
Effects of density altitude on performance	2	1
Pre-stall recognition and recovery	2	1
Use of power	2	1
Stall stick position	2	1
5.6 Slow flight		
Use of flaps (if fitted) and effects of changing flap setting in flight	2	1
Adequate airspeed above the stall during manoeuvres	2	1
Use of trim	2	1
5.7 Methods of losing height		
Use of flap (if fitted) and power	2	1
Use of sideslip	2	1
5.8 Emergency procedures		
Engine failure at low level	2	1
Bird strike / obstacle strike - immediate actions	2	1
Loss of visual reference	2	2

-END OF UTILITY SYLLABUS-

LEVELS OF KNOWLEDGE AND APPLICATION

The following syllabi specifies the **MINIMUM** standard of knowledge required. Qualifying letters are used to indicate the specific levels of knowledge necessary for each individual item within a particular subject, as follows:

A — A **basic** understanding of the subject matter, sufficient, with some assistance from an RA-Aus instructor, for the solution of simple practical problems either by calculation or by the exercise of judgment.

B — A **sound** understanding of the subject matter, sufficient, without assistance, for the solution of more advanced practical problems either by calculation or by the exercise of judgment.

C — A **thorough** understanding of the subject matter, achieving without assistance, a first attempt accuracy of 80% in the solution of advanced practical problems either by calculation or by the exercise of judgment.

P- — **Basic** practical application of relevant procedures.

P+ — **Thorough** practical application of relevant procedures.

Note: The required pass mark for all examinations set to these syllabi is 80%.

UNIT 2.01 – BASIC AERONAUTICAL KNOWLEDGE SYLLABUS

Note: The required pass mark for all examinations set to this syllabus is 80%.

1 PRINCIPLES OF FLIGHT 1.1- AERODYNAMICS		Standard Prior to:	
		Solo	P/Cert
1.1.1	**Terminology**		
	Identify descriptions/drawings of the following terms:		
	(a) aerofoil; span; chord; camber; thickness/chord ratio	A	B
	(b) relative airflow; angle of attack	A	B
	(c) total reaction; lift; drag	A	B
1.1.2	**Design features**		
	State the purpose of the following design features/controls:	A	B
	(a) dihedral; aspect ratio; sweepback; wash-out		
	(b) flaps		
	(c) slats and slots		
	(d) trim tabs		
1.1.3	**Lift and drag**		
	Define the relationship between the following factors in the production of lift by an aerofoil;	A	B
	(a) Air density		
	(b) Surface area		
	(c) Angle of attack		
	(d) Angle of incidence		
	(e) Velocity		
	Define the relationship between the following factors in the production of drag by an aerofoil;	A	B
	(a) Angle of attack		
	(b) Velocity		
	(c) Shape		
	(d) Effect of damage to an aerofoil surface		
	State whether lift and drag of an aerofoil will increase or decrease with changes in:	A	B
	(a) airspeed;		
	(b) angle of attack;		
	(c) flap setting.		

	List the types of drag, which affect an aeroplane in flight. **Note**: *Types are:* *(a) Parasite (zero lift): form, interference, skin friction;* *(b) Induced (lift dependent).* State how Total Drag varies with airspeed. **Note**: *Students should be aware that these values are representative only.*	A A	B B
1.1.4	**Straight and level flight** State the relationship between attitude, angle of attack and airspeed in level flight. **Note**: *Students should appreciate that this relationship is only true in level flight.*	 A	 B

1 PRINCIPLES OF FLIGHT

1- AERODYNAMICS		Standard Prior to:	
		Solo	P/Cert
1.1.5	**Changes in angle of attack**		
	State/identify the effect of changes in angle of attack up to the stalling angle on:	A	B
	(a) pressure changes above and below the wing;		
	(b) changes in airflow characteristics; streamlined to turbulent		
	(c) lift and drag;		
	Recall typical angles of attack at which a basic low speed aerofoil:	A	B
	(a) generates maximum lift (about 16 degrees);		
	(b) is most efficient (best L/D :about 4 degrees);		
	and relate these angles to:	A	B
	i. stall speed;		
	ii. best glide speed.		

1.2 – STABILITY AND CONTROL		Standard prior to:	
		Solo	P/Cert
1.2.1	State the effect of the factors listed below on the stability and control of an aeroplane in each of the three planes of movement:		
	(a) longitudinal stability:	A	B
	i. position of CG;		
	ii. movement of centre of pressure;		
	iii. changes in thrust;		
	(b) lateral stability:	A	B
	i. high wing versus low wing;		
	ii. dihedral / anhedral		
	iii. sweepback.		
	(c) directional stability:	A	B
	i. large fore/aft displacement of the Centre of Gravity (CofG);		
	ii. large versus small fin and rudder moment.		
	Recognise statements/diagrams which describe static and dynamic stability.	A	B
	Explain the purpose of:	A	B
	(a) trim tabs (fixed and cockpit controlled);		
	(b) balance tabs;		
	(c) aerodynamic balance;		
	(d) mass balance		
	(e) ailerons – differential and frise		

