



DECLARED TRAINING ORGANISATION (DTO) TRAINING PROGRAM – GLIDING, TOURING MOTOR GLIDERS AND INSTRUCTORS

NOTES:

DTO Training Programme and Syllabi

141.08.13 A DTO training programme if not already contained in the applicable regulations and technical standards shall include at least the following information-

- (a) the aim of the course;
- (b) crediting of previous experience and pre-entry requirements, including appropriate procedures for a student that wish to complete his or her training after having started at a different training organisation;
- (c) a list of all air and FSTD exercises to be taught, including a description of the objective of each exercise;
- (d) a syllabus summary if applicable;
- (e) the structure and content of the theoretical knowledge instruction;
- (f) the structure of the entire course and integration of theoretical knowledge instruction, FSTD and flight training; and
- (g) student progress checks for theoretical knowledge and flight training, as appropriate.

1. This training program can be copied and included in the DTO Procedures Manual as Appendices.

APPENDIX A - SYLLABUS OF THEORETICAL KNOWLEDGE FOR THE GLIDER PILOT AND TOURING MOTOR GLIDER LICENSE

Ref. No.	SYLLABUS OF THEORETICAL KNOWLEDGE FOR THE GLIDER PILOT AND TOURING MOTOR GLIDER LICENSE	GLD	TMG
1.0	AIR LAW		
1.1	Civil Aviation Regulations (CAR) and Technical Standards (CATS)		
1.1.1	PART 1: DEFINITIONS AND ABBREVIATIONS		
	Definitions	X	X
	Abbreviations	X	X
1.1.2	PART 12: AVIATION ACCIDENTS AND INCIDENTS	GLD	TMG
	12.02.1 – Notification of accidents	X	X
	12.02.2 – Notification of incidents	X	X
	12.02.4 – Particulars of notification	X	X
	12.04.1 – Guarding of aircraft involved in accident	X	X
	12.04.4 – Interference with objects and marks at scene of accident	X	X
1.1.3	PART 68: FLIGHT CREW LICENSING	GLD	TMG
	Subpart 1: General		
	68.01.1 - Applicability	X	X
	68.01.2 - Authority to act as pilot	X	X
	68.01.3 - Ratings for glider pilots	X	X
	68.01.4 - Competency	X	X
	68.01.5 - Medical fitness	X	X
	68.01.6 - Language	X	X
	68.01.7 - Logging of flight time	X	X
	68.03.9 - Period of validity	X	X
	68.03.10 - Privileges and limitations	X	X
	68.03.11 - Maintenance of competency	X	X
1.1.4	PART 67: MEDICAL CERTIFICATION	GLD	TMG

	67.00.2 Classes of medical certificates	X	X
	67.00.6 Period of validity of medical certificates	X	X
	67.00.9 – Duties of holder of medical certificate	X	X
1.1.5	PART 91 – GENERAL OPERATING AND FLIGHT RULES	GLD	TMG
	Subpart 1: General Provisions		
	91.01.2 – Authority of pilot-in-command	X	X
	91.01.10 – Endangering safety	X	X
	91.01.11 – Preservation of documents	X	X
	Subpart 2: Flight Crew		
	91.02.2 – Flight crew member emergency duties	X	X
	91.02.3 – Flight crew member responsibilities	X	X
	91.02.4 – Recency	X	X
	91.02.6 – Laws, regulations, and procedures	X	X
	91.02.7 – Duties of pilot-in-command regarding flight preparation	X	X
	91.02.8 – Duties of pilot-in-command regarding flight operations	X	X
Ref. No.	Subpart 3: Documentation and Records	GLD	TMG
	91.03.1 – Documents to be carried on board	X	X
	91.03.2 – Aircraft flight manual	X	X
	91.03.4 – Air traffic service flight plan		X
	91.03.5 – Flight folio	X	X
	91.03.6 – Fuel and oil record		X
	91.03.7 – Certificate of release to service	X	X
	Subpart 4: Instruments and Equipment	GLD	TMG
	91.04.1 – Use of instruments and equipment by pilot		X
	91.04.2 – Circuit protection devices		X
	91.04.3 – Aircraft operating lights		X
	91.04.4 – Flight, navigation and associated equipment for aircraft operated under VFR		X
	91.04.11- Seat Safety Belts	X	X
	91.04.14 – Seats, seat safety belts, harnesses and child restraint devices		X
	91.04.15 –Stowage of articles, baggage, and cargo	X	X
	91.04.16 –Standard first aid kit	X	X
	91.04.19 – Supplemental oxygen in the case of non-pressurised aircraft	X	X
	91.04.21 – Hand-held fire extinguishers		X
	SUBPART 5 COMMUNICATION AND NAVIGATION	GLD	TMG
	91.05.1- Communication equipment	X	X
	91.05.3- Use of global navigation satellite system	X	X
	Subpart 6: Rules of the Air – Flight Rules	GLD	TMG
	91.06.1 – Landing on roads		X
	91.06.2 – Dropping objects spraying or dusting		X
	91.06.3 – Picking up objects		X
	91.06.4 – Towing	X	X
	91.06.5 – Operation of vehicle towed	X	
	91.06.6 – Proximity and formation flights	X	X
	91.06.7 – Right of way	X	X
	91.06.8 – Following line features		X
	91.06.9 – Aircraft speed	X	X
	91.06.10 – Lights to be displayed by aircraft		X
	91.06.11 – Taxi rules		X
	91.06.12 – Operation on and in the vicinity of aerodrome	X	X

	91.06.13 – Signals (Gliding launch and air/ground)	X	X
	91.06.15 – Reporting position		X
	91.06.16 – Mandatory radio in controlled airspace	X	X
	91.06.17 – Mandatory radio in advisory airspace	X	X
	91.06.18 – Compliance with air traffic control clearance and instructions	X	X
	91.06.19 – Prohibited areas	X	X
	91.06.20 – Restricted areas	X	X
	91.06.21 – Visibility and distance from cloud	X	X
	91.06.22 – Special VFR weather minima		X
	91.06.23 – Responsibility to ascertain whether VFR flight is permitted		X
	91.06.29 – Identification and interception of aircraft		X
	91.06.30 – Air traffic service procedures		X
	91.06.31 – Priority		X
	91.06.32 – Minimum heights		X
	91.06.33 – Semi-circular rule		X

