Hang Gliding Federation of Australia

PG PILOT TRAINING SYLLABUS

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INTRODUCTION

The HGFA Hang Gliding and Paragliding Pilot Training Syllabus for flight tuition has been designed in a format closely following that of other forms of aviation. The syllabus attempts to follow the standard general aviation curriculum where possible, but obviously substantial variations have been necessary given the unique training requirements that these aircraft present. .

The sequence of this syllabus is a guide only. The actual sequence in which each Unit/Phase is completed is dependent upon the particular sites and equipment available to the instructor; and most importantly the weather. The time allocated to each Phase may vary with the size of the class, the student/s' ability to learn, the continuity of training and the effects of weather and other influences.

Although the sequence of presentation may be varied, it must be remembered that safe progression depends upon providing a foundation of the vital basic knowledge and skills from which the pilot builds. It is imperative that any phase that has been by-passed to take advantage of conditions must be completed before the pilot achieves a Basic or Restricted Pilot Certificate.

The instructor must keep daily logs of each student's progress, either by using the HGFA Flight Training Progress Report or by another appropriate means.

This Training Syllabus is to be used in conjunction with other HGFA Manuals and training guidelines that are issued from time to time. It is essential for the professional instructor to continue to upgrade knowledge of these guidelines and other techniques throughout his or her training career.

The preferred text book to compliment this syllabus is : - The Art of Paragliding by Dennis Pagen 2nd Ed. 2004. References to chapters and page numbers relate to this textbook.

This Syllabus is not designed as a stand-alone document. The instructor will need to develop an individual Lesson Plan for each phase of the syllabus and plan a training program specific to his or her sites and training systems. The lesson planning process is to enable the instructor to apply the syllabus to his/her specific training environment and to ensure that each theoretical and practical component of the syllabus is provided.

Attention to classroom theoretical support is of vital importance to the effectiveness of the HGFA training system. Each student must complete an appropriate Pilot Training Workbook and the theoretical support provided to students must be relevant to the practical training being undertaken. The relevant Pilot Workbook theory components must be completed prior to the student sitting the applicable multiple choice theory.

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Unit 1 – Phase 0 INTRODUCTORY TRAINING FLIGHT

AIMS:

To introduce a potential student to the sport of hang gliding or paragliding;

To motivate the potential student to undertake a pilot training course by instilling confidence in the aircraft, associated equipment and the HGFA Pilot Training System; and

To lay the foundations of good "airmanship" by establishing at the outset an attitude of respect for the weather conditions; a care and attention to detail with equipment; and an expectation that only the highest standards of safety are acceptable.

Objectives: To have the prospective student:

Observe the basic operation of a hang glider or paraglider and the environment in which it operates; (Chapter 1)

Gain a basic understanding of the aircraft components, controls and pre-flight checking procedures; (Chapter 3) and

Take part in a well-controlled flight.

Lesson Type	**:**	Theory / practical
Venue	**:**	HGFA approved training site
Lesson Duration	**:**	Approx. 1 hour
Equipment	**:**	Certified training aircraft
Other materials	**:**	Harnesses, helmets and warm clothing

Briefing (may be conducted on site)

- Risks and dangers of the sport and safety provisions
- Australian sport aviation and the role of HGFA: including Pilot Training, Certificates and Endorsements
- Acceptance of all risk and signing of waiver
- Health and fitness
- How a wing flies (pg 72-85)
- Aircraft stability - pendular and aerofoil stability (pg 312)

Unit 1 continued

Pre-flight briefing

- Lift considerations and soaring techniques (pg 326)
- Launch and landing procedures, including harness entry and exit procedures
- In-flight procedures, including relaxation, horizon and visual reference datum
- Aircraft controls - input requirements and effects, handing over and taking over procedures
- Flight plan and flight limitations
- Pre-flight checks

Introductory Training Flight

- Take-off and flight path stabilisation
- Harness entry
- Student relaxation
- Flight path control and lookout considerations
- Turns, flat and moderate bank, including visual references
- Hand-over of controls (if flight conditions allow – not during landing circuit)
- Control feel and effects of control input
- Landing circuit and landing
- Post-flight procedures and de-brief
- Provision of on-going pilot certificate training contacts

Unit 2 INTRODUCTION & GROUND HANDLING

AIMS:

To consolidate the student's introduction to the sport of paragliding.

To motivate potential students to undertake a complete course by instilling confidence in the HGFA training system, the equipment and training procedures.