2 OPERATION OF AN AEROPLANE

2.1- MANOEUVERING		Standard prior to:	
		Solo	P/Cert
2.1.1	Identify the forces of lift, weight, thrust and drag acting on an aeroplane in:	B	C
	(a) "steady" level flight;		
	(b) a "steady" climb;		
	(c) a "steady" descent;		
	(d) a balanced level turn.		
	State why:	B	C/P
	(a) power must be applied to maintain speed in a level turn;		
	(b) an aeroplane tends to overbank in level and climbing turns and not in descending turns.		
	State:	B	C
	(a) the effect of aileron drag on turn performance at low airspeed;		
2.1.2	**Climbing**		
	Differentiate between rate and angle of climb.	B	C
	State the effect (increase/decrease) on climb rate and angle resulting from changes in:	B	C
	(a) weight;		
	(b) power;		
	(c) airspeed (changed from recommended);		
	(d) flap deflection;		
	(e) head/tailwind component, windshear;		
	(f) bank angle;		
	(g) altitude and density altitude.		
2.1.3	**Descents:**		
	State the effect on rate, angle of descent and attitude resulting from changes in:	B	C
	(a) power - constant IAS;		
	(b) flap - constant IAS.		
	State the effect of head/tail wind on the glide path and glide distance (relative to the earth's surface).	B	C
	Explain why a pilot should maintain the recommended glide speed if undershooting an approach to land.	B	C

2.1.4	**Turning**		
	Describe what is meant by a balanced turn.	B	C
	Describe the terms "g"; wing loading; load factor.	B	C
	During a level turn, state the effect (increase/decrease) of bank angle on:	A	C
	(a) stall IAS;		
	(b) the aeroplane's structure (load factor).		
	List reasons for avoiding steep turns:	B	C
	(a) shortly after take-off;		
	(b) during a glide - particularly on approach.		
2.1.5	Stalling, spinning & spiral dives.		
	Define stalling angle and describe:	B	C
	(a) the symptoms when approaching the stall;		
	(b) the characteristics of a stall.		
	Explain:	B	C
	(a) the possible effect of using ailerons when approaching and during the stall;		
	(b) why an aeroplane may stall at different IAS.		
	List the effect (increase/decrease/nil) of the following variables on the level flight stall IAS:	B	C
	(a) power		
	(b) flap		
	(c) wind shear; vertical gusts		
	(d) manoeuvres		
	(e) weight		
	(f) frost and ice		
	(g) rigging		
	(h) altitude		

2.1.6	Taxi, take-off and landing		
	Describe the stability and control characteristics, during ground operation of;	B	C
	(a) nose wheel aeroplane		
	(b) tail wheel aeroplane		
	Describe the result of the following factors on the controllability of an aeroplane:	B	C
	(a) propeller torque and slipstream effect;		
	(b) gyroscopic effect;		
	Describe the term "ground effect" and its effect on aeroplane performance.	B	C
	Cite situations which may cause an aeroplane to "wheel barrow" or enter pilot induced oscillation and state the recommended pilot action in the event of such occurrences.		
	List the advantages of taking-off and landing into wind.	B	C
	Compare a flapless approach to an approach with flap in terms of:	B	C
	(a) attitude during descent;		
	(b) approach path angle;		
	(c) landing roll.		
	Describe the effect of wind shear (wind gradient) and ground effect on aerodynamic and flight characteristics and identify.	B	C

2.1.7	**Wake turbulence** **Note:** *If a student is operating from an aerodrome where helicopters or heavy aeroplane also operate, all 'B' items must be taught prior to pre-solo.*		
	List factors affecting the strength of vortex flow :	B	C
	(a) aeroplane weight, speed, wing shape		
	State the primary control hazard that may result from a vortex encounter.	B	C
	(a) approximate location of vortices (in still air) generated by a preceding aeroplane during:		
	i. cruise flight;		
	ii. take-off and landing;		
	(b) approximate take-off/touch-down points and flight profiles		
	Caution: Students should be advised that heavy/medium aeroplanes are capable of steep climb gradients after take-off when operating at low take-off weights.		
	Recall that rotor downwash can be a hazard to a radius of approximately three times the rotor diameter, and that this area should be avoided by light aeroplane.	B	C
	Note: *Students should be aware of wake turbulence separation standards in order to make value judgements to provide their own separation at non-controlled aerodromes.*		

2.2 –AEROPLANE PERFORMANCE CONSIDERATIONS		Standard Prior to:	
		Solo	P/Cert
2.2.1	Given that certain flight conditions remain constant, state the effect of: (a) changes in weight and altitude (height) on: i. angle of attack and IAS in level flight; ii. level flight range and endurance; iii. glide range and endurance. iv. rate of climb v. take off distance required. vi. landing distance required. (b) changes in head/tail wind component on: i. level flight range and endurance; ii. glide range and endurance. iii. take off distance required. iv. landing distance required.	B B	C C
	Identify different types of climbs; (a) maximum angle climb (b) maximum rate climb (c) cruise climb	B	C
2.2.2	Take off techniques Explain: (a) into wind (b) cross wind (c) soft field (d) rough field Explain differences in aeroplane performance from low density to high density altitude aerodromes Explain the importance of pre-take off checks Explain the importance of a pre-take off safety brief	B/P	C/P+