Ref. No.	Subpart 7: flight operations	GLD	TMG
	91.07.1 – Routes and areas of operation		X
	91.07.2 – Minimum flight altitudes		X
	91.07.3 – Use of aerodromes		X
	91.07.9 – Meteorological conditions		X
	91.07.10 – VFR operating minima		X
	91.07.11 – Mass and balance	X	X
	91.07.12 – Fuel and oil supply		X
	91.07.13 – Refuelling or de-fuelling with passengers on board		X
	91.07.14 – Smoking in aircraft		X
	91.07.17 – Submission of air traffic service flight plan		X
	91.07.18 – Seats, safety belts and harnesses	X	X
	91.07.19 – Passenger seating	X	X
	91.07.20 – Passenger briefing	X	X
	91.07.23 – Use of supplemental oxygen	X	X
	91.07.28 – Starting of engines		X
	91.07.29 – Acrobatic flights		X
	91.07.32 – Simulated instrument flight in aircraft		X
	Part 94 Operation of Non-Type Certified Aircraft	GLD	TMG
	94.01.2- Authority to Fly	X	X
	Subpart 3 – Documentation and records	X	X
	Subpart 4 – Communication Equipment	X	X

Ref. No.	TECHNICAL	GLD	TMG
2.0	AIRCRAFT GENERAL KNOWLEDGE		
2.1	Airframe and Engines		
	Airframe structure (aeroplane)	X	X
	–components	X	X
	–fuselage, wings, tailplane, fin	X	X

	-primary flying controls	X	X
	-trim	X	X
	-flap systems	X	X
	-landing gear	X	X
	-Engines		X
2.2	Instruments	GLD	TMG
	Pitot/static system	X	X
	-pitot tube, function	X	X
	-pitot tube, principles and construction	X	X
	-static source	X	X
	-alternate static source	X	X
	-system drains	X	X
	-errors caused by blockage or leakage	X	X
	-effect of pressure/density altitude	X	X
	-performance as a function of pressure and temperature	X	X
	-Slip indicator and similarity to the string	X	X
2.3	Airspeed indicator	GLD	TMG
	-principles of operation and construction	X	X
	-relationship between pitot and static pressure	X	X
	-definitions of indicated, calibrated and true airspeed	X	X
	-instrument errors	X	X
	-airspeed indications, colour coding	X	X
	-pilot's serviceability checks	X	X
2.4	Altimeter	GLD	TMG
	-principles of operation and construction	X	X
	-function of the subscale	X	X
	-effects of atmospheric density	X	X
	-pressure altitude	X	X
	-true altitude	X	X
	-international standard atmosphere	X	X
2.5	Variometer	GLD	TMG
	-principles of operation and construction	X	X
	-function	X	X
	-inherent lag	X	X
	-Mechanical variometer (types)	X	X
	-instantaneous VSI		X
	-presentation	X	X
	-pilot's serviceability checks	X	X
2.6	Magnetic compass	GLD	TMG
	-construction and function	X	X
	-earth's magnetic field	X	X
	-variation and deviation	X	X
	-turning, acceleration errors	X	X
	-precautions when carrying magnetic items	X	X
	-pilot's serviceability checks	X	X
2.7	Airworthiness and Emergency Procedures	GLD	TMG
	Airworthiness		

	–certificate to be in force	X	X
	–compliance with requirements	X	X
	–periodic maintenance inspections	X	X
	–compliance with flight manual (or equivalent), instructions	X	X
	Limitations, placards		
	–flight manual supplements	X	X
	–provision and maintenance of documents	X	X
	–glider logbooks	X	X
	–recording of defects	X	X
	–permitted maintenance by pilots	X	X
	Emergency Procedures		
	–emergency equipment and its use	X	X
	–fire extinguisher		X
	–engine/cabin fires		X
	–flammable goods/pressurised containers		X

Ref. No.		GLD	TMG
3.0	FLIGHT PERFORMANCE AND PLANNING		
3.1	Mass and balance		
	Terminology:	X	X
	–Arm, moment, reference datum, flight station, centre of gravity	X	X
	–Forward and aft limitations of centre of gravity, normal and utility operation	X	X
	–Maximum ramp and taxi mass	X	X
	–Maximum take-off mass	X	X
	–Limitations on maximum mass	X	X
	–Forward and aft limitations of centre of gravity, normal and utility operation	X	X
	–Mass and centre of gravity calculations	X	X
3.2	Abbreviations, definitions and symbols	GLD	TMG
	–IAS, RAS, TAS	X	X
	–Vx, Vy, Vfe, Vfo, Vle, Vlo, Va, Vne, Vno, Vs, Vso (as applicable)	X	X
	–OAT, IOAT		X
	–ISA temperature/deviation from ISA	X	X
	–pressure altitude, density altitude	X	X
	–QNH, QFE, QNE	X	X
	–glide range	X	X
	–landing performance, effect of flaps, mass, wind, density altitude, approach speed, ground surface and gradient	X	X
	–stall speeds	X	X

Ref. No.		GLD	TMG
4.0	HUMAN PERFORMANCE AND LIMITATIONS		
4.1	The atmosphere		
	–composition of the atmosphere	X	X
	–the gas laws	X	X
	–oxygen requirement of tissues	X	X
4.2	The heart	GLD	TMG
	–basic physiology	X	X
	–blood pressure, pulse rate	X	X
	–composition of blood and circulation	X	X

	–ailments, recognition and treatment	X	X
4.3	The lungs	GLD	TMG
	–physiology	X	X
	–respiration	X	X
	–ailments and treatment	X	X
	–effects of partial pressure	X	X
	–effect of increasing altitude	X	X
	–gas transfer	X	X
	–hypoxia, symptoms, prevention	X	X
	–time of useful consciousness	X	X
	–the use of oxygen masks and rapid descent	X	X
	–hyperventilation, symptoms, avoidance	X	X
	–effects of accelerations	X	X
4.4	Vision	GLD	TMG
	–physiology of vision	X	X
	–limitations of the visual system	X	X
	–vision defects	X	X
	–optical illusions	X	X
	–night vision	X	X
	–spatial disorientation	X	X
	–avoidance of disorientation	X	X
	–ailments and treatment	X	X
4.5	Hearing	GLD	TMG
	–basic physiology	X	X
	–vestibular system	X	X
	–inner ear sensations	X	X
	–effects of altitude/pressure change	X	X
	–noise and hearing loss	X	X
	–protection of hearing	X	X
	–spatial disorientation	X	X
	–conflicts between ears and eyes	X	X
	–prevention of disorientation	X	X
	–motion sickness, causes, symptoms, prevention	X	X

4.6	Flying and health	GLD	TMG
	–medical requirements	X	X
	–effect of common ailments and cures	X	X
	–colds and flu	X	X
	–stomach upsets	X	X
	–hypotension, hypertension, coronary disease	X	X
	–obesity	X	X
	–nutrition hygiene	X	X
	–drugs, medicines, and side effects	X	X
	–alcohol	X	X
	–tobacco	X	X
	–self medication	X	X
	–personal fitness	X	X