To lay the foundations of good 'airmanship' by establishing at the outset:

an attitude of respect for the air and the prevailing weather;

an awareness of the need to operate within any limitations imposed by personal experience and pilot skills;

an awareness of the need to pay attention to detail with equipment; and

an expectation that only the highest standards of safety are acceptable in all flying operations.

To introduce the student to the fundamentals of glider set-up and ground handling.

Unit 2 - Phase 1 Sport Awareness

Objectives: To provide the student with an awareness of the current state of development of the sport with regard to equipment design and standards, pilot training and licensing and general flight potential and limitations.

To outline the sports regulatory and administrative relationships.

To provide the student pilot with complete details of the course being offered and the normal steps of progression toward Basic Pilot Certificate and Restricted Pilot Certificate.

To present a realistic picture of the risks as well as the conditions and contractual arrangements under which the course is being offered.

Venue/lesson type	:	Classroom / Theory and video presentation
Lesson duration	:	Approx 1 hour
Equipment	:	HGFA Training video, lecture-discussion, other videos
Other materials	:	HGFA and school brochures, waivers, HGFA membership applications, course programs etc

- Introduction of Instructor/s and outline objectives of session
- Brief history of sport (pg 69)
- Aerodynamics - How a wing works (pg 23), controlling the aircraft (pg 33), current equipment design standards, stability and performance of modern gliders
- Safe operating and training conditions
- The HGFA, pilot certificate system, pilot development plan
- The HGFA-CASA relationship and basic regulations
  - Height and air space restrictions
  - VMC conditions
  - Pilot in command requirements

- HGFA training system...
  - Questions, discussion and explanation of points raised in video

- Outline of training program
- The legal situation, HGFA membership, Public Liability Insurance
- The waiver and what it means
- The risks and dangers of sport aviation
- The HGFA Pilot Training Workbook and Flight Log requirements
- Other motivational video

Unit 2 - Phase 2 Aircraft Assembly and Familiarisation

Objectives: To familiarise the student with the aircraft components and assembly as well as pre-flight checking procedures.

The student will establish a routine for pre-flight checking, harness attachment and harness entry.

The student / instructor will discuss in detail the reason for each of the checks.

To introduce the student to ground handling techniques.

To provide the student with a well-controlled flight or simulated flight experience.

Venue/lesson type	:	Tandem site or ab initio training site
Lesson duration	:	1 hour explanation and demonstrations and appropriate flight or simulator session
Equipment	:	gliders, harnesses etc (Full training kit)

- Site rules (no smoking, designated set-up or landing areas) (pg 264)
- Wind and weather conditions awareness
- Assembly procedure and safe parking / lay-out (pg 37)
- Explanation of the glider component parts and materials (pg 6)(pg 18-22)
- Harness attachment (pg 50)
- Pre-flight checks and drills: (pg 51,pg 141)
  Canopy;
  Risers, lines, brakes;
  Karabiners, harness connectors
- "Touch to check it" in a routine system
- Inclusion of harness in pre-flight
- Glider inspection requirements following hard landing
- Helmet and other protective clothing

- Ground handling and wind orientation
- Harness checks/ helmet checks

- Familiarisation flights

- Glider de-rig and pack-up (pg 43)
- Defect/damage observation
- Transporting the glider

- Personal flight log book and Progress Report

Unit 3 BASIC AERONAUTICAL KNOWLEDGE & LOW GLIDES

AIMS:

To introduce the concepts of aerodynamics.

To discuss general meteorology and the atmosphere.

To emphasise specific micro-meteorological influences with regard to safe operations.

To explain & demonstrate, and then for students to attempt the following basic flight sequences: -

Ground handling (Chapter 4)
Launch procedure (Chapter 4)
Air speed/pitch control (pg 93)
Altitude control
Directional/roll control (pg 98)
Landing bleed-off and flare (pg 94)
Shallow turns to 'final' landing approach (pg 98)

Unit 3 - Phase 3 Basic Aerodynamics & Meteorology

Objectives: The student will be able to describe fundamental aerodynamics and how they relate to a paraglider wing.

The student will be familiar with the basic laws of meteorology and to understand the concept of micrometeorology.