2.2.3	Explain landing techniques; (a) into wind (b) cross wind i. crabbed approach ii. wing into wind Explain differences in landing techniques; (a) nose wheel aeroplane i. the importance of reducing weight on nose wheel. (b) tail wheel aeroplane i. three point ii. wheeler **Note:** Students must be able to explain the landing technique of their training aeroplane thoroughly and must also have a sound understanding of other types of undercarriage differences.	B/P	C/P+
2.2.4	Circuit operations; (a) legal requirements (b) circuit pattern, names of circuit legs (c) radio call requirements (d) pre-landing checks (e) circuit entry and exit procedures	B/P	C/P+
2.2.5	Ground operations; (a) effect of wind on ground handling (b) braking and testing of brakes (c) differences in directional control between; i. nose wheel aeroplane ii. tail wheel aeroplane	B/P	C/P+
2.2.6	Emergency procedures (a) forced landings (b) engine failure on take off (c) engine failure in the circuit (d) missed approach / go-around	B/P	C/P+

2.3 – AEROPLANE GENERAL KNOWLEDGE		Standard prior to:	
		Solo	P/Cert
2.3.1	**Terminology** With respect to the items listed below recall the standards abbreviations used and meet the objectives stated: Direction: (a) recall the following methods of expressing direction: i. as a three figure group; ii. as a two figure group for runways; iii. in the clock code; (b) define heading (HDG); (c) define True (T), Magnetic (M), and Compass North;	A A	B B
	Distance, Speed and Velocity (a) state the units used for distance: i. navigation - nautical miles (NM); ii. visibility - metres (M), kilometres (KM); (b) define wind velocity (W/V);	A	B
	Time: (a) mentally convert local time (EST, CST, WST) to UTC and vice versa; **Vertical measurement.** (a) state the unit used (FT) for vertical measurement and differentiate between: i. height; ii. altitude; iii. elevation; **Other units.** (a) state the units used for: i. runway dimensions; ii. temperature - degrees Celsius; iii. pressure - hectopascals (hPa), psi, iv. weight - kilograms (KG), pounds (LB); v. volume - litres (L), (b) given W/V and runway directions determine the appropriate runway for take-off/landing: i. the direction (left/right) of any cross wind component; ii. the value of crosswind component.	A A A	B B B

2.3.2	**Power plants and systems – Basics.**		
	Demonstrate a basic understanding of the principle of operation of a two/four stroke cycle internal combustion engine and state the purpose of the following components: (a) cylinders; pistons; piston rings; inlet/exhaust valves; crank shaft; cam shaft; spark plugs.	A	B
	State the purpose of the following components/features: (a) carburettor; (b) throttle; (c) CDI, dual ignition; (d) regulator/rectifier; (e) battery, battery compartment vent; (f) propeller; (g) circuit breaker, fuse, bus bar; (h) oil cooler; (i) fuel tank vents.	A	B
	State the purpose of the following gauges: (a) RPM (Tachometer); (b) CHT, EGT; (c) voltmeter, ammeter; (d) fuel pressure; (e) oil temperature and pressure. **Note:** *"Purpose" means the importance in relation to monitoring the power plant and systems.*	A	B
	State how the following affects the power output of an engine: (a) throttle position; (b) RPM; (c) air density.	A	B
	State the purpose of engine lubrication. **Note:** *"Purpose" means the reduction of friction and engine cooling.*	B	B
	Describe the effect of excessively rich and lean mixture strengths on engine operation.	A	B

2.3.3	**Fuels and Oils.**		
	List safety precautions when refuelling aeroplane;	A	B
	List reasons why a fuel drain is done and when;	A	B
	List sources of fuel contamination;	A	B
	State the advantage of filling tanks prior to overnight parking;	A	B
	Explain the terms:	A	B
	(a) viscosity, oil sump, multi-grade oils;		
	(b) octane rating;		
	(c) Avgas, Avtur, ULP;		
	and indicate how to identify Avtur, Avgas and ULP;	A	B
	List factors conducive to fuel vaporisation and identify procedures to minimise this phenomenon.	A	B
	Identify differences in fuel gauge indications in tail and level flight attitudes in a tail wheel aeroplane.	A	B
	Outline the pre-mix requirements for two stroke engines	A	B
	Explain the fuel system terms;	A	C
	(a) gravity feed		
	(b) pump feed		
	(c) difference between electronic boost pumps and mechanical pumps		
	(d) fuel tank vents and importance		
2.3.4	**Engine Handling.**		
	List the causes and effect of detonation.	A	B
	State the effect on engine operation of:	B	C
	(a) a mixture that is too rich or too lean.		
	Give reasons for the following limitations/actions:	B	C
	(a) minimum oil pressure;		
	(b) minimum/maximum oil temperature;		
	(c) minimum/maximum CHT;		
	(d) maximum RPM;		
	(e) ignition checks: pre-takeoff and shutdown;		
	(f) prolonged use of starter motor.		
	(g) engine warm up on prolonged descents.		
	Explain the significance of blue or black exhaust smoke.	A	B