	–scuba diving – precautions before flying	X	X
	–decompression sickness	X	X
	–acceleration/deceleration and vibration	X	X
	–effects of pressure change	X	X
	–incapacitation	X	X
	–faints	X	X
	–toxic hazards	X	X
	Threat and Error Management	GLD	TMG
	Single Pilot CRM and threat and error management	X	X

Ref. No.		GLD	TMG
5.0	METEOROLOGY		
5.1	The atmosphere		
	–composition and structure	X	X
	–vertical divisions	X	X
	–International standard atmosphere (ISA)	X	X
5.2	Pressure, density and temperature	GLD	TMG
	–barometric pressure, isobars	X	X
	–changes of pressure and density with altitude	X	X
	–insolation and terrestrial energy radiation	X	X
	–diurnal variation of temperature	X	X
	–adiabatic process	X	X
	–temperature lapse rate	X	X
	–stability and instability	X	X
	–effects of advection and convection	X	X
5.3	Humidity and precipitation	GLD	TMG
	–water vapour in the atmosphere	X	X
	–dew point, relative humidity	X	X
	–condensation and vaporization	X	X
	–precipitation	X	X
5.4	Pressure and wind	GLD	TMG
	–high- and low-pressure areas	X	X
	–troughs, ridges, cols	X	X
	–pressure gradient, Coriolis force	X	X
	–geostrophic and surface winds	X	X
	–vertical and horizontal motion, convergence, divergence	X	X
	–effect of wind gradient and windshear on take-off and landing	X	X
	–relationship between isobars and wind, Buys Ballot's law	X	X
	–turbulence and gustiness	X	X
	–local winds	X	X
	–föhn wind	X	X
	–land and sea breezes	X	X
	–anabatic and katabatic winds	X	X
5.5	Cloud formation	GLD	TMG
	–cooling by advection, radiation and adiabatic expansion	X	X
	–cloud types (high, medium, low and vertical development)	X	X
	–formation of cloud types	X	X
	–flying conditions associated with each cloud type	X	X

5.6	Fog, mist and haze	GLD	TMG
	–visibility		X
	–radiation fog		X
	–advection fog		X
	–frontal fog		X
	–freezing fog		X
	–steam fog		X
	–valley fog		X
	–formation and dispersal		X
	–assessment of probability of reduced visibility		X
	–hazards in flight due to low visibility, horizontal, vertical and slant angle		X
5.7	Air masses	GLD	TMG
	–characteristics and factors affecting the properties of air masses	X	X
	–classification of air masses, region of origin	X	X
	–modification of air masses during their movement	X	X
	–development of low and high pressure systems	X	X
	–weather associated with pressure systems	X	X
5.8	Frontology	GLD	TMG
	–cold fronts	X	X
	formation	X	X
	associated clouds and weather	X	X
	flying conditions	X	X
	changes with the passage of the front	X	X
	–warm fronts	X	X
	formation	X	X
	associated clouds and weather	X	X
	weather in the warm sector	X	X
	flying conditions	X	X
	changes with the passage of the front	X	X
	–occlusions	X	X
	formation	X	X
	associated clouds and weather	X	X
	–stationary fronts	X	X
5.9	Thunderstorms	GLD	TMG
	–conditions required	X	X
	–formation, trigger action	X	X
	–air mass, frontal, orographic	X	X
	–development process	X	X
	–hazards for aircraft	X	X
	–effects of lightning and severe turbulence	X	X
	–avoidance of flight in the vicinity of thunderstorms	X	X
5.10	Flight over mountainous areas	GLD	TMG
	–hazards	X	X
	–influence of terrain on atmospheric processes	X	X
	–mountain waves, windshear, turbulence, vertical movement, rotor effects	X	X
	–valley winds	X	X
5.11	Climatology		
	–Basic Climatology	GLD	TMG
	–general seasonal circulation in the troposphere over Southern Africa		X
	–local seasonal weather and winds		X

	-development of a coastal low (orographic depression)		X
	-South Westerly Buster		X
	-Cape Doctor		X
	-Black South Easter		X
	-Berg winds		X
5.12	Altimetry	GLD	TMG
	-operational aspects of pressure settings	X	X
	-pressure altitude, density altitude	X	X
	-height, altitude, flight level	X	X
	-QNH, QFE, standard setting	X	X
5.13	Weather analysis and forecasting	GLD	TMG
	-synoptic weather charts, symbols, signs	X	X
	-significant (prognostic) weather charts		X
	-upper wind and temperature charts		X
	-Tephigram use and interpretation	X	X
	-gliding weather forecasting information and software	X	X
5.14	Weather information for flight planning	GLD	TMG
	-interpretation of coded information METAR, TAF, SPECI, SIGMET		X
	-Meteorological broadcasts for aviation		X
	-ATIS		X
	-interpretation of coded information Tephigrams, using commercial/non-commercial software	X	X
	Practical Soaring Techniques	GLD	TMG
	THERMALLING		
	-Locating Thermals	X	X
	-Entering Thermals	X	X
	-Bank Angle, Centering and exiting thermals	X	X
	-Collision avoidance	X	X
	RIDGE/SLOPE SOARING		
	-traps	X	X
	-Bowls and Spurs	X	X
	-obstructions	X	X
	-Safe Flying Procedures	X	X
	WAVE SOARING		
	-Getting into the wave	X	X
	-Flying the Wave	X	X
	SOARING CONVERGENCE LINES	X	X

Ref. No.		GLD	TMG
6.0	NAVIGATION		
6.1	Form of the earth		
	-true north, axis, poles, direction and rate of rotation	X	X
	-cardinal and quadrantal points	X	X
	-meridians of longitude	X	X
	-prime (Greenwich) meridian	X	X
	-parallels of latitude	X	X
	-equator	X	X
	-great circles, small circles, rhumb lines	X	X
	-convergency between meridians	X	X