The student will be able to explain the relationship between air movement and glider/wing behaviour and performance

Venue/lesson type	:	Classroom theory presentation
Lesson duration	:	approx 2 hours presented in two sessions
Equipment	:	HGFA Training video, lecture-discussion
Other materials	:	Bureau of Meteorology handouts, Atmosphere, Clouds, model of wing or wall charts

Aerodynamics

- How a wing works, aerofoils - camber, span, chord (pg 23-32, pg 302)
- Forces of lift, drag and weight / gravity on the wing (pg 32)
- Wing loading (pg 307)
- Angle of Attack - relative airflow - airspeed - stall (pg 80-83)
- Centre of Pressure, Centre of Gravity and Pendular Stability (pg 32, pg 313)
- Roll, Pitch and Yaw (pg 84)
- Weight shift control/ Use of brakes and back risers (pg213)
- The relationship in production of lift and drag of, A of A, angle of bank and surface area, wing profile and shape (chapter 12)
- A of A relative to brake position and pressures at trim speed (pg 31-33)

Meteorology (Chapter 6)

- Understanding forecasts
- Wind strength and direction observations and judgement (pg 112)
- Wind strength and turbulence (pg 114)
- Other causes of turbulence (pg 116)
- General weather observations (clouds, fronts, squalls, storms, etc) (pg 123-137)
- Other terrain influences on airflow (pg 347)

Meteorology as applied to safe gliding operations

- The relationships of airspeed, wind strength and ground speed (pg 24-25)
- Glide angles at varying airspeed and penetration (pg 25,202,221)
- Wind strength and airflow effects on take off run and pitch control (pg 145-160)
- Wind strength effects on landing, bleed-off and flare (pg 167)
- Wind gradient and landing considerations (pg 167)

Unit 3 - Phase 4 Low Glides

Objectives: The student will be able to perform appropriate take off technique in light to moderate breeze (3-15knts).

The student will be able to perform consistent stand up landings in light to moderate breeze (3-15knts).

Venue/lesson type	:	Approved training site or flat ground
Lesson duration	:	3-6 hours in two sessions (dependent on number of students) Explanation, demonstrations and student flight practice (or in conjunction with simulator session)
Equipment	:	Full training kit

- Site rules (pg 264)
- Assembly procedure and pre-flight checks (pg 37-44)
- Harness attachment and checks (pg 46-54)

Launch phase
- Ground handling and wind orientation (pg 55,75)
- Assessing conditions and pre take-off checks
- Building a wall, lofting the canopy, forward and reverse techniques (pg 59-80)
- Smooth acceleration (pg 87-90)
- Control of pitch and roll throughout take-off run (pg 87-90)
- Smooth transition to flight (pg90)

Flight phase
- Control of pitch, altitude and airspeed (pg 90-95)
- Relaxed and subtle inputs (pg 98)
- Holding a stable course (pg 100)
- Course correction (pg 100)

Landing Phase (pg 161-164)
- Wings level on final approach
- Airspeed on approach
- Body and hand positions
- Flare timing, power and commitment (technique discussions)
- Run out of remaining ground speed
- Adjustment of flare to prevailing wind conditions
- Post landing glider control

- Glider de-rig and pack-up
- Defect/damage observation

- Personal flight log book and Progress Report

Unit 3 - Phase 5 Controlling Airspeed and Flight Path

Objectives: The student will be able to perform simple flight sequences demonstrating an ability to fly at trim speed, and be able to recognise when flying faster or slower.

The student will also demonstrate an ability to hold a straight and steady course by making required corrections to stay on course into the wind.

Venue/lesson type	:	Approved training site or tandem flight
Lesson duration	:	2-4 hours in two sessions (dependent on number of students) Explanation, demonstrations and student flight practice (or in conjunction with simulator session or tandem flight)
Equipment	:	Full training kit.

- Assembly, harness attachment and pre-flight checks (pg 37)
- Assessing conditions (pg 84) and pre take-off checks (pg 86)
- Smooth transition to flight (pg 88)

- Flight at trim speed / little or pressure on controls (pg 91)
- Flying faster and slower then returning to trim speed (pg 92)
- Holding trim speed through slight turbulence (pg 98)
- Relaxed and subtle pitch / brake inputs (pg 98)
- Body / arm position awareness (pg 93)

- Holding a stable heading (pg 100)
- Holding central body position / equal brake pressures
- Looking toward landing point / not looking down (pg 167)
- Seeing windsock and aware of wind direction
- Effective corrections for drift off course
- Wings level through final approach phase (pg 161-164)
- Airspeed on approach

- Consolidation of take-off skills and fault correction (chapter 7)
- Light cross wind take-offs (pg 147)

- Continued development of landing skills (pg 161-169)
- Adapting landing to varied conditions
- Flare accuracy development

- Personal flight log book and Progress Report

Unit 3 - Phase 6 Flight Controls and Inflight Incidents

Objectives: The student will be able to demonstrate the primary controls and how they should be used.