2.3.5	**Malfunctions.**		
	With respect to a malfunction or a failure of the components listed in (a) to (h) below:		
	• identify cockpit indications which may suggest a malfunction	A	B
	• state pilot actions (if any) to rectify the problem	A	B
	• describe the consequences if the malfunction cannot be rectified.	A	B
	Components:		
	(a) Regulator/rectifier;		
	(b) CDI's or ignition modules;		
	(c) battery;		
	(d) ignition switch;		
	(e) fuel vent (blockage), fuel/booster pump;		
	(f) oil cooler;		
	(g) hydraulic brakes		
	(h) coolant loss (if applicable)		
	With respect to the following engine gauges listed in (a) to (f) below:		
	• identify reasons for an abnormality	B	C
	• state pilot actions (if any) to rectify a problem	B	C
	• state the consequences if the problem cannot be rectified by the pilot	B	C
	Engine Gauges:		
	(a) oil temperature and pressure;		
	(b) CHT;		
	(c) fuel pressure;		
	(d) tachometer;		
	(e) ammeter;		
	(f) voltmeter.		

2.3.6	**Engine Icing.** **Note:** *Students should be advised that the following material is general in nature and that the operational application of engine ice prevention/control varies between individual aeroplane and engines. Pilots should therefore follow procedures recommended in the pilots' operating handbook.*		
	Describe the method for checking the operation of carburettor heat prior to take-off.	B/P	C/P+
	For aeroplane fitted with a fixed pitch propeller, identify cockpit indications which would signify the presence of engine ice.	B	C
	Discuss the use of carburettor heat for: (a) anti-icing; (b) de-icing; (c) ground operations.	B	C
	State the effect of the application of carburettor heat on engine performance and engine instrument indications.	B	C

2.3.7	**Flight Instruments.**		
	General:		
	(a) explain the following terms:	A	B
	i. pitot-static system;		
	ii. pitot pressure; static pressure;		
	iii. alternate static source;		
	iv. pressure error;		
	(b) explain the relationship between:	A	B
	i. IAS; TAS.		
	(c) have a basic knowledge of the principle of operation and construction of the:	A	B
	i. ASI, VSI, altimeter;		
	State the effect of the following factors on the accuracy of pressure instrument indications:	A	B
	(a) ASI:		
	i. blockage/leaks (pitot or static);		
	(b) VSI:		
	i. blockage of the static source;		
	ii. lag.		
	(c) Altimeter:		
	i. blockage of the static source;		
	ii. lag;		
	iii. incorrect sub-scale settings;		
	iv. errors due to changes in atmospheric temperature and pressure.		
	Interpret the colour codes on an ASI. Magnetic compass		
	Background knowledge		
	Principle of construction:		
	• magnetic needles point to magnetic north	A	B
	• fluid decreases oscillations and friction	A	B
	• should not contain bubbles	A	B
	State the effect of the following errors on compass indications in the southern hemisphere:	A	B
	(a) turning errors;		
	(b) acceleration errors.		
	State the purpose of and use a compass correction card to determine magnetic heading.	A	B

	Note: *Pressure instruments are the ASI, altimeter, VSI*		
	State the effect of a blockage of the pitot or static source on the indications displayed by each pressure instrument listed above.	A	B
	State the effect of an incorrect sub-scale setting on the reading of an altimeter;	A	B
	State the effect of using an alternate static source located inside the cockpit, on the reliability of pressure instrument indications.	A	B
	Describe checks which would ensure the serviceability of a magnetic compass and the flight instruments mentioned above.	A	B

-End of Basic Aeronautical Knowledge Syllabus-

UNIT 2.02 – AIR LEGISLATION SYLLABUS

Note: The pass mark for examinations set to this syllabus is 80%.

1 AIR LEGISLATION

1.1 – FLIGHT RULES AND AIR LAW		Standard prior to:	
		Solo	P/Cert
1.1.1	**Flight rules and conditions of flight.**		
	Recall/apply the following rules/requirements:	B/P	C/P+
	(a) rules of the air;		
	(b) the requirements relating to the operation of aeroplanes on & in the vicinity of an aerodrome & the conditions relating to turns after take-off;		
	(c) separation minima between aeroplanes for take-off & landing at a non-controlled aerodrome;		
	(d) rules relating to restrictions on smoking in aeroplanes during flight and refuelling;		
	(e) visual flight rules and visual meteorology conditions (aeroplanes) for operations below 10,000ft;		
	(f) altimetry procedures for flight below 10,000ft.		
	State the rules relating to:	B	C
	(a) the use of drugs & alcohol, and recall the minimum period between alcohol consumption and flight departure;		
	Recall regulations relating to the minimum heights for flights over:	B	C
	(a) populated areas;		
	(b) other areas.		
	State the limitations imposed on:	B	C
	(a) acrobatic flight;		
	(b) flights over public gatherings.		
	Recall the requirements for landing prior to the end of daylight.	B	C

1.1.2	**Aerodromes.**		
	With reference to a diagram of the aerodrome(s) used for training:	B	C
	(a) identify movement areas;		
	(b) explain the significance of taxiway, runway, and/or helipad markings.		
	Identify the following positions in a circuit:	B	C
	(a) downwind leg;		
	(b) base leg;		
	(c) crosswind leg;		
	(d) upwind leg;		
	(e) dead side of the circuit.		
	Explain the significance of a white cross on the movement area.	B	C
	Identify and explain the purpose of the following aerodrome markings:	B	C
	(a) runway markings;		
	(b) runway threshold markings;		
	(c) runway end markings;		
	(d) cone and gable markers;		
	(e) taxiway markings;		
	(f) holding points/bays;		
	(g) a double white cross adjacent to a primary wind indicator;		
	(h) a horizontal white dumbbell.		