	–hemispheres, north/south, east/west	X	X
	–distances	X	X
	–units in use	X	X
	–derivation of nautical mile and kilometre	X	X
6.2	Time	GLD	TMG
	–Arc to time, relationship between universal co-ordinated (UTC) time, local mean time (LMT) and Standard time factor (STF)	X	X
	–definitions of sunrise and sunset times	X	X
	–official day and official night	X	X
6.3	Mapping – general	GLD	TMG
	–aeronautical maps and charts (topographical)	X	X
	–Lambert’s conic conformal, (ICAO 1: 500,000 chart)	X	X
	orthomorphism	X	X
	–construction	X	X
	–convergence of meridians	X	X
	–presentation of meridians, parallels, great circles and rhumb lines		
	–measurement of tracks	X	X
	–indication of magnetic variation	X	X
	–scale, standard parallels	X	X
	–measurement of distance in relation to map projection	X	X
	–conversion of units	X	X
	–map analysis	X	X
	depiction of height	X	X
	topography	X	X
	relief	X	X
	cultural features	X	X
	permanent features (e.g. line features, spot features, unique or	X	X
	special features)	X	X
	features subject to change (e.g. water)	X	X
	aeronautical symbols	X	X
	aeronautical information	X	X
6.4	Direction	GLD	TMG
	–true north	X	X
	–earth’s magnetic field, variation – annual change	X	X
	–magnetic north	X	X
	–isogonals, agonic lines	X	X
6.5	Practical Navigation	GLD	TMG
	–measurement of tracks and distances	X	X
	–dead reckoning, position, fix	X	X
	–procedure when uncertain of position	X	X
	–plotting positions	X	X
	–latitude and longitude	X	X
	–bearing and distance	X	X
	–use of navigation protractor	X	X
	–calculating headings (T), (M), (C)	X	X
	–EET and ETA		X
	–Final Gide	X	X
	–rate of descent and rate of climb	X	X
	–ETA for top of descent		X
	–compass headings, use of deviation card	X	X

6.6	GPS	GLD	TMG
	–application	X	X
	–principles	X	X
	–presentation and interpretation	X	X
	–coverage	X	X
	–errors and accuracy	X	X
	–factors affecting reliability and accuracy	X	X

Ref. No.		GLD	TMG
7.0	PRINCIPLES OF FLIGHT		
7.1	The atmosphere		
	–composition and structure	X	X
	International standard atmosphere (ISA)	X	X
	atmospheric pressure	X	X
	Lift	X	X
	–Newton's Laws of motion	X	X
	–Equation of continuity	X	X
	–IAS, CAS, TAS	X	X
	–Bernoulli's principle – venturi effect	X	X
	–airflow around a flat plate	X	X
	–airflow around a curved plate (airfoil)	X	X
	–Description of airfoil cross section	X	X
	Relative Airflow	X	X
	Chord line	X	X
	Mean camber line	X	X
	Camber	X	X
	Symmetrical airfoils	X	X
	Surface area	X	X
	Shape	X	X
	Angle of Attack	X	X
	Centre of Pressure	X	X
	Lift Force	X	X
7.2	Pressure distribution about an airfoil	GLD	TMG
	–The lift formula – definitions	X	X
	Velocity	X	X
	Coefficient of Lift (CL)	X	X
	Density	X	X
	Surface area	X	X
	–Lift curve	X	X
7.3	Drag	GLD	TMG
	–Parasite (profile) drag	X	X
	form	X	X
	skin friction	X	X
	interference drag	X	X
	–Induced drag	X	X
	wingtip and trailing edge vortices	X	X
	downwash angle	X	X
	–Total Drag Curve	X	X
	–The Drag Formula	X	X

	-lift/drag ratio	X	X
	-aerofoil shapes and wing planforms	X	X
	-aspect ratio	X	X
7.4	Thrust	GLD	TMG
	-Glider forward vector (force)	X	X
7.5	Flying controls	GLD	TMG
	-the three planes	X	X
	-pitching about the lateral axis	X	X
	-rolling about the longitudinal axis	X	X
	-yawing about the normal axis	X	X
	-primary effects of the elevator (stabilators), ailerons and rudder	X	X
	-further effects of the elevator (stabilators), ailerons and rudder	X	X
	-spiral dive recovery	X	X
	-Control in pitch, roll and yaw	X	X
	cross coupling, roll and yaw	X	X
	mass and aerodynamic balance of control surfaces	X	X
	effect of rotor configuration on control power	X	X
	adverse aileron yaw	X	X
7.6	Trimming controls	GLD	TMG
	-basic trim tab, balance tab and anti-balance tab	X	X
	-purpose and function	X	X
	-method of operation	X	X

7.7	Flaps and slats	GLD	TMG
	-simple, split, slotted and Fowler flaps	X	X
	-purpose and function	X	X
	-operational use	X	X
7.8	Climbing	GLD	TMG
	-forces	X	X
	-maximum rate and maximum angle of climb		X
	-effects of configuration, weight, temperature and altitude, wind	X	X
7.9	Descending	GLD	TMG
	-forces	X	X
	-effects of configuration, weight, temperature and altitude, wind	X	X
7.10	Turning	GLD	TMG
	-forces	X	X
	-load factor	X	X
	-turn rate and turn radius	X	X
	-effects of weight, speed, angle of bank, wind, configuration	X	X
	-Advanced turning	X	X
	reduction of performance during climbing and descending turns (reduction of performance during turning Gliding)	X	X
	steep turns	X	X
7.11	The stall	GLD	TMG
	-boundary layer	X	X
	-laminar and turbulent flow	X	X
	-stalling angle of attack	X	X
	-disruption of smooth airflow	X	X
	-reduction of lift, increase of drag	X	X
	-movement of centre of pressure	X	X

	-symptoms of development	X	X
	-glider characteristics at the stall	X	X
	-factors affecting stall speed	X	X
	-stalling from level, climbing, descending and turning flight	X	X
	-inherent and artificial stall warnings	X	X
	-recovery from the stall	X	X
	-effect of weight and flaps	X	X
	-basic stalling speed	X	X
7.12	Avoidance of spins	GLD	TMG
	-wing tip stall	X	X
	-the development of roll and autorotation	X	X
	-recognition at the incipient stage	X	X
	-recovery technique	X	X
	-full spin recovery technique	X	X
7.13	Stability	GLD	TMG
	-definitions of static and dynamic stability	X	X
	-longitudinal, lateral and directional stability	X	X
	-effect of location of centre of gravity and speed	X	X
7.14	Load factor and manoeuvres	GLD	TMG
	-structural considerations	X	X
	-manoeuvring and gust envelope	X	X
	-limiting load factors, (glider – with and without flaps)	X	X
	-changes in load factor in turns and pull-ups	X	X
	-vibrations, control feedback		X
	-changes in load factor in turns and pull-ups	X	
	-manoeuvring speed limitations	X	X
	-in-flight precautions	X	X
7.15	Stress loads on the ground	GLD	TMG
	-side loads on the landing gear	X	X
	-landing	X	X

OPERATIONAL PROCEDURES

		GLD	TMG
	-Aerotow abnormal and emergency procedures	X	
	-Winch Launch emergency and abnormal procedures	X	
	--self-launch glider malfunctions	X	
	-system equipment malfunctions	X	X
	-Flight control malfunctions	X	X
	-other malfunctions	X	X