The student will be able to analyse specific skill techniques and flight sequences.

The student will discuss the effects of poor skill / manoeuvre performance and the resultant glider reactions and any emergency responses required of the pilot.

Venue/lesson type	:	Classroom theory presentation
Lesson duration	:	Approx 2 hours presented in two sessions
Equipment	:	HGFA Training video, lecture-discussion
Other materials	:	White board, reference books, small model wing

- Review of basic aerodynamics (pg 301-308)

- Review of take-off techniques including cross and nil wind situations
- The effect of wind direction change during take-off run
- Adjusting take-off run for a change in wind condition (pg 145)

- Correcting for wing lift / tip tuck during launch

- Correcting for turbulence induced yaw and roll
- Dangers of flying too slow or fast, especially near ground and correction for these errors
- Coping with too slow or fast approach
- Coping with high flare
- Cross wind landings
- Uncontrolled landings (PLF)

Unit 3 - Phase 7 Airspeed Control and Shallow Turns

Objectives: The student will be able to perform simple flight sequences demonstrating an ability to fly at chosen airspeeds.

The student will also demonstrate efficient and coordinated shallow banked turns, to be stable on new heading, and to land into wind.

Venue/lesson type	:	Approved training site or tandem flight
Lesson duration	:	2-4 hours in two sessions (dependent on number of students) Explanation, demonstrations and student flight practice (or in conjunction with tandem flight)
Equipment	:	Full training kit.

- Assembly, harness attachment and pre-flight checks (pg 37)
- Assessing conditions (pg 84) and pre take-off checks (pg 86)
- Smooth transition to flight (pg 88)

- Flights at variety of nominated airspeeds - trim, min sink, L/D, and faster dependent on available safe altitude (pg 92,200)
- Flying faster and slower then returning to trim speed (pg 92,201)
- Holding nominated speed and course through slight turbulence(pg 98)

- Shallow banked turns (R & L) to achieve course changes of up to 90 degrees off wind (ie cross wind) and return to land into wind (pg 210-214)

- Demonstration of stability on new headings
- Holding course in cross winds - no drift (pg 222)
- Accuracy and consistency of bank angles

- Air speed control throughout turns and course changes

- Continued development of landing skills (pg 161-169)
- Adapting landing to varied conditions
- Flare accuracy development

- Personal flight log book and Progress Report

Unit 4 FLIGHT PLANNING, HIGH GLIDES & BASIC SOARING TECHNIQUES

AIMS:

To provide the theoretical support and knowledge to plan and attempt high glides.

To ensure an understanding of flight planning and landing approach options.

To gradually introduce the student to flight from higher launches.

To broaden the students experience of conditions and sites to include near soarable conditions and nil/very light wind situations

To emphasise the risks associated with new sites and conditions as well as increased altitude and glide range.

To establish the students' complete understanding of airspeed, especially stall recognition, glider behaviour when stalled and demonstration of correct recovery procedures.

To introduce steeper bank turns including 360 degree turns.

To introduce techniques for efficient and coordinated turns as well as descending or slipping turns.

Unit 4 - Phase 8 Flight Planning and Landing Approaches

Objectives: To review all stages of the landing flight sequence.

The student will be able to describe a variety of landing approaches and planning factors.

The pilot will identify the effects of poor technique, the resultant glider reactions and the emergency responses required.

Venue/lesson type	:	Classroom theory presentation
Lesson duration	:	60 minutes
Equipment	:	HGFA Training video, lecture-discussion
Other materials	:	White board, reference books, small model wing

- Review of the standard landing sequence for light to moderate breezes
- Landing sequence for nil wind
- Slope of ground considerations
- Landing considerations and sequence for moderate/gusty conditions

Review of
- Coping with high flare (pg 165)
- Uncontrolled landings (PLF)
- Landing approach speeds, wind gradient
- Adjusting flare technique for varying situations
- The importance of *sensing airspeed* during bleed off and timing for flare

Landing approach planning (pg 169-186)
- Pre-flight inspection of LZ and approach area
- The standard landing approach
- Focus on the touch down point
- Always turn toward touch down point
- Wind direction judgement form air
- Arrival height for safe LZ inspection
- Downwind leg, base leg and final
- Air speed through turns on approach
- Minimum altitude for straight and level on final
- The figure eight pattern and 'S' turns
- Need to stay upwind of LZ or major obstacles

- Obstacles around landing area
- Flying the perimeter
- Other gliders on approach
- Alternate fields, overshoot & undershot and final glide judgement

Unit 4 - Phase 9 Medium Level Glides

Objectives: The student will be able to plan and execute basic landing approach patterns.

