

# **FTAONLINE**

## **STUDENT STUDY GUIDE**

### **STEPS LESSON STRUCTURES**

#### **FOR**

**Recreational Pilots License (RPL)**

**Private Pilots License (PPL)**

**Commercial Pilots License (CPL)**

*Lesson applicable to a particular license category is indicated with a cross [X]*

## AIRCRAFT GENERAL KNOWLEDGE [AGK 1]

LESSON	SCOPE	RPL	PPL	CPL	Completed
<b>AIRCRAFT GENERAL KNOWLEDGE [AGK1]</b>					
Lesson 1 : Design & Construction	01.1 Aircraft Structure	X	X	X	
	01.2 Stabilising Surfaces	X	X	X	
	01.3 Flight Controls	X	X	X	
Lesson 2 : Piston Engines and Four Stroke Cycle	02.1 Performance Terminology	X	X	X	
	02.2 Components	X	X	X	
	02.3 Four Stroke Cycle	X	X	X	
	02.4 Four Stroke Cycle Principles	X	X	X	
Lesson 3 : Ignition System	03.1 Ignition System	X	X	X	
Lesson 4 : Aviation Fuel, Fuel and Metering Systems	04.1 Aviation Fuel	X	X	X	
	04.2 Metering Systems	X	X	X	
	04.3 Fuel Systems	X	X	X	
	04.4 Induction Systems Icing	X	X	X	
Lesson 5 : Lubrication and Cooling	05.1 Lubrication and Cooling	X	X	X	
Lesson 6 : Electrical Systems	06.1 Electrical Systems	X	X	X	
Lesson 7 : Engine Instruments	07.1 Engine	X	X	X	
Lesson 8 : Flight Instruments Part 1	08.1 Pressure Instruments	X	X	X	
	08.2 Gyroscopes	X	X	X	
	08.3 Turn and Slip	X	X	X	
Lesson 9 : Flight Instruments Part 2	08.4 Artificial Horizon	X	X	X	
	08.5 Directional Gyro Indicator		X	X	
Lesson 10 : Hydraulic Systems and Braking	09.1 Systems and Fluids		X	X	
	09.2 Brake Systems	X	X	X	
Lesson 11 : Propellers	10.1 Propellers	X	X	X	
Lesson 12 : Engine Limitations, Handling and Malfunctions	11.1 Limits and Handling	X	X	X	
	11.2 Malfunctions		X	X	
Lesson 13 : Magnetism	12.1 Magnetism		X	X	
	12.2 Terrestrial Magnetism		X	X	
Lesson 14 : Direct Reading Compass	13.1 Direct Reading Magnetic Compass - General	X	X	X	
	13.2 Direct Reading Magnetic Compass - Technical		X	X	

## AIRCRAFT GENERAL KNOWLEDGE [AGK 2]

LESSON	SCOPE	RPL	PPL	CPL	Completed
<b>AIRCRAFT GENERAL KNOWLEDGE [AGK2]</b>					
Lesson 1 : Undercarriage	01.1 Undercarriage			X	
Lesson 2 : Hydraulic Systems	02.1 Hydraulics			X	
Lesson 3 : Ignition System	03.1 Ignition System		X	X	
Lesson 4 : Fuel and Metering Systems	04.1 Fuel System		X	X	
	04.2 Fuel Metering System		X	X	
Lesson 5 : Aviation Oil	05.1 Aviation Oil		X	X	
Lesson 6 : Lubrication and Cooling	06.1 Engine Lubrication		X	X	
	06.2 Engine Cooling		X	X	
Lesson 7 : Propellers	07.1 Propellers		X	X	
Lesson 8 : Super/Turbo Chargers and Engine Handling	08.1 Super and Turbo Chargers			X	
	08.2 Engine Handling		X	X	
Lesson 9 : Flight Instruments and Autopilot	09.1 Turn Coordinator		X	X	
	09.2 Autopilot			X	
Lesson 10 : Electrical Systems	10.1 Electrical System		X	X	
Lesson 11 : Fire Protection	10.2 Fire Protection System			X	

