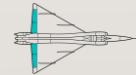


# PATRAS AVIATION TRAINING PROGRAMS EASA PART-66 SYLLABUS

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# EASA Part-66 Syllabus

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# EASA Part-66 Syllabus

## License categories

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**A Categories** usually held by assisting maintenance personnel

**B Categories** usually held by maintenance personnel who are assigned

- **Category B1**

B1 category divided into the following subcategories

B1.1 Aeroplanes Turbine

B1.2 Aeroplanes Piston

B1.3 Helicopters Turbine

B1.4 Helicopters Piston.

- **Category B2** avionics systems

B2 licence is applicable to all aircraft

# EASA Part-66 Syllabus

## Full EASA Part-66 Module List

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- Module 1: Mathematics
- Module 2: Physics
- Module 3: Electrical Fundamentals
- Module 4: Electronic Fundamentals
- Module 5: Digital Techniques / Electronic Instrument Systems
- Module 6: Materials & Hardware
- Module 7: Maintenance Practices
- Module 8: Basic Aerodynamics
- Module 9: Human Factors
- Module 10: Aviation Legislation
- Module 11: Aeroplane Aerodynamics, Structures and Systems
- Module 12: Helicopter Aerodynamics, Structures and Systems
- Module 13: Aircraft Aerodynamics, Structures and Systems (Avionic)
- Module 14: Propulsion
- Module 15: Gas Turbines
- Module 16: Piston Engines
- Module 17: Propellers



# EASA Part-66 Syllabus

## MODULES REQUIRER PER CATEGORY & EXAMS QUESTIONS

MODULE	DESCRIPTION	NUMBER OF EXAMS QUESTIONS	RIGHT QUESTIONS NEEDED	MODULES REQUIRED PER CATEGORY				
				BI.1	BI.2	BI.3	BI.4	B2
1	MATHEMATICS	32 MC	24	X	X	X	X	X
2	PHYSICS - BI	52 MC	39	X	X	X	X	X
3	ELECTRICAL FUNDAMENTALS	52 MC	39	X	X	X	X	X
4	ELECTRONIC FUNDAMENTALS - B2	20/40 MC	15/30	X	X	X	X	X
5	DIGITAL TECHNIQUES/ ELECTRONIC INSTUNMENT SYSTEMS - B2	40/72 MC	30/54	X	X	X	X	X
6	MATERIAL & HARDWARE - BI	72/60 MC	54/45	X	X	X	X	X
7A	MAINTENANCE PRACTICES - BI + 7,4 AT B2	80/60 MC + 2 ESS	60/45 + 75% ESS	X	X	X	X	X
8	BASIC AERODYNAMICS	20 MC	15	X	X	X	X	X
9A	HUMAN FACTORS	20 MC + 1 ESS	15 + 75% ESS	X	X	X	X	X
10	AVIATION LEGISLATION	40 MC + 1 ESS	30 + 75% ESS	X	X	X	X	X
11A	TURBINE AEROPLANE AERODYNAMICA, STRUCTURES & SYSTEMS	140 MC	105	X				
11B	PISTON AEROPLANE SYSTEMS	100 MC	75		X			
12	HELICOPTER AERODYNAMICS	128 MC	96			X	X	
13	AIRCRAFT AERODYNAMICS, STRUCTURES & SYSTEMS	180 MC	135					X
14	PROPULSION	24 MC	18					X
15	GAS TURBINE ENGINES	92 MC	69	X		X		
16	PISTON ENGINES	72 MC	54		X		X	
17A	PROPELLERS	32 MC	24	X	X			

# MODULES ANALYTICAL SYLLABUS

## MODULE 1: MATHEMATICS

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Module I covers the basic arithmetic, algebra and geometry that lays the foundation for the equations used in the modules that follow (physics, electrical fundamentals and electronic fundamentals).

I.1 Arithmetic

I.2 Algebra

I.3 Geometry

# MODULES ANALYTICAL SYLLABUS

## MODULE 2: PHYSICS

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The *physics* module provides knowledge of matter (structure of atoms, molecules etc), mechanics (forces, movement, energy etc), thermodynamics, optics (light) and sound.

2.1 Matter

2.2 Mechanics

2.3 Thermodynamics

2.4 Optics (Light)

2.5 Wave Motion and Sound



# Modules Analytical Syllabus

## Module 3: Electrical Fundamentals

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This module provides the fundamental electrical knowledge required for an aircraft maintenance engineer and the basis for the electronic fundamentals module that follows. The content includes electron theory, generation of electricity, capacitance, magnetism, inductance, transformers, generators and motors.

- 3.1 Electron Theory
- 3.2 Static Electricity and Conduction
- 3.3 Electrical Terminology
- 3.4 Generation of Electricity
- 3.5 DC Sources of Electricity
- 3.6 DC Circuits
- 3.7 Resistance / Resistor
- 3.8 Power
- 3.9 Capacitance / Capacitor
- 3.10 Magnetism
- 3.11 Inductance / Inductor
- 3.12 DC Motor / Generator Theory
- 3.13 AC Theory
- 3.14 Resistive (R), Capacitive (C) and Inductive (L)
- 3.15 Transformers
- 3.16 Filters
- 3.17 AC Generators
- 3.18 AC Motors



# MODULES ANALYTICAL SYLLABUS

## MODULE 4: ELECTRONIC FUNDAMENTALS

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This module follows on from the electrical fundamentals module and covers components (diodes, transistors and integrated circuits), PCBs (printed circuit boards) as well as including information on different types of servomechanisms (also known as synchros). There are different versions of this module (B1 or B2) as the knowledge requirement is more in-depth for those studying towards a B2 licence.