To introduce the student to gradually increased launch or release altitudes.

Venue/lesson type	:	Approved training and high glide sites
Lesson duration	:	2-6 flights (dependent on number of students and fatigue levels)
Equipment	:	Full training kit plus radios and LZ assistant

- Site rules (red streamers)(pg 264)
- Conditions assessment
- Landing area inspection and approach planning from LZ perspective
- Obstacles and ground slope noted
- Wind indicator placement

- Landing planning from take off
- Other plans and options for changing conditions
- Flight and approach demonstration
- Orientation and terrain/landmark awareness
- Depth perception and parallax error

Pre-flight briefing
- Review of flight plan and conditions assessment before each flight
- Emergency procedures (radio failure)
- Reinforcement of airspeed as key to complete control

During flight (chapter 8)
- Each phase of flight at a time
  Take-off requires 100% concentration…..then concentrate on flight control / following the flight plan accurately.....which will allow complete attention to the landing phase.
- Focus of attention
- Clearing turns
- Height judgement
- Coping with changes of lift, sink and need to adjust flight plan
- Speed through turns on approach, timing the level-out and bleed-off
- Harness / glider exit, ground handling and clearing the LZ

Post flight de-brief / feedback
- Pilots own analysis
- De-rig and care of equipment (radios etc)
- Flight log entries and Progress Report

Unit 4 - Phase 10 Consolidation of Flight Preparation & Contingency Planning

Objectives: To emphasise the need for complete flight planning.

To further develop landing approach and planning skills.

The pilot and instructor will discuss specific emergency procedures for common problem situations.

Venue/lesson type	:	Classroom theory presentation
Lesson duration	:	approx 90 minutes
Equipment	:	Lecture-discussion
Other materials	:	White board, reference books, wall charts and photos of sites

- The flight begins at home (all gear checked/packed)
- Forecasts and actual conditions
- Observation and interpretation of conditions
- Site familiarity

The Fundamental Flight Plan (safe T/O and safe landing) (pg 241)
- Minimum altitude and glide to landing
- Launch point selection (assistance required / seeking advice)
- Landing Approach planning
- Pre-flight inspection of LZ and approach area
- Wind indicators and wind gradient
- Altitudes for downwind leg, base leg and final and focus touch down point
- Other approach options

Extended Flight Plan
- Continual conditions assessment & observing other gliders in air
- Areas of lift or sink (and turbulence)
- Height loss manoeuvres
- Turn markers and flight area limits
- Soaring strategies and height gain considerations

Emergency Procedures and Options
- Alternate landing areas, range, size, slope, approach
- Unexpected sink or increased headwind considerations
- Unexpected obstacles in landing area (people, stock, etc)
- Wind shift problems
- Overshoot / undershoot landing approach adjustment
- Emergency landing on coast, cannot make regular LZ
- Tree, hillside, downwind landings (PLF)
- Injured pilot procedures

Unit 4 - Phase 11 High Glide and Landing Approaches

Objectives: To practise complete flight planning on site.

The student will demonstrate landing approach and approach planning skills.

The student will demonstrate ability to follow exact designated flight plan.

Venue/lesson type	:	Approved high flight site
Lesson duration	:	2 - 4 flights > 250' descent
Equipment	:	Full training kit (or tandem)

- Site and conditions assessment
- Specific flight plan considerations
- Flight plan confirmation & landing approach planning

- Pre-flight briefing
- Flight performance
- Post flight de-brief

- Performance evaluation
- Flight plan amendment
- Pre-flight briefing
- Flight performance
- Post flight de-brief

- Pilot log book entries
- Progress Report

Unit 4 - Phase 12 Stalls and Incident Recovery, Speed to Fly

Objectives: The student will be able to describe the cause, dynamics, and recovery procedures for stalls in a variety of situations.

The student will describe how to adjust flying speed to changing conditions with in order to optimise flight or extend/diminish glide.