APPENDIX B - GLIDING PRACTICAL SYLABUS

Ex No	Exercise/Description
1	Aircraft System & Familiarization/Introduction with the aircraft, equipment, Cockpit Layout/Rigging and Derigging
1E	Emergency Drills
2	Preparation for flight and actions after Flight and Pre-Flight Inspection
3	Air Experience.
4	Effect of controls
5	Ground Handling
6	Straight glide
7	Climbing (Soaring)
9	Medium Turns
10a	Slow Flight
10b	Stalling
11	Spin Avoidance/Spinning
12a	Aerotow take off & climb to release
12b	Winch Launch take off and climb to release
12c	Cross wind Take off / Landing
13	Circuit approach and landing
14	First Solo (Gliding)
14a	Solo Consolidation
15	Advanced Turning
16	Sideslips
17	Conversion to Single Seater
18	Navigation

APPENDIX C – TOURING MOTOR GLIDING PRACTICAL SYLABUS

x No	Exercise/Description
1	Aircraft System & Familiarization/Introduction with the aircraft, equipment, Cockpit Layout
1E	Emergency Drills
2	Preparation for flight and actions after Flight and Pre-Flight Inspection
3	Air Experience.
4	Effect of controls
5	Taxying
5e	Emergencies
6	Straight and Level
7	Climbing
8	Descending
9	Turning
10a	Slow Flight
10b	Stalling
11	Spin Avoidance/Spinning
12	Take-off and Climb to Downwind Position
13	Circuit approach and landing
14	First Solo
14a	Solo Consolidation
15	Advanced Turning
16	Forced Landing Without Power (Engine off)
16a	Sideslips
17a	Low Level Flying
17b	Precautionary Landings
18a	Navigation
18b	Navigation problems at lower levels and in reduced visibility

APPENDIX E – ASSISTANT GLIDER/TMG GRADE C INSTRUCTORS TRAINING SYLABUS

INSTRUCTORS SYLABUS FOR AN ASSISTANT GLIDING INSTRUCTOR /GRADE C TMG INSTRUCTOR

		GLD	TMG
SUBPART 3: REQUIREMENTS FOR THE ISSUE OF A RATING BY NAME FOR GLIDERS			
68.03.1 Requirements for the issue of a glider pilot licence			
68.03.2 Experience			
68.03.3 Training			
68.03.4 Theoretical knowledge examination			
68.03.5 Skills test			
68.03.6 Ratings for special purposes for a glider pilot licence		X	X
68.03.7 Application			
68.03.8 Issuing			
68.03.9 Period of validity			
68.03.10 Privileges and limitations			
68.03.11 Maintenance of competency			
SUBPART 4: GLIDER PILOTS INSTRUCTOR RATINGS			
68.04.1 General			
68.04.2 Experience			
68.04.3 Training			
68.04.4 Theoretical knowledge examination		X	X
68.04.5 Skills test			
68.04.6 Application			
68.04.7 Issuing of the glider pilot's instructor rating			
68.04.8 Privileges and limitations			
68.04.9 Renewal			
SUBPART 5: REQUIREMENTS FOR THE ISSUE OF A GLIDER TEST FLIGHT RATING			
68.05.1 General			
68.05.2 Requirements		X	X
68.05.3 Experience			
68.05.4 Application			
68.05.5 Issuing			
68.05.6 Privileges and limitation			
1.1.4	PART 67: MEDICAL CERTIFICATION		
	67.00.2 – Classes of medical certificates		
	67.00.6 – Period of validity of medical certificates		
	67.00.9 – Duties of holder of medical certificate	X	X
1.1.5	PART 91 – RULES OF THE AIR AND GENERAL OPERATING RULES		
	Subpart 1: General Provisions		
	91.01.1 – Applicability		
	91.01.2 – Authority of pilot-in-command		
	91.01.10 – Endangering safety	X	X
	91.01.11 – Preservation of documents		
	Subpart 2: Flight Crew	GLD	TMG
	91.02.2 – Flight crew member emergency duties		
	91.02.3 – Flight crew member responsibilities		
	91.02.4 – Recency	X	

91.02.6 – Laws, regulations and procedures		
91.02.7 – Duties of pilot-in-command regarding flight preparation		
91.02.8 – Duties of pilot-in-command regarding flight operations		X

	GLD	TMG
Subpart 3: Documentation and Records		
91.03.1 – Documents to be carried on board		
91.03.2 – Aircraft flight manual		
91.03.3 – Aircraft checklists		
91.03.4 – Air traffic service flight plan		
91.03.5 – Flight folio	X	X
91.03.6 – Fuel and oil record		
91.03.7 – Certificate of release to service		
Subpart 4: Instruments and Equipment		
91.04.1 – Use of instruments and equipment by pilot		
91.04.2 – Circuit protection devices		
91.04.3 – Aircraft operating lights	X	X
91.04.4 – Flight, navigation and associated equipment for aircraft operated under VFR		
91.04.14 – Seats, seat safety belts, harnesses and child restraint devices		
91.04.15 – Stowage of articles, baggage and cargo		
91.04.16 – Standard first aid kit		
91.04.19 – Supplemental oxygen in the case of non-pressurised aircraft		
91.04.21 – Hand-held fire extinguishers	X	X
Subpart 6: Rules of the Air – Flight Rules		
91.06.1 – Landing on roads		
91.06.2 – Dropping objects spraying or dusting		
91.06.3 – Picking up objects		
91.06.4 – Towing		
91.06.6 – Proximity and formation flights		
91.06.7 – Right of way		
91.06.8 – Following line features		
91.06.9 – Aircraft speed		
91.06.10 – Lights to be displayed by aircraft		
91.06.11 – Taxi rules	X	X
91.06.12 – Operation on and in the vicinity of aerodrome		
91.06.13 – Signals		
91.06.15 – Reporting position		
91.06.16 – Mandatory radio in controlled airspace		
91.06.17 – Mandatory radio in advisory airspace		
91.06.18 – Compliance with air traffic control clearance and instructions		
91.06.19 – Prohibited areas		
91.06.20 – Restricted areas		
91.06.21 – Visibility and distance from cloud		
91.06.23 – Responsibility to ascertain whether VFR flight is permitted		
91.06.30 – Air traffic service procedures		
91.06.31 – Priority		
91.06.32 – Minimum heights	X	X