## AERODYNAMICS [ADY 1]

LESSONS	SCOPE	RPL	PPL	CPL	Completed
<b>AERODYNAMICS [ADY1]</b>					
Lesson 1 : Symbols and Definitions	01.1 Symbols and Definitions	X	X	X	
Lesson 2 : Aerofoils	02.1 Pressure, Velocity and Lift	X	X	X	
	02.2 Newton's Laws of Motion			X	
	02.3 Airflow Around Aerofoils	X	X	X	
	02.4 Boundary Layer Theory	X	X	X	
	02.5 Pressure Distribution	X	X	X	
Lesson 3 : Forces Lift	03.1 Lift Formula	X	X	X	
	03.2 Controlling Lift	X	X	X	
	03.3 Design Factors and Lift	X	X	X	
Lesson 4 : Forces Drag	04.1 Drag	X	X	X	
Lesson 5: Stalling	05.1 The Basic Stall	X	X	X	
	05.2 Wing Planforms			X	
Lesson 6 : Lift Augmentation and Flaps Prt 1	06.1 Augmenting Lift			X	
	06.2 Flap Types			X	
	06.3 Flap Effect	X	X	X	
Lesson 7 : Lift Augmentation and Flaps Prt 2	06.4 Boundary Layer Control			X	
Lesson 8 : Flight Controls Part 1	07.1 Introduction	X	X	X	
	07.2 Control Systems	X	X	X	
	07.3 Ailerons	X	X	X	
	07.4 Elevators	X	X	X	
Lesson 9 : Flight Controls Part 2	07.5 Rudders	X	X	X	
	07.6 Secondary Control Surfaces	X	X	X	
	07.7 Non-Conventional			X	
Lesson 10 : Level flight, Climb and Glide	08.1 Forces in Straight and Level			X	
	08.2 Level Flight Performance			X	
	08.3 The Climb	X	X	X	
	08.4 The Glide	X	X	X	
Lesson 11 : Turning	09.1 Turning	X	X	X	
	09.2 Turning Performance			X	
Lesson 12 : Manoeuvre Envelope	10.1 Manoeuvre Envelope			X	
Lesson 13 : The Spin	11.1 The Spin – Introduction	X	X	X	
	11.2 The Spin – Recovery	X	X	X	
Lesson 14 : Wake Turbulence	12.1 Wake Turbulence	X	X	X	

## AERODYNAMICS [ADY 2]

LESSONS	SCOPE	RPL	PPL	CPL	Completed
<b>AERODYNAMICS [ADY2]</b>					
Lesson 1 : Range and Endurance	01.1 Range and Endurance			X	
Lesson 2 : Longitudinal and Dynamic Stability	03.2 Longitudinal Stability			X	
	02.2 Dynamic Stability			X	
Lesson 3 : Directional Stability	03.1 Directional Stability			X	
	02.1 Stability Introduction			X	
Lesson 4 : Lateral Stability	04.1 Lateral Stability			X	
Lesson 5 : Propellers	05.1 Aerodynamic Principles			X	
	05.2 Propeller Theory			X	