Venue/lesson type	:	Classroom theory presentation
Lesson duration	:	45 minutes
Equipment	:	Lecture-discussion
Other materials	:	White board, reference books

Stalls (pg 205-210)

- Relationships of lift, drag and airspeed throughout stall
- Incipient stall recognition
- Effects on glider control
- Effects of stall on glider pitch
- Severity of stalls / types of stalls

- Stall recovery
- Stall recovery procedure collapse / “surge” control
- Stalls near ground
- Stalls near hill
- Downwind stall
- Spins

Speed to Fly

- Relationship of airspeed to glide angle
- Lift/Drag relationship
- Induced and parasitic drag
- Glide degradation in increasing headwinds
- Glide variation in increasing tailwind
- Lift and sink and speeds to fly
- Turbulence and speed to fly
- Min sink speed, trim speed, best glide speed
- “Mushing” and its dangers
- Speeds to fly in turns (forces acting on wing)
- Maximum speed and dangers
- Extra speed in turns near ground

Unit 4 - Phase 13 Stall, Spin and Tuck recovery

Aims:

To raise awareness of paraglider incidents in flight (stall, spin, tuck)
To demonstrate SIV type incidents while ground handling (stall, spin, tuck)

Objectives: The student will simulate correct recovery from stalls

The student will simulate correct recovery from asymmetric and symmetric tucks

The student will demonstrate rear riser steering (paragliding only).

Venue/lesson type	:	Approved low flight site
Lesson duration	:	1 hour
Equipment	:	Full training kit

- Site and conditions assessment
- Use SIV videos to demonstrate stall, spin, tuck in flight

- Demonstration
- Flight performance 1M AGL
- Post flight de-brief

- Performance evaluation
- Post flight de-brief

- Rear riser steering (paragliding students only) / height considerations for demonstration

- Pilot log book entries and Progress Report

Unit 5 HIGH GLIDE CONSOLIDATION, SOARING TECHNIQUES & THEORY EXAMINATION

AIMS:

To demonstrate the need to adapt basic skills and techniques for various sites and situations.

To demonstrate an understanding of the basic principles of soaring flight.

To review in detail, the rules and regulations that govern hang gliding and paragliding.

To reinforce the need for vigilance and self-discipline through discussion and detailed explanation of the Rules of the Air.

To demonstrate the factors that influence soaring flight and adopt strategies that will extend the flight and increase flight options.

To ensure that student decisions and judgements are made with awareness of his/her abilities and glider performance. To test the student pilots Basic Aeronautical Knowledge, and his/her understanding of the concepts and principles of soaring flight.

To ensure that the student pilot is aware of the Rules & Regulations and his/her responsibility to operate within those rules in the interest of both personal safety and the safety of other aviators.

Unit 5 - Phase 14 Advanced Launch Techniques & Soaring Strategies

Objectives: The student will consider the changes in launch technique required for a variety of site situations and soarable conditions.

The student will relate his/her understanding of soaring flight skills and strategies.

Venue/lesson type	:	Classroom theory presentation
Lesson duration	:	60 minutes
Equipment	:	Lecture-discussion
Other materials	:	White board, reference books, site maps & diagrams

Complex launch considerations (pg145-160)

- Assisted launches and commands
- Steep slope launches (light & moderate wind)
- Shallow slope launches (light & moderate wind)
- Clearing or slot in trees (light/mod and cross wind)
- Take off above tree line (light/mod wind)
- Cliff launches (light/mod and cross winds)
- Changing slope

Soaring strategies

- Pre-launch checks and precautions
- Being ready and “focussed”
- Conditions assessment
- Launch timing-when all gliders are going up
- Glider performance and sink rate relative to available lift
- The "parcel of air" concept
- The lift band and soaring envelope
- Presence of thermals (extra lift & extra sink)
- Downwind vs upwind passes along ridge
- Turning in strongest lift-never in sink
- The first turn and first pass
- Below take off then head to bomb out rule

Airmanship

- Traffic considerations and Rules of the Air
- Fitting into a soaring pattern
- See and be seen (heads up)
- Flying predicably
- Student/glider performance and what others are doing
- Land or fly to clear air if not comfortable with crowding or conditions

Unit 5 - Phase 15 Basic Soaring Skills Demonstration

Objectives: The student will demonstrate basic soaring skills, appropriate to conditions and site, with radio assistance from instructor.