	91.06.33 – Semi-circular rule		
	SUBPART 7: FLIGHT OPERATIONS		
	91.07.1 – Routes and areas of operation		
	91.07.2 – Minimum flight altitudes	X	X
	91.07.3 – Use of aerodromes		
	91.07.9 – Meteorological conditions		
	91.07.10 –VFR operating minima		
	91.07.12 – Fuel and oil supply (and CATS 91.07.12, excluding all special procedures)		
	91.07.13 – Refuelling or de-fuelling with passengers on board		
	91.07.14 – Smoking in aircraft		
	91.07.17 – Submission of air traffic service flight plan		
	91.07.18 – Seats, safety belts and harnesses		
	91.07.19 – Passenger seating		
	91.07.20 – Passenger briefing	X	X
	91.07.23 – Use of supplemental oxygen		
	91.07.28 – Starting of engines		
	91.07.29 – Acrobatic flights	X	X
2.0	APPLIED METEOROLOGY		
2.1	The atmosphere		
	(a) Composition of the atmosphere	X	X
	(b) Structure of the atmosphere	X	X
	(c) International Standard Atmosphere	X	X
2.2	Pressure		
	(a) Definition of atmospheric pressure	X	X
	(b) Pressure tendency and pressure surfaces	X	X
	(c) Isobars	X	X
	(d) Mean sea level pressure change	X	X
	(e) Low pressure/cyclonic flow	X	X
	(f) Through of low pressure	X	X
	(g) High pressure/anti-cyclonic flow	X	X
	(h) Ridge of high pressure	X	X
	(i) Col area	X	X
	(j) Pressure gradient	X	X
	(k) Diurnal pressure variation	X	X
	(l) Altimetry		X
	(m) QFE, QNH, standard setting (QNE)		X
	(n) Simple applications of altimetry to aviation		X
2.3	Temperature and heat		
	(a) Difference between heat and temperature	X	X
	(b) Methods of heat transfer	X	X
	(c) Temperature scales	X	X
	(d) Thermometers	X	X
	(e) Land and sea heating/cooling	X	X
	(f) Diurnal variations	X	X
	(g) Adiabatic process	X	X
	(h) Thermal Formation	X	X

2.4	Humidity		
	(a) Water vapour	X	X
	(b) Evaporation	X	X
	(c) Condensation	X	X
	(d) Precipitation	X	X
	(e) Saturation	X	X
	(f) Dew point	X	X
	(g) Relative humidity	X	X
	(h) Vapour pressure	X	X
2.5	Density		
	Definition of density	X	X
	Effects of temperature and pressure on the density of air	X	X
	Effects of humidity on the density of air	X	X
	Definition of density altitude	X	X
	Calculation of density altitude and applications to aviation		X
2.6	Stability and instability		
	Absolute, conditional and neutral stability	X	X
	Lapse rates (ELR, DALR, SALR)	X	X
	Inversions	X	X
2.7	Wind		
	(a) Buys Ballot's Law	X	X
	(b) Coriolis force	X	X
	(c) Geostrophic wind	X	X
	(d) Gradient wind	X	X
	(e) Surface friction	X	X
	(f) Thermal wind	X	X
	(g) Anabatic wind	X	X
	(h) Katabatic Wind	X	X
	(i) Sea breeze	X	X
	(j) Land breeze	X	X
	(k) Measurement and expression of wind velocity	X	X
	(L) Fohn Winds		
2.8	Air masses		
	(a) Definition of an air mass	X	X
	(b) Geographic classification	X	X
	(c) Moisture content classification	X	X
	(d) Thermodynamic classification	X	X
	(e) Warm air masses	X	X
	(f) Cold air masses	X	X
	(g) Modification of an air mass	X	X
2.9	Clouds		
	(a) Cloud formation	X	X
	(b) Advection and convection	X	X
	(c) Orographic cloud	X	X
	(d) Convergent cloud	X	X
	(e) Convection cloud	X	X
	(f) Turbulent cloud	X	X

	(g) Frontal cloud	X	X
	(h) Cloud classification	X	X
	(i) Cloud observations/amount and height	X	X
	(j) flying conditions associated with each cloud type		
2.10	Fog and mist		
	(a) Definition of fog and mist		X
	(b) Radiation fog		X
	(c) Advection fog		X
	(d) Upslope fog		X
	(e) Valley fog		X
	(f) Frontal fog		X
	(g) Smog		X
2.11	Visibility		
	(a) Definition and measurement of visibility	X	X
	(b) Glare	X	X
	(c) Visibility from the air	X	X
	(d) Visibility into sun/moon	X	X
	(e) Causes of reduced visibility	X	X
2.12	Precipitation		
	(a) Condensation nuclei	X	X
	(b) Ice Particle Theory	X	X
	(c) Coalescence Theory	X	X
	(d) Drizzle	X	X
	(e) Rain	X	X
	(f) Showers	X	X
	(g) Snow	X	X
	(h) Sleet	X	X
	(i) Hail	X	X
	(j) Freezing rain	X	X
2.13	Fronts		
	(a) Formation of fronts	X	X
	(b) The cold front	X	X
	(c) The warm front	X	X
	(d) Occluded fronts	X	X
	(e) Factors determining weather intensity of fronts	X	X
	(f) Flight conditions and hazards associated with fronts	X	X
2.14	Thunderstorms		
	(a) Developing conditions	X	X
	(b) Convective thunderstorms	X	X
	(c) Frontal thunderstorms	X	X
	(d) Convergent thunderstorms	X	X
	(e) Orographic thunderstorms	X	X
	(f) Nocturnal thunderstorms	X	X
	(g) Cellular structure of thunderstorms	X	X
	(h) Cumulus stage	X	X
	(i) Mature stage	X	X

	(j) Dissipating stage	X	X
	(k) Surface weather associated with thunderstorms	X	X
	(l) Flight hazards associated with thunderstorms	X	X
	(m) Avoidance of thunderstorms	X	X
2.15	Turbulence		
	(a) Definition of turbulence	X	X
	(b) Criteria for turbulence	X	X
	(c) Mechanical turbulence		X
	(d) Low level turbulence	X	X
	(e) Wake turbulence		X
	(f) Mountain/Standing waves	X	X
	(g) Microbursts	X	X
	(h) Clear Air Turbulence (CAT)	X	X
	(i) Terrain features causing windshear	X	X
	(j) Flight hazards associated with turbulence and windshear	X	X
2.16	Ice accretion		
	(a) Airframe icing		X
	(b) Hoar frost		X
	(c) Rime ice		X
	(d) Clear ice		X
	(e) Rain ice		X
	(f) Airframe icing protection equipment (small aircraft)		X
	(g) Throttle icing		X
	(h) Fuel evaporation icing		X
	(i) Impact icing		X
	(j) Symptoms of carburettor icing		X
	(k) Dangers of icing		X
	(l) Avoiding icing regions		X
2.17	Climatology		
	(a) General world circulation	X	X
	(b) South African summer patterns	X	X
	(c) South African winter patterns	X	X
	(d) Berg winds	X	X
	(e) The south westerly buster	X	X
	(f) The Cape doctor	X	X
	(g) The black south easter	X	X
2.18	Weather observations and reporting		
	(a) South African Weather Bureau (SAWB)	X	X
	(b) Weather satellites	X	X
	(c) Weather stations	X	X
	(d) Automatic Weather Stations (AWS)	X	X
	(e) ATIS, internet, cell phone	X	X
2.19	Codes/documentation		
	(a) METAR		X
	(b) TAF		X
	(c) Speci		X
	(d) Winds and Temperatures		X