## FLIGHT RULES AND AIR LAW [LAW]

LESSONS	SCOPE	RPL	PPL	CPL	Completed
<b>FLIGHT RULES AND AIR LAW [LAW]</b>					
Lesson 1 : Australian Aviation Organisations	01.1 CASA and Air Services	X	X	X	
	01.2 Documentation	X	X	X	
Lesson 2 : Aerodromes	02.1 Aerodromes	X	X	X	
	02.2 Markings - Taxiways	X	X	X	
	02.3 Markings - Runways	X	X	X	
	02.4 Signals	X	X	X	
	02.5 Visual Aids	X	X	X	
Lesson 3 : Rules of the Air	03.1 Rules of the Air	X	X	X	
	03.2 Operations at Aerodromes	X	X	X	
Lesson 4 : Visual Flight Rules	04.1 Visual Flight Rules	X	X	X	
Lesson 5 : Altimeter Settings	05.1 Altimetry	X	X	X	
Lesson 6 : Operations at Parafield	06.1 Airspace	X	X	X	
Lesson 7 : Student Pilot Licence	07.1 Licence - Privileges and Limitations	X	X	X	
Lesson 8 : Radio Communications	08.1 Radio Communication	X	X	X	
Lesson 9 : Emergency Communications	09.1 Emergency Messages	X	X	X	
Lesson 10 : Radio Broadcast in Class D Airspace	10.1 Radio Broadcast in Class D	X	x	X	
Lesson 11 : Radio Failure Procedure	11.1 Radio Failure Procedures	X	X	X	
Lesson 12 : Radio Equipment	12.1 Radio Equipment	X	X	X	
Lesson 13 : Air Service Operations	13.1 Air Service Operations	X	X	X	
Lesson 14 : Seatbelts, Harnesses and Passengers	14.1 Seat Belts and Passengers	X	X	X	
Lesson 15 : Emergencies and SAR	15.1 Emergencies and SAR	X	X	X	
Lesson 99 Classroom	9.02.4 Markings - Helipads	X	X	X	

## NAVIGATION [NAV 1]

LESSONS	SCOPE	RPL	PPL	CPL	Completed
<b>NAVIGATION [NAV1]</b>					
Lesson 1 : Local Navigation	01.1 Publications		X	X	
	01.2 Symbols		X	X	
	01.3 Relief Representations		X	X	
	<i>01.4 E&amp;W Departing and Arriving Procedures*</i>		X	X	
Lesson 2 : Navigation by reference to the Earth	02.1 Form of the Earth		X	X	
	02.2 Navigation Reference Datum		X	X	
	02.3 Plotting Position		X	X	
Lesson 3 : Units and Measurement - Distance	03.1 Units and Measurement		X	X	
Lesson 4 : Units and Measurement - Direction	04.1 Definitions and Measurement		X	X	
	04.2 Compass Direction		X	X	
	04.3 Measuring Tracks		X	X	
Lesson 5 : Effect of Wind on Air Navigation	05.1 Terminology		X	X	
	05.2 Triangle of Velocities		X	X	
	05.3 Triangle of Velocities - Application		X	X	
Lesson 6 : CR3 Navigation Computer	06.1 CR3 - Operations		X	X	
Lesson 7: Time	08.1 Arc to Time		X	X	
	08.2 Presentation of Date and Time		X	X	
	08.3 LMT and UTC		X	X	
	08.4 Standard Time		X	X	
	08.5 Factors Affecting BOD and EOD		X	X	
Lesson 8 : Flight Planning Sequence	10.1 Pilot Navigation		X	X	
Lesson 10 : Automatic Direction Finding	05.1 NDB Introduction		X	X	
	05.2 NDB Loop Antenna Theory		X	X	
	05.3 NDB Range Accuracy		X	X	
	05.4 ADF Bearing		X	X	
Lesson 11 : VHF Omidirectional Range	06.1 VOR Introduction		X	X	
	06.2 VOR Operation		X	X	
<i>Lesson 12 : Area Navigation Systems</i>	<i>12.1 Area Navigation Systems [TBA]</i>				