Venue/lesson type	:	Approved soaring site and conditions
Lesson duration	:	10 flights > 250' agl over several days if required
Equipment	:	Full training kit

- Glider assembly and pre-flight / streamer attachment
- Site and conditions assessment
- Specific flight plan considerations

- Pre-flight briefing
- Minimum of 10 flights of at least 5 minutes duration
- Post flight de-brief

- Pilot log entries and Progress Report

Unit 5 - Phase 16 Theory Consolidation and Trial Exam

Objectives: The student will review the Rules of the Air.

The student will study the regulations governing hang gliding.

The student will study the HGFA Operations Manual and specific Local Site Rules.

To assess the pilot's knowledge of basic gliding/soaring theory.

Venue/lesson type	:	Classroom theory presentation
Lesson duration	:	60 minutes
Equipment	:	Lecture-discussion / Examination papers
Other materials	:	Reference books, manuals and instructor answer overlay

CASA Regulations
- The CASA - HGFA chain of responsibility
- The altimeter for flights above 300' agl
- VMC
- Controlled airspace and height restrictions

HGFA Regulations
- The HGFA Operations Manual
- Basic Certificate privileges and responsibilities
- The Red Streamer
- Club and Site rules
- Obtaining information
- Flight rules and procedures

Airmanship
- Traffic considerations and Rules of the Air (pg 266)
- Fitting into a soaring pattern
- See and be seen (heads up)
- Flying predicably
- Student/glider performance and what others are doing
- Glider maintenance
- Parachute repack

Trial Exam
- The multiple choice theory examination will be conducted under normal examination conditions.
- No prompting or reference material is to be used.
- After marking of first attempt the instructor is to revise subject areas incorrectly answered and retest the section of the exam not passed to the standard required.

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Unit 6 SOARING SKILLS, ADVANCED FLIGHT TECHNIQUES, THEORY EXAMINATION & INTRODUCTION TO THE FLYING FRATERNITY

AIMS:

To assess the student pilots flight skills, judgement and decision making abilities.

To ensure that the student pilot is fully aware of the environment in which soaring takes place as well as the potential risks and dangers.

To consolidate soaring skills and achieve soaring airtime under instructor supervision, then will minimal supervision.

To provide extra formal training/practical experience in conditions and sites not experienced during the basic training program.

To test the student pilots Basic Aeronautical Knowledge, and his/her understanding of the concepts and principles of soaring flight.

To ensure that the student pilot is aware of the Rules & Regulations and his/her responsibility to operate within those rules for the sake of the sport and for his/her and other aviators safety.

To provide the pilot with the information and contacts for safe supervised flying outside of the training situation.

To make the pilot aware of the limitations of the training operation in terms of sites and conditions experienced as well as foot launch versus towing skills achieved, so that the pilot can more realistically gauge what sort of flying is suitable to be attempted.

To ensure that the pilot has sufficient skill and knowledge to access recognised sites suitable for Restricted Certificate pilots.

Unit 6 - Phase 17 Soaring Flight

Objectives: The student will demonstrate competent soaring skills, appropriate to conditions and site.

The student will demonstrate ability to enter and exit harness without any control loss.

Venue/lesson type	:	Approved soaring site and conditions
Lesson duration	:	1 - 2 flights > 250' agl
Equipment	:	Full training kit

- Glider assembly and pre-flight/streamer attachment
- Site and conditions assessment
- Specific flight plan and soaring considerations

- Pre-flight briefing
- Soaring flight of greater than 15 minutes.
- Demonstrating linked 180 degree turns; 360 degree turns and correct airspeed selection for maximising flight and safety.
- Efficient turn coordination

- Setting up harness on wing
- Potential dangers of entry/exit and overall orientation
- Take-off and harness entry
- Landing approach and harness exit/landing preparations
- Height/time considerations of harness exit/entry
- Aviate, Navigate, then think about harness

- Post flight de-brief

- Pilot log entries and Progress Report

- Discussion of sea breezes, valley winds, anabatic & katabatic
- Fronts, squalls, storms and use of thermals as appropriate to situations likely to be encountered

Unit 6 - Phase 18 Unassisted Soaring Flight

Objectives: The student pilot will demonstrate an unassisted soaring flight displaying all necessary skills and judgement with minimal supervision.