(e)	Significant Weather Charts		X
Practical Soaring Techniques			
(a)	Thermalling	X	X
	Locating Thermals	X	X
	Entering Thermals	X	X
	Bank Angle, Centering and Exiting Thermals, Collision Avoidance	X	X
(b)	Ridge/Slope Soaring	X	X
	Traps	X	X
	Bowls and Spurs	X	X
	Obstructions	X	X
	Safe Flying Procedures	X	X
(c)	Wave Soaring	X	X
	Getting into the wave	X	X
	Flying the Wave	X	X
(d)	Soaring Convergence Lines	X	X

3.0	APPLIED NAVIGATION		
3.1	The Earth		
	(a) Shape of the Earth, Axis of Rotation, Poles, Direction and Rate of Rotation	X	X
	(b) Great circle, small circle, meridians, Equator, parallels of latitude, bearing measurement, great circle and rhumbline tracks	X	X
	(c) Latitude and Longitude	X	X
	(d) Tropics of Cancer and Capricorn	X	X
	(e) Use of latitude and longitude co-ordinates to locate any specific position, conversion to decimal notation and vice versa	X	X
	(f) Cardinal directions, True North	X	X
	(g) Earth's Magnetism	X	X
	(h) The Magnetic Compass, Variation, Magnetic North, Isogonals, Agonic Lines, Compass Deviation, Compass North	X	X
	(i) Units of distance used in navigation, relationship to the Earth and conversions: Nautical Mile, Statute Mile, Kilometre, Metre, Foot	X	X
	(j) Measurement of time: UTC, GMT, LMT, Standard Time	X	X
	(k) International Date Line	X	X
	(l) Time Conversions	X	X
	(m) Sunrise and Sunset, effect of latitude	X	X
3.2	Charts		
	(a) Mercator and Lambert's (basic properties)	X	X
	(b) World Aeronautical Charts (WAC)	X	X
	(c) Definition of Scale and simple calculations	X	X
	(d) Track lines and measurement of distance and track bearing (mid-latitude)	X	X
3.3	Dead-reckoning (DR) navigation		
	(a) True, Magnetic Track	X	X
	(b) True, Magnetic and Compass Heading	X	X
	(c) True Air Speed (TAS), Ground Speed (GS)	X	X
	(d) Wind velocity and drift correction	X	X
	(e) Triangle of velocities and solution of simple problems		X
	(f) Navigation computer (circular slide rule) use		X
	(g) 1 in 60 rule and applications to drift correction		X

	(h) Distance, time, speed calculations		X
	(i) Fuel consumption calculations		X
3.4	satellite navigation		
	(e) GPS use and limitations,	X	X
3.5	Practical navigation		
	(a) ICAO flight plans		X
	(b) Classes of airspace		X
	(c) Methods of setting course and time management en-route		X
	(d) Uncertain of position tactics		X
	(e) Minimum altitudes		X
	(f) Altimeter setting procedures		X
	(g) Use of transponder		X
	(h) Mass and balance terminology and calculations		X
	(i) Use of tables and graphs from POH/AFM		X
	(j) Flying for range		X
	(k) Flying for endurance		X
4.0	PRINCIPLES OF FLIGHT & FLIGHT INSTRUCTION		
4.1	Theory of instruction		
	(a) Techniques of applied instruction	X	X
	(b) The learning process	X	X
	(c) Elements of effective teaching	X	X
	(d) Student evaluation and testing, training philosophies	X	X
	(e) Training programme development	X	X
	(f) Lesson planning	X	X
	(g) Classroom instructional techniques	X	X
	(h) Use of training aids	X	X
	(i) Analysis and correction of student errors	X	X
	(j) Human performance relevant to flight instruction including principles of threat and error management	X	X
4.2	Introductory physics		
	(a) Composition and structure of the atmosphere	X	X
	(b) Physical Properties: pressure, static pressure, dynamic pressure, temperature, compressibility, humidity, density and their mutual relationship	X	X
	(c) International Standard Atmosphere (ISA)	X	X
	(d) Equation of continuity	X	X
	(e) Bernoulli's Principle – Venturi Effect	X	X
	(f) Measurement of airspeed	X	X
	(g) Definition of and relationship between TAS, EAS, IAS, CAS and GS	X	X
	(h) Basic understanding of the concepts speed, velocity, acceleration, mass, inertia, force, weight, work, power, energy, potential energy, kinetic energy, pressure energy, momentum, turning moment, couple, centre of gravity (CG)	X	X
	(i) Newton's Laws of Motion	X	X
	(j) The four main forces acting on an aeroplane in flight (lift, weight, thrust, drag)	X	X
4.3	Lift and aerofoils		
	(a) Terminology: Leading Edge, Trailing Edge, Gross Wing Area (S), Net Wing Area, Wing Span, Average Chord, Aspect Ratio, Taper Ratio, Wash Out, Chord Line, Chord, Mean Camber Line, Camber, Maximum Camber, Maximum Thickness, Angle of Attack, Angle of Incidence, Coefficient of Lift	X	X
	(b) Streamline, turbulent and free stream airflow	X	X