## NAVIGATION [NAV 2]

LESSONS	SCOPE	RPL	PPL	CPL	Completed
<b>NAVIGATION [NAV2]</b>					
Lesson 1 : Time Calculations (Revision)	01.1 Time Calculation			X	
Lesson 2 : Maps and Charts	02.1 Projection Types			X	
	02.2 Orthomorphism			X	
	02.3 Scale			X	
	02.4 Relief Portrayal			X	
	02.5 Cultural and Aeronautical Features			X	
	02.6 Projection Properties			X	
Lesson 3 : Lambert's Conformal Conic	02.7 Lambert's – Projection Types			X	
Lesson 4 : Normal Mercator Projection	02.8 Mercator – Lines and Convergence			X	
Lesson 5 : Transverse Mercator Projections	02.9 Transverse Mercator Projection			X	
Lesson 6 : Radio Navigation Part 1	03.1 Electromagnetic Waves			X	
	03.2 Electromagnetic Wave Phases			X	
	03.3 Electromagnetic Wave Polarisation			X	
	03.4 Antennas			X	
Lesson 6 : Radio Navigation Part 2	03.5 Electromagnetic Wave Modulation			X	
	03.6 Emission Designation and Frequency Spectrum			X	
	03.7 Basic Principles of Propagation			X	
	03.8 Basic Radio Transmitter and Receiver			X	
	04.1 Propagation of Radio Waves			X	
<i>Lesson 7 : Automatic Direction Finding (PPL)</i>	<i>05.1 NDB Introduction</i>		X	X	
	<i>05.2 NDB Loop Antenna Theory</i>		X	X	
	<i>05.3 NDB Range Accuracy</i>		X	X	
	<i>05.4 ADF Bearing</i>		X	X	
<i>Lesson 8 : VHF Omidirectional Range (PPL)</i>	<i>06.1 VOR Introduction</i>		X	X	
	<i>06.2 VOR Operation</i>		X	X	
Lesson 9 : Distance Measuring Equipment	07.1 Distance Measuring Equipment			X	
Lesson 10 : Airways Navigation	08.1 Airways Navigation Techniques			X	
<i>Lesson 11 : EPR, PNR and Diversions (NA)</i>	<i>09.1 ETP and CP</i>				
	10.1 PNR			X	
Lesson 12 : Flight Planning (Exercises)	11.0 Flight Planning			X	
Lesson 13 : 1 in 60 Rule Extension	12.1 1-in-60			X	
Lesson 14 : Revision Questions	13.1 Revision Questions			X	



## HUMAN PERFORMANCE [HPL 1]

LESSONS	SCOPE	RPL	PPL	CPL	Completed
<b>HUMAN PERFORMANCE [HPL1]</b>					
Lesson 1 : Health and Fitness	01.1 Background and Need	X	X	X	
	02.1 Diet and Exercise	X	X	X	
	03.1 Diabetes and Oncology	X	X	X	
	04.1 Heart	X	X	X	
	05.1 Ailments	X	X	X	
	05.2 Head Injuries	X	X	X	
	06.1 Fit for Flight	X	X	X	
	07.1 Drugs, Alcohol and Addiction	X	X	X	
Lesson 2 : Atmosphere and Associated Problems	08.1 Atmosphere				
	08.2 Gas Laws	X	X	X	
	08.3 Cardio Respiratory System	X	X	X	
Lesson 3 : Hyperventilation and Hypoxia	09.1 Hyperventilation	X	X	X	
	09.2 Hypoxia	X	X	X	
	19.3 Toxic Hazards	X	X	X	
Lesson 4 : The Eye	11.1 Eye	X	X	X	
	11.2 Healthy Eye Sight	X	X	X	
Lesson 5 : The Ear	10.1 Hearing Health	X	X	X	
	10.2 Hearing System	X	X	X	
	10.3 Balancing	X	X	X	
	10.4 Acceleration	X	X	X	

## HUMAN PERFORMANCE [HPL 2]

LESSONS	SCOPE	RPL	PPL	CPL	Completed
<b>HUMAN PERFORMANCE [HPL2]</b>					
Lesson 1 : Information Processing and Behaviour	16.1 Integration of Sensory Input			X	
Lesson 2 : Spatial Disorientation and Illusions	14.1 Illusions	X	X	X	
Lesson 3 : Situational Awareness	16.1 Integration of Sensory Input	X	X	X	
Lesson 4 : Decision Making and Human Error	20.1 Crew Coordination	X	X	X	
Lesson 5 : Stress	17.1 Stress	X	X	X	
Lesson 6 : Fatigue and Circadian Rhythms	18.1 Fatigue and Circadian Rhythms	X	X	X	
Lesson 7 : Flight Deck Design	19.1 Basic Ergonomic	X	X	X	
Lesson 8 : TEM	13.1 Threat and Error	X	X	X	