1.1.3	**Emergencies, accidents, incidents and SAR.**		
	Differentiate between an accident and an incident.	A	C
	Extract the requirements applicable to the notification of accidents and incidents.	A	C
	Extract from RA-Aus Operations Manual the responsibilities of a pilot regarding the notification of accidents and incidents.	A	C
1.1.4	**Documentation.**		
	Describe the method of obtaining publications and why it is important to update these documents.	A	B
	Given an item of operational significance:	A	B
	(a) select from the list below the appropriate reference document:		
	CAR; CASR; CAO; AIP (Book); RA-Aus Operations Manual;		
	(b) extract relevant and current information from these documents.		
	Extract/decode information contained in ERSA, NOTAMS and AIP supplements.	A	B
1.1.5	**Pilot certificate, privileges and limitations.**		
	Know the:	A	C
	(a) privileges and limitations of the certificate;		
	(b) recent experience requirements;		
1.1.6	**Airspace.**		
	Differentiate between the various classifications of airspace.	A	C
	With respect to the terms listed in (a) to (e): explain each term and, if applicable.	A	C
	• identify airspace boundaries on appropriate charts		
	• extract vertical limits of designated airspace from charts or ERSA		
	(a) flight information service; FIR; FIA; OCTA; Class G		
	(b) air traffic control service; CTA; CTR; controlled airspace;		
	(c) PRD areas;		
	(d) CTAF areas;		
	(e) Controlled aerodromes;.		
	Know the requirements and procedures to be adopted when operating:	A	C
	(a) from or into:		
	i. any licensed aerodrome;		
	ii. a CTAF.		

-End of Air Legislation Syllabus-

UNIT 2.03 – NAVIGATION AND METEOROLOGY SYLLABUS

Note: The pass mark for the examinations set to this syllabus is 80%.

1. CROSS COUNTRY ENDORSEMENT

1.1 – NAVIGATION		Standard prior to:	
		Solo	P/Cert
1.1.1	**Basics – Extract Information from documents.**	B/P	C/P+
	Note: *Reference to AIP "visual" charts means the present ERC-L, VTC, VNC and AUS PCA and includes any subsequent changes to charts required for flight under VFR.*		
	On a WAC and AIP "visual" charts (if applicable) which cover the local area of operation:	B/P	C/P+
	(a) identify, without reference to the chart legend:		
	i. major features to assist in map reading e.g. roads, rivers, lakes;		
	ii. obstacles and spot heights, including elevation or height above terrain;		
	iii. CTA, PRDs, and aerodrome data on VTC/ERC (if applicable);		
	(b) decode other symbols with reference to the chart legend		
	(c) assess the general height of the terrain from hypsometric tints and contours;		
	(d) estimate track and distance;		
	(e) demonstrate and explain the reason for chart orientation in flight.		
	On AIP visual charts identify airspace boundaries and symbols with reference to the chart legend.	B/P	C/P+
	Use ERSA to extract the following regarding aerodromes:	B/P	C/P+
	(a) runway data;		
	(b) special procedures;		
1.1.2	**Computation Techniques.**		
	Use mental rules of thumb to estimate:	B/P	C/P+
	(a) time interval using estimated GS and distance e.g. 120 KT = 2 NM/MIN;		
	(b) endurance; given fuel flow and fuel available (excluding reserve fuel).		
	Note: *Students should be given examples to indicate that over short distances and periods of time, such approximations are reasonably accurate.*		
	Apply magnetic variation to obtain magnetic direction.	B/P	C/P+
	Determine head/tail, and x-wind components given W/V and HDG.	B/P	C/P+

1.1.3	**Form of the Earth.** In order to apply this knowledge a student should have an understanding of the items listed in (a) to (f) and, if applicable, their effect on:		
	• position on the earth	B/P	C/P+
	• time differences	B/P	C/P+
	• distance and direction	B/P	C/P+
	(a) the shape and rotation of the earth;		
	(b) latitude, longitude;		
	(c) meridians of longitude, parallels of latitude;		
	(d) difference between true and magnetic north;		
	(e) terrestrial magnetism, magnetic variation and the change in variation with time;		
	(f) distance on the earth i.e. relationship between a minute of latitude and a nautical mile.		
1.1.4	**Time.**		
	Explain the terms UTC, Local Mean Time, Local (Standard) Time, Local summer time.	B/P	C/P+
	Extract (within +/- 5 min) the beginning and end of civil twilight from AIP daylight and darkness graphs.	B/P	C/P+
	Carry out conversions between:	B/P	C/P+
	• LMT, UTC, Local (Standard) times including local summer time		
	List factors which may cause daylight to diminish earlier than the time extracted from AIP darkness graphs.	B/P	C/P+
	Describe the effect of the earth's rotation and revolution around the sun on the:	B/P	C/P+
	(a) beginning and end of daylight;		
	(b) period of daylight;		