	(c) Pressure distribution around an aerofoil	X	X
	(d) Upwash, downwash, stagnation point, centre of pressure (cp), aerodynamic centre	X	X
	(e) Lift Force	X	X
	(f) Lift Formula: $L = CL(\frac{1}{2}\rho V^2)S$	X	X
	(g) CL vs. Angle of Attack Curve (Lift Curve)	X	X
	(h) Factors affecting Lift	X	X
4.4	Drag		
	(a) Form Drag, Boundary Layer and Skin Friction Drag, Interference Drag, Profile Drag, Parasite Drag	X	X
	(b) Spanwise Flow, Wing Tip Vortices, Induced Drag	X	X
	(c) Total reaction	X	X
	(d) Total drag and the drag curves	X	X
	(e) Drag formula: $D = CD(\frac{1}{2}\rho V^2)S$	X	X
	(f) Factors affecting drag and methods of reducing drag	X	X
	(g) Lift to drag ratio and relationship to angle of attack	X	X
	(h) Minimum Drag Speed (VMD)	X	X
4.5	Stability		
	(a) Roll, pitch and yaw, the associated three planes and axes	X	X
	(b) Horizontal and vertical stabilisers	X	X
	(c) Equilibrium and pitching moments	X	X
	(d) Definitions of dynamic and static stability	X	X
	(e) Stable, neutral and unstable situations	X	X
	(f) Longitudinal, lateral and directional stability and factors affecting them	X	X
4.6	Flying controls		
	(a) The Primary Control Surfaces: Ailerons, Rudder, Elevators, Stabilator, Ruddervators	X	X
	(b) Primary effects of each control surface	X	X
	(c) Secondary/further effects of each control surface	X	X
	(d) Adverse aileron yaw and methods to overcome it	X	X
	(e) Effects of speed, slipstream and location of CG	X	X
	(f) Description and principle of balance tabs, anti-balance tabs, trim tabs	X	X
	(g) Trailing Edge Flaps: simple, split, slotted, fowler and combinations	X	X
	(h) Purpose, function and effects of trailing edge flaps	X	X
4.7	Straight and level flight		
	(a) Forces and equilibrium	X	X
	(b) Pitching moments and couples, effect of the horizontal stabiliser	X	X
	(c) Relationship between change in speed, attitude, altitude, weight or configuration	X	X
	(d) Flying for endurance or range (reciprocating engines)		X
4.8	Climbing		
	(a) Climb angle, forces and equilibrium, pitching moments	X	X
	(b) Rate of climb, VX, VY, cruise climb		X
	(c) Climb performance and power curves, service ceiling and absolute ceiling		X
	(d) Effects of altitude, speed, temperature, wind, weight, and configuration		X
4.9	Descending		
	(e) Forces and equilibrium		X
	(f) (A) Power-off descent (glide) and effects of altitude, speed, temperature, wind, weight, configuration, and lift to drag ratio	X	X
	(e) Best glide speed	X	X
	(f) Power-on descents		X

4.10	Turning		
	(a) Centripetal force, bank angle, forces in a steady, co-ordinated turn	X	X
	(b) Effect of bank angle on load factor and stalling speeds	X	X
	(c) Relationship between bank angle, turn radius, turn rate and speed	X	X
	(d) Effects of altitude, speed, temperature, wind, weight, and configuration	X	X
	(e) Effect of torque		X
	(f) Balanced turns, slipping and skidding and the sideslip	X	X
	(g) Climbing and descending turns		X
	(h) Spiral dive initiation, recognition and recovery	X	X
4.11	Take-off and landing		
	(a) Definition of terms (SE only) – take-off distance required/available; ground roll; landing distance required/available; critical speeds and their relationship	X	X
	(b) Factors affecting take-off and landing performance – mass, density altitude; wind; runway surface and slope	X	X
4.12	Stalling		
	(a) Boundary layer, laminar and turbulent flow, transition point, separation point, adverse pressure gradient	X	X
	(b) Movement of centre of pressure, decrease in lift, increase in drag, pitching moment	X	X
	(c) Stalling angle of attack	X	X
	(d) Definition of stalling speed, V_S , V_{S0} , relationship to lift and accelerated or G stall	X	X
	(e) Effects on stalling speed of weight, CG, manoeuvres and load factor, power, configuration, wing planform, wing contamination, altitude	X	X
	(f) Symptoms of the developing stall	X	X
	(g) Inherent and artificial stall warnings	X	X
	(h) Aircraft characteristics at the stall	X	X
	(i) Recovery from the stall	X	X
	(j) Wingtip stalling and devices to prevent it	X	X
4.13	Spin awareness/avoidance		
	(a) Description of a spin and comparison with spiral dive	X	X
	(b) Requirements for the development of a spin	X	X
	(c) Autorotation, CL and CD vs. angle of attack curves	X	X
	(d) Recovery from an incipient spin	X	X
	(e) Effects of CG on the spin and spin recovery	X	X
4.14	Aircraft technical		
	(a) Fuselage, wings, tail assembly, flying controls	X	X
	(b) Airframe limitations: weights, speeds,	X	X
	(c) Fuselage, controls (yaw pedals)	X	X
	(d) Landing gear, tyres and brakes	X	X
	(e) Landing gear (skids, wheels and tyres, braking systems and shock absorbers)	X	X
	(f) Piston engines: basic principles, four-stroke cycle, valves and valve timing, ignition system, exhaust system, cooling		X
	(g) Carburettor, mixture control, detonation, pre-ignition, icing, fuel injection, turbocharging		X
	(h) Propeller terminology, forces on a blade section, thrust curve, propeller efficiency, variable pitch propeller and constant speed unit (CSU), effects of increasing or decreasing propeller rpm, wind-milling effect		X
	(i) Drive systems, gear boxes, clutch systems, rotors, blade construction, rotor heads		X
	(j) Basic fuel and oil systems, engine handling		X
	(k) Basic electrical system, batteries, alternators and generators, fuses and circuit breakers		X
	(l) Pressure instruments: airspeed indicator (ASI), altimeter, vertical speed indicator (VSI), problems and	X	X

errors		
(n) Magnetic compass, variation, deviation, dip, acceleration and turning errors	X	X
(q) Transponder: basic principles, modes and use	X	X

INSTRUCTORS GLIDING PRACTICAL SYLABUS	
Ex No	Exercise/Description
1	Aircraft System & Familiarization/Introduction with the aircraft, equipment, Cockpit Layout/Rigging and Derigging
1E	Emergency Drills
2	Preparation for flight and actions after Flight and Pre-Flight Inspection
3	Air Experience.
4	Effect of controls
5	Ground Handling
6	Straight glide
7	Climbing (Soaring)
9	Medium Turns
10a	Slow Flight
10b	Stalling
11	Spin Avoidance/Spinning
12a	Aerotow take off & climb to release
12b	Winch Launch take off and climb to release
12c	Cross wind Take off / Landing
13	Circuit approach and landing
14	First Solo (Gliding)
14a	Solo Consolidation
15	Advanced Turning
16	Sideslips
17	Conversion to Single Seater
18	Navigation

INSTRUCTORS TMG PRACTICAL SYLABUS	
Ex No	Exercise/Description
1	Aircraft System & Familiarization/Introduction with the aircraft, equipment, Cockpit Layout
1E	Emergency Drills
2	Preparation for flight and actions after Flight and Pre-Flight Inspection
3	Air Experience.
4	Effect of controls
5	Taxying
5e	Emergencies
6	Straight and Level
7	Climbing
8	Descending
9	Turning
10a	Slow Flight
10b	Stalling
11	Spin Avoidance/Spinning
12	Take-off and Climb to Downwind Position
13	Circuit approach and landing
14	First Solo
14a	Solo Consolidation
15	Advanced Turning
16	Forced Landing Without Power (Engine off)
16a	Sideslips
17a	Low Level Flying
17b	Precautionary Landings
18a	Navigation
18b	Navigation problems at lower levels and in reduced visibility