## OPERATION, PERFORMANCE & FLIGHT PLANNING [OPsFPL 1]

LESSONS	SCOPE	RPL	PPL	CPL	Completed
<b>OPERATION, PERFORMANCE &amp; FLIGHT PLANNING [OPsFPL]</b>					
Lesson 1: Weight and Balance	01.1 Weight Control	X	X	X	
	02.2 Weight and Balance Terminology	X	X	X	
	03.1 Balance, Stability and CG	X	X	X	
Lesson 2: Loading - System Alpha	04.1 Alpha System	X	X	X	
Lesson 3: Loading - System Bravo	05.1 Bravo System	X	X	X	
Lesson 4: Loading - System Charlie	06.1 Charlie System	X	X	X	
Lesson 5: Altimetry, Pressure and Density	07.1 Altimetry	X	X	X	
	08.1 The Atmosphere	X	X	X	
	09.1 Pressure Altitude	X	X	X	
	10.1 Density Altitude	X	X	X	
Lesson 6: Runways and Airfields	11.1 Runways	X	X	X	
	12.1 Airfields		X	X	
	13.1 ERSA		X	X	
Lesson 7: Regulations and Orders	14.1 CASA Regulations & Orders	X	X	X	
	14.2 CAO 20.7.4		X	X	
	14.3 Performance Requirements		X	X	
Lesson 8: Aircraft Landing Area	15.1 Aircraft Landing Area Definitions		X	X	
	15.2 Aircraft Landing Area Problems		X	X	
Lesson 9: Performance Part 1	16.1 Take-off Performance	X	X	X	
	17.1 Landing Performance	X	X	X	
Lesson 10: Performance Part 2	18.1 Performance Chart	X	X	X	
Lesson 11: Take-off Performance	19.1 Take-off Charts	X	X	X	
	19.2 Basic Take-off Calculations	X	X	X	
Lesson 12: Landing Performance	20.1 Landing Charts		X	X	
Lesson 13: Administration and Safety	21.1 Aircraft Administration and Safety		X	X	
	22.1 Risk Assessment			X	

## OPERATION, PERFORMANCE & FLIGHT PLANNING [OPsFPL 2]

LESSONS	SCOPE	RPL	PPL	CPL	Completed
<b>OPERATION, PERFORMANCE &amp; FLIGHT PLANNING [OPsFPL]</b>					
Lesson 1 : Echo System Operating Manual	01.0 Echo System Operating Manual			X	
Lesson 2 : AVGAS and Echo Fuel Burn	02.1 AVGAS			X	
	02.2 Echo System - Fuel Burn			X	
Lesson 3 : Echo Take-off Charts	03.1 Echo Take-off Charts			X	
Lesson 4 : Echo Landing Charts	04.1 Echo Landing Charts			X	
Lesson 5 : Echo Loading Data	05.1 Echo Loading Data			X	
Lesson 6 : Echo Graphical Landing System [BOOK]	06.1 Echo Graphical Landing System			X	
Lesson 7 : Echo C of G Calculations	07.1 Echo C of G Calculations			X	
Lesson 8 : Echo Weight and Balance	08.1 Echo Weight and Balance			X	
Lesson 9 : Echo C of G Adjustments	09.1 Echo C of G Adjustments			X	
Lesson 10 : Echo Mean Aerodynamic Chord	10.1 Echo Mean Aerodynamic Chord			X	
Lesson 11 : CP and PNR [BOOK]	11.1 CP and PNR		X	X	
Lesson 12 - Climb Performance [BOOK]	12.1 Climb Performance			X	
Lesson 13 : Descent and Cruise Performance [BOOK]	13.1 Descent and Cruise Performance ***			X	
<i>Lesson 14 : Range and Payload [BOOK]</i>	<i>14.1 Range and Payload ***</i>				