Venue/lesson type	:	Approved soaring site and conditions
Lesson duration	:	1 flight > 250' agl
Equipment	:	Full training kit

- The pilot will demonstrate all skills necessary for safe soaring operations relying on a pre-flight briefing only.
- The demonstration will show the pilots ability to handle straightforward sites in easy soaring conditions.
- The student will demonstrate appropriate harness entry and exit techniques without any loss of control or awareness of course, glider attitude and traffic.
- The student will have a red streamer on the glider
- The flight will be in excess of 15 minutes duration.

Unit 6 - Phase 19 Assessment

Objectives: To assess the pilot's knowledge of gliding / soaring theory.

To ensure that the pilot is aware of the current rules and regulations controlling the sport.

To ensure the pilot is has enough understanding and knowledge to operate safely with minimal supervision.

Venue/lesson type	:	Classroom theory examination
Lesson duration	:	60 minutes
Equipment	:	Pilot Training Workbook, Examination papers
Other materials	:	Instructor answer masters

- The instructor will ensure that all sections of the Pilot Training Workbook have been correctly completed.
- The multiple choice theory examination will be conducted under normal examination conditions. No prompting or reference material is to be used.
- After marking of first attempt the instructor is to revise subject areas incorrectly answered and retest the section of the exam not passed to the standard required.

Unit 6 - Phase 20 Introduction to the HGFA club and pilot support system

Objectives: To re-emphasise the need for supervision and the seeking of advice prior to flying each day.

To introduce the pilot to the local club and local safety officers.

To ensure the pilot is has enough understanding and knowledge to operate safely with minimal supervision.

Venue/lesson type	:	Classroom theory presentation / Club meeting
Lesson duration	:	1 hr
Advisory material	:	Club Lists and handouts, Skysailors

- A detailed review of the pilots log and training record
- Listing of suitable sites and conditions for the pilot
- A contact list for those sites and suitable supervisors

- Introduction to local Club and safety officers etc
- A description of the on-site procedures for the new Restricted Certificate pilot

- Specific warnings about what sites, conditions and types of operation are not suitable without further training

- Discussion of the types, models and size of equipment suitable to each individual pilot

- Advice on contacts if travelling outside of local flying community

Unit 6 - Phase 21 Soaring in Differing Conditions and Environments

Objectives: To demonstrate more complex flight planning incorporating ridge/slope soaring flight skills and sequences.

To broaden the students experience of conditions and sites to include thermal lift conditions and moderate wind situations.

To re-emphasise the risks associated with new sites and conditions as well as the problems of moderate crosswind drift, laminar airflow, mechanical turbulence and restricted beach landings.

The student will experience flying in moderately crowded conditions including mixed operations together with other hang gliders and paragliders.

The student will display correct turn technique in narrow lift band.

The student will perform efficient as well as descending turns.

Venue/lesson type	:	Approved soaring site/s
Lesson duration	:	Several flights as required
Equipment	:	All flight gear

- Glider assembly and pre-flight/streamer attachment
- Site and conditions assessment
- Specific flight plan and soaring considerations

- Specific skills as required by individual students
- Specific coastal and / or inland considerations
- Utilising thermal left

- Pre-flight briefing
- Soaring flights
- Demonstrating linked 180 and 360 degree turns, correct airspeed selection for maximising flight and safety.
- Efficient turn coordination
- Crosswind/crabbing flight
- Judging glide in variable lift and sink conditions
- Specific landing approaches for site(s)
- Light and moderate wind landing techniques

- Post flight de-briefs

- Pilot log entries (and Progress Report if required)

Unit 6 - Phase 22 Introduction to Human Factors in Aviation

Aim: This session is aimed to introduce the concept of Human Factors to student pilots.

Objectives: To introduce pilots to Human factors in Aviation

To introduce pilots to Air-Man-Ship as a way to incorporate human factors into flying activities

Venue/lesson type	:	Classroom theory presentation / Club meeting
Lesson duration	:	1 hr
Advisory material	:	Intro to Human factors Handout

- AIR-MAN-SHIP

- Managing fatigue
  - Identifying symptoms of fatigue
  - Recognising effects of fatigue
  - Implementing fatigue coping strategies

- Managing stress
  - Identifying symptoms of stress
  - Recognising effects of stress
  - Implementing stress coping strategies

- Alcohol and other drugs
  - Recognising the effects of AOD use
  - Identifying risk factors and symptoms of AOD use
  - Implementing strategies to maintain fitness to fly

- Decision making
  - Defining the problem
  - Considering options
  - Selecting and implementing options
  - Reviewing the outcome.

- Situational awareness
  - Gathering information
  - Interpreting information
  - Anticipating future states