1.1.5	**Charts and Publications.**		
	Note: *AIP "Visual Charts" refers to the present ERC-L, VTC, VNC and AUS PCA and embraces any subsequent changes to charts required for flight under VFR.*		
	From AIP "Visual Charts" and ERSA, select the chart(s) document(s) which contain information about a given item of operational significance.	B/P	C/P+
	Extract/decode symbols and apply information displayed on AIP "visual charts".	B/P	C/P+
	Interpret topographic detail and decode symbols displayed on a WAC, VTC and VNC.	B/P	C/P+
	On a WAC and AIP "visual charts":	B/P	C/P+
	(a) measure distance:		
	i. using chart and latitude scale;		
	(b) plot a position given:		
	i. latitude and longitude;		
	ii. bearing and distance.		
	Note: *Students should also practice techniques to estimate track and distance.*		
1.1.6	**Computations.**		
	Review computations and conversions and:	B/P	C/P+
	(a) solve GS, distance, fuel used, fuel required, fuel remaining and fuel consumption problems, given appropriate combinations of these factors;		
	(b) determine HDG, GS and drift given TAS, W/V, TR;		
	(c) determine TR given HDG, TAS, W/V;		

1.1.7	**Pilot Navigation.**		
	Principles of map reading:	B/P	C/P+
	(a) describe the method of chart orientation;		
	(b) list situations when a pilot should read:		
	i. from map to ground;		
	ii. from ground to map;		
	(c) select appropriate position lines to establish:		
	i. ground speed;		
	ii. track error;		
	iii. a fix;		
	(d) select appropriate ground features to establish position when flying:		
	i. at low level (500 FT AGL);		
	ii. between (approximately) 2000 and 10,000 FT;		
	iii. over mountainous terrain, coastal areas, densely populated and sparsely populated areas.		
	Chart preparation and selection (practice):	B/P	C/P+
	(a) draw tracks, track error lines, time/distance markings;		
	(b) given a route:		
	• select WAC(s) and appropriate AIP "visual charts"		
	With reference to a planned or given track and given appropriate data:	B/P	C/P+
	(a) determine track made good (TMG);		
	(b) calculate drift;		
	(c) determine alteration of heading or HDG(M) to:		
	i. parallel track;		
	ii. intercept track at a nominated point;		
	iii. maintain track once track is intercepted.		
	(d) revise/confirm estimates or ETA using latest ground speed or time/distance proportion;		
	(e) establish a DR position using latest TR & GS.		
	Note: *Whilst the use of a map plotter is acceptable, students should be taught to employ mental dead reckoning and proportional techniques to solve in-flight navigational problems.*		
	Monitor flight progress by maintaining an in-flight navigation log.	B/P	C/P+
	Monitor fuel consumption and revise fuel reserves.	B/P	C/P+
	Plan in-flight diversions:	B/P	C/P+
	(a) around adverse weather;		
	(b) to a suitable aerodrome.		
	Note: *Diversions must address all appropriate items listed in AIP with respect to flight plan amendments.*		

1.2 – METEOROLOGY		Standard prior to:	
		Solo	P/Cert
1.2.1	**Knowledge of Local Weather.**		
	Demonstrate a basic knowledge of local weather, in particular the likely occurrence of :	B/P	C/P+
	(a) thunderstorms;		
	(b) low cloud;		
	(c) poor visibility;		
	(d) turbulence;		
	and describe how these phenomena may affect the safe operation of an aeroplane.	B/P	C/P+
1.2.2	**Knowledge of Forecasts and Reports.**		
	Demonstrate an understanding of weather forecasts, reports and broadcasts that are pertinent to the area of operation.	B/P	C/P+
	Know the terms and abbreviations used in forecasts and where to obtain decodes.	B/P	C/P+
	Demonstrate an ability to obtain relevant forecasts.	B/P	C/P+
1.2.3	**Understand Significance of Observations.**		
	Recognise signs which may indicate the presence of :	B/P	C/P+
	(a) turbulence, thermals, dust devils;		
	(b) wind gradient, wind shear,		
	and describe the effect of these phenomena on flight characteristics.	B/P	C/P+
	Note: *"Signs" means forecast conditions and pilot observations.*		

1.2.4	**Atmospheric Pressure:**		
	Demonstrate an understanding of :	B/P	C/P+
	(a) Unit of measure (b) Variation with height (c) Pressure altitude (d) Effects of pressure altitude (e) ICAO standard atmospheric pressure		
1.2.5	**Atmospheric Temperature:**		
	Demonstrate an understanding of:	B/P	C/P+
	(a) Units of measure (b) Variation with height (c) Density altitude (d) Effects of density altitude (e) ICAO standard atmospheric temperature		