## METEOROLOGY [MET]

LESSONS	SCOPE	RPL	PPL	CPL	Completed
<b>METEOROLOGY [MET]</b>					
Lesson 1: The Atmosphere	01.1 Composition of the Atmosphere	X	X	X	
	02.1 Structure of the Atmosphere	X	X	X	
Lesson 2: Temperature	03.1 Temperature	X	X	X	
Lesson 3: Atmospheric Pressure	04.1 Atmospheric Pressure	X	X	X	
Lesson 4: Humidity	05.1 Relative Humidity	X	X	X	
Lesson 5: Atmospheric Stability	06.1 Atmospheric Density		X		
	07.1 Lapse Rates	X	X	X	
	07.2 Stability	(X)	(X)	X	
Lesson 6: Wind	09.1 Wind	(X)	(X)	X	
	10.1 Local Winds	X	X	X	
Lesson 7: Clouds and Precipitation	12.1 Cloud Classification	X	X	X	
	12.2 Cloud Formation	X	X	X	
	12.3 Cloud Dispersal	X	X	X	
	13.1 Precipitation	X	X	X	
Lesson 8: Visibility	14.1 Visibility	X	X	X	
Lesson 9: Air Masses and Fronts	15.1 Airmasses	??	??	X	
	15.2 Fronts			X	
Lesson 10: Associated with Fronts	16.1 Frontal Zones	X	X	X	
	16.2 Warm Sector Depression	X	X	X	
	16.4 Other Low Press Systems	X	X	X	
	16.5 Anticyclones	X	X	X	
	16.3 Stationary and Occluded Front	X	X	X	
Lesson 11: Tropical Weather	17.1 World Pressure System Distribution	X	X	X	
	17.2 Monsoon	X	X	X	
	17.3 Tropical Cyclones	X	X	X	
Lesson 12: Turbulence	18.1 Turbulence	X	X	X	
Lesson 13: Aircraft Icing	19.1 Icing	X	X	X	
Lesson 14: Thunderstorms	20.1 Thunderstorms	X	X	X	
Lesson 15: Windshear and Microbursts	21.1 Microburst	X	X	X	
Lesson 16: Jetstreams	23.1 Jetstreams (ATPL)				X
	24.1 Clear Air Turbulence (ATPL)				X
	22.1 Low Level Jet Streams			X	
Lesson 17: Satellite Imaging	25.1 Satellite Imaging (ATPL)				
Lesson 18: Dust Devils and Dust Storms	26.1 Small Depressions	X	X	X	
Lesson 19: Climatology	27.1 Global Climatology			X	
	28.1 Climatology Zones (ATPL)				X
Lesson 20: Weather Services Part 1	29.1 Meteorological Services	X	X	X	
	29.2 Routine and Special Reports (METAR and SPECI)	X	X	X	
	29.3 Significant WX Advice (SIGMET-AIRMET)	X	X	X	
	29.4 Volcanic Ash Report (ATPL)	X	X	X	X

	Lesson 21: Weather Services Part 2	29.5 Aerodrome Forecast (TAF)	X	X	X	
		29.6 Trend Type Forecast (TTF)	X	X	X	
		29.7 Area Forecast (ARFOR)	X	X	X	
		29.8 Upper Wind and Temperature (ATPL)				X
		29.9 Significant Weather Chart (SIGWX) (ATPL)				X
	Lesson 22: Australian Weather	30.1 Australian Climatology	X	X	X	
	MET Assessment Handout	MET Assessment Handout	X	X	X	
<b>NOTES</b>						
	Lesson 5	7.2 (2)(3) N/A for RPL/PPL				
	Lesson 6	9.1 Streamline N/A				