1.2.6	**Pressure systems and fronts:** Demonstrate an understanding of: (a) Depression or low pressure (b) Anti-cyclone or high pressure (c) Cold and warm fronts (d) General characteristics of pressure systems and fronts over Australia (e) Horizontal pressure (f) Isobars	B/P	C/P+
1.2.7	**Cloud Classifications:** Demonstrate and be able to identify different cloud classifications and the weather associated with them.	B/P	C/P+

1.2.8	**Visibility:** Demonstrate an understanding of the effects on visibility of : (a) Haze (b) Smoke (c) Fog	B/P	C/P+

1.2.9	**Turbulence:** Demonstrate a knowledge and understanding of turbulence in relation to the following: (a) Mechanical (b) Terrain (c) Convectional (d) Local winds (e) Slipstream (f) Wake	B/P	C/P+

1.2.10	**Wind:** Demonstrate a knowledge and understanding of: (a) Wind velocity (b) Wind shear (c) Wind gradient (d) Backing and veering (e) Sea breezes (f) Fohn winds (g) Valley winds (h) Anabatic and katabatic winds	B/P	C/P+

1.2.11	**Mountain waves** Demonstrate an understanding of: (a) conditions and severity at which they occur (b) how they can affect flight conditions	B/P	C/P+

1.2.12	**Met Reports and Forecasts:**		
	Demonstrate an understanding of:	B/P	C/P
	(a) Metar's (b) Speci's (c) TTF (d) TAF (e) AFOR (f) Sigmet (g) Airmet		

-End of Navigation and Meteorology Syllabus-

UNIT 2.04 – RADIO OPERATOR SYLLABUS

Note: The pass mark for the examinations set to this syllabus is 80%.

1.1 – NAVIGATION		Standard prior to:	
		Solo	P/Cert
1.1.1	**Radio Telephony.**		
	Know the basic principles of radio wave propagation and recall the appropriate frequency bands for VHF.	B	C
	Know the limitations of VHF in terms of quality of reception and range.	B	C
	List factors which may affect VHF reception.		
	Use appropriate charts/documents to:		
	(a) extract VHF frequencies;		
	(b) determine communication coverage.		
	Recall the phonetic alphabet and the method of transmitting numerals and recreational aeroplane call signs.	B/P	C/P+
	Recall pertinent (local) procedures and radio phraseology for:	B/P	C/P+
	(a) circuit flying;		
	(b) flights to and from the training area.		
	State the purpose of the following radio controls:	B/P	C/P+
	(a) on/off switches;		
	(b) frequency selector and squelch control;		
	(c) transmit button and mute switch.		
	Differentiate between a distress & urgency message	B/P	C/P+
	(a) give examples when each should be used;		
	(b) recall each prefix and extract the elements of each message from ERSA		
	Extract radio failure procedures from ERSA	B/P	C/P+
	Explain the legal requirements of radio calls with regard to;	B	C
	(a) Foreign language (b) Secrecy of communications (c) Swearing or offensive language (d) Non-essential radio communication (e) Improper or unauthorised use of call signs		

1.1.2	**Class 'G' Airspace Procedures.** Explain the main differences and cite the radio requirements and broadcasts between; (a) Flight Information Area (FIA) (b) CTAF (c) Aeroplane landing area. Explain procedures after loss of radio communication at; (a) Flight Information Area (FIA) (b) CTAF (c) Aeroplane landing area. Operations at non controlled aerodromes (a) Sound knowledge of CAAP 166-1 (2)	B/P	C/P+

-End of Radio Operator Syllabus-

UNIT 2.05 – HUMAN FACTORS SYLLABUS

The pass mark for the examinations set to this syllabus is 80%.

1.1 - AVIATION MEDICINE		Standard prior to:	
		Solo	P/Cert
1.1.1	**Fitness for flight: the pilot will be able to** (a) describe the basic levels of fitness required for safe flight (b) demonstrate an awareness of a pilots responsibility for his medical fitness	B	C
1.1.2	**Body systems: the pilot will be able to** (a) describe briefly the functions of the skeletal, muscular, respiratory, nervous, circulatory, digestive and endocrine systems and their relevance to pilot fitness	B	C
1.1.3	**Incapacitation: the pilot will be able to** (a) describe subtle, partial, total incapacitation, (b) demonstrate an awareness of the prevention and causes	B	C
1.1.4	**Diet , exercise, lifestyle: the pilot will be able to** (a) demonstrate an awareness of the importance of diet and exercise on pilot fitness (b) demonstrate an awareness of the risk factors for heart disease	B	C
1.1.5	**Common conditions affecting flight:** (a) the pilot will be able to describe the effects of headache and migraine, dehydration, hypoglycaemia, blood donation, anaesthetics, injuries, food poisoning and pregnancy on safe flight	B	C
1.1.6	**Drugs and medicines:** (a) the pilot will be able to demonstrate an awareness of the need for care with both prescription and common over the counter medicines. (b) the pilot will be able to demonstrate an awareness of the adverse effects of tobacco smoking on pilot performance. (c) the pilot will be able to demonstrate an awareness of the adverse effects of alcohol on pilot performance. (d) the pilot will be able to demonstrate an awareness of the need to avoid use of illicit drugs	B	C
1.1.7	**Hypoxia, hyperventilation, Carbon monoxide poisoning: the pilot will be able to:** (a) describe the causes, symptoms and treatment required even below 10,000 ft.	B	C
1.1.8	**The common cold and barotraumas: the pilot will be able to** (a) describe the reasons for not flying with a cold (b) demonstrate an awareness of the problems caused by expansion of gases in other parts of the body, including the reasons for not flying after Scuba diving	B	C
1.1.9	**Limitations of vision: the pilot will be able to** (a) describe the basic structure of the eye and its effect on vision. (b) demonstrate an awareness of the effect on the pilots vision of empty sky, myopia, brightness and sun glare. (c) describe factors conducive to mid air collisions (d) demonstrate methods of effective scanning and collision avoidance	B	C

1.1.10	**Visual Illusions: the pilot will be able to** (a) Demonstrate an awareness of illusions resulting from the following factors: false horizons, approach angles, runway slope and width	B	C
1.1.11	**Hearing loss: the pilot will be able to** (a) describe common causes of hearing loss and the need for hearing protection when flying	B	C
1.1.12	**Acceleration: the pilot will be able to** (a) describe the physiological effects of acceleration on the body	B	C
1.1.13	**Vestibular illusions: the pilot will be able to** (a) Demonstrate an awareness of illusions associated with linear and angular acceleration and the reasons for remaining in VFR conditions	B	C
1.1.14	**Motion Sickness: the pilot will be able to list** (a) the causes, symptoms, prevention and treatment of motion sickness	B	C
1.1.15	**The pilot will be able to** (a) list the Medical standards for pilot certificate and/or instructor ratings	B	C
1.1.16	**Survival and Basic first aid: the pilot will be able to** (a) demonstrate an awareness of the first aid and survival information in ERSA	B	C

1.2 HUMAN FACTORS		**Standard prior to:**	
		Solo	**P/Cert**
1.2.1.	**What is human factors: the pilot will be able to** (a) Define human factors (b) List components of human factors (c) Demonstrate an awareness of the importance of human factors in minimising human error	B	C
1.2.2	**Classification of Errors into slips, lapses, mistakes, violations: the pilot will be able to** (a) describe each error type (b) identify examples of each error type (c) identify error chains (d) analyse scenarios (e) suggest minimization strategies	B	C
1.2.3	**Airmanship; Proficiency, skill, discipline: The pilot will be able to** (a) Identify the components of airmanship (b) Define each of the components (c) Identify examples of each component	B	C
1.2.4	**Airmanship; Flight Discipline: The pilot will be able to** (a) List aviation examples of imposed, self and collective discipline (b) Explain the relevance of flight discipline (c) Analyse scenarios for flight discipline	B	C
1.2.5	**Airmanship; Skills: The pilot will be able to** (a) Define motor, intellectual and perceptive skills (b) List examples of their application in aviation	B	C

1.2.6	**Stress and fatigue: The pilot will be able to** (a) Define stress (b) Describe examples of chronic and acute stress (c) Recognise stress and causes of stress (d) Recognise the effects of stress (e) Develop stress management strategies (f) Define fatigue (g) Identify causes and effects of fatigue (h) Develop fatigue countermeasures	B	C
1.2.7	**Risk Management and hazard analysis: The pilot will be able to** (a) Define risk (b) Identify and classify hazards (c) List risk control strategies (d) Assess the level of risk in scenarios (e) Complete a hazard Record (f) Use a Flight Safety hazard analysis form	B	C
1.2.8	**Information processing: The pilot will be able to** (a) Explain perception and the function of short term memory (b) Explain the function of the long term memory (c) Explain the function of the working memory with respect to decision making (d) Explain how channel capacity effects decision making (e) Explain the role of attention in decision making (f) Explain the difference between selective , focussed and divided attention (g) Explain the effects of stress on attention (h) Develop strategies for improving memory	B	C
1.2.9	**Attitudes and behaviour: The pilot will be able to;** (a) Define attitude and its component processes (b) Describe and identify hazardous attitudes	B	C
1.2.10	**Airmanship, Situational awareness, Judgement: The pilot will be able to** (a) Define situational awareness (b) Identify behavioural markers of situational awareness (c) Perform situational assessment in flight preparation (d) Identify critical elements of situational awareness	B	C
1.2.11	**Judgement and decision making: The pilot will be able to** (a) Define judgement (b) List examples of cognitive and perceptual judgement (c) Explain the difference between judgement and decision making (d) Define Aeronautical Decision Making (ADM) (e) List 6 steps of good decision making (f) Define Naturalistic Decision Making (NDM) (g) Define Rule Based Decision Making (h) Examine ways to improve their own decision making	B	C
1.2.12	**Accident & incident reviews: The pilot will be able to** (a) Analyse accident scenarios with respect to human factors to learn from them	B	C

-End of Human Factors Syllabus-