- 4.1 Semiconductors
- 4.2 Printed Circuit Boards
- 4.3 Servomechanisms

# MODULES ANALYTICAL SYLLABUS

## MODULE 5: DIGITAL TECHNIQUES / ELECTRONIC INSTRUMENT SYSTEMS

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Module 5 includes data, databuses, logic circuits, microprocessors, fibre optics and typical digital aircraft systems.

- 5.1 Electronic Instrument Systems
- 5.2 Numbering Systems
- 5.3 Data Conversion
- 5.4 Data Buses
- 5.5 Logic Circuits
- 5.6 Basic Computer Terminology
- 5.7 Microprocessors
- 5.8 Integrated Circuits
- 5.9 Multiplexing
- 5.10 Fibre Optics
- 5.11 Electronic Displays
- 5.12 Electrostatic Sensitive Devices
- 5.13 Software Management Control
- 5.14 Electromagnetic Environment
- 5.15 Typical Electronic / Digital Aircraft Systems

# MODULES ANALYTICAL SYLLABUS

## MODULE 6: MATERIALS & HARDWARE

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This module begins by covering the wide range of aircraft materials in use today (such as alloys and composites) enabling students to apply their knowledge of atomic structure from the earlier physics module to understand of the characteristics and properties of these materials. The module then introduces components such as fasteners, pipes, springs, bearings, gears, cables and connectors which feature in the maintenance practices module.

- 6.1 Aircraft Materials - Ferrous
- 6.2 Aircraft Materials - Non-Ferrous
- 6.3 Aircraft Materials - Composite and Non-Metallic
- 6.4 Corrosion
- 6.5 Fasteners
- 6.6 Pipes and Unions
- 6.7 Springs
- 6.8 Bearings
- 6.9 Transmissions
- 6.10 Control Cables
- 6.11 Electrical Cables and Connectors

# MODULES ANALYTICAL SYLLABUS

## MODULE 7: MAINTENANCE PRACTICES

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This module focuses on typical aircraft maintenance activities that are performed such as the assembly, inspection and testing of components as well as the associated tools, safety precautions and engineering standards.

- 7.1 Safety Precautions - Aircraft and Workshop
- 7.2 Workshop Practices
- 7.3 Tools
- 7.4 Avionic General Test Equipment
- 7.5 Engineering Drawings, Diagrams and Standards
- 7.6 Fits and Clearances
- 7.7 Electrical Cables and Connectors
- 7.8 Riveting
- 7.9 Pipes and Hoses
- 7.10 Springs
- 7.11 Bearings
- 7.12 Transmissions
- 7.13 Control Cables
- 7.14 Material Handling
- 7.15 Welding, Brazing, Soldering and Bonding
- 7.16 Aircraft Weight and Balance
- 7.17 Aircraft Handling and Storage
- 7.18 Disassembly, Inspection, Repair and Assembly Techniques
- 7.19 Abnormal Events
- 7.20 Maintenance Procedures



# MODULES ANALYTICAL SYLLABUS

## MODULE 8: BASIC AERODYNAMICS

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The basic aerodynamics module builds upon knowledge from the physics module and includes the atmosphere, aerodynamics and the theory of flight.

- 8.1 Physics of the Atmosphere
- 8.2 Aerodynamics
- 8.3 Theory of Flight
- 8.4 Flight Stability and Dynamics

# MODULES ANALYTICAL SYLLABUS

## MODULE 9: HUMAN FACTORS

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Within a maintenance environment it is essential that human factors are taken into account. By understanding human performance limitations, social psychology, communication and the factors affecting performance we can minimise the likelihood of incidents attributable to human human error.

- 9.1 General
- 9.2 Human Performance and Limitations
- 9.3 Social Psychology
- 9.4 Factors Affecting Performance
- 9.5 Physical Environment
- 9.6 Tasks
- 9.7 Communication
- 9.8 Human Error
- 9.9 Hazards in the Workplace

# MODULES ANALYTICAL SYLLABUS

## MODULE 10: AVIATION LEGISLATION

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This module covers the aviation regulatory framework (such as the role of the ICAO and EASA), certifying staff, aircraft certification and international requirements.

- 10.1 Regulatory Framework
- 10.2 JAR 66 - Certifying Staff - Maintenance
- 10.3 JAR 145 - Approved Maintenance Organisations
- 10.4 JAR-OPS - Commercial Air Transportation
- 10.5 Aircraft Certification
- 10.6 Part-M
- 10.7 Aircraft National and International Requirements

# MODULES ANALYTICAL SYLLABUS

## MODULE 11: AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS

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This extensive module builds upon the knowledge from earlier modules and provides explanations of fixed-wing aerodynamics and all the main systems found in modern civil aircraft: airframe, air conditioning, cabin pressurisation, instruments, electrical power, equipment & furnishings, fire protection, flight controls, fuel systems, hydraulic power, ice & rain protection, landing gear, lights, oxygen, pneumatics, water & waste, onboard maintenance systems, integrated modular avionics (IMA), cabin systems and information systems.

Note that there are two versions of this module available:

- IIA is tailored for aircraft powered by turbine engines (applicable for those studying towards A1 or B1.1 licences).
- IIB is tailored for piston engine aircraft (applicable for those studying towards A2 or B1.2 licences).



# MODULES ANALYTICAL SYLLABUS

## MODULE 11: AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS

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- 11.1 Theory of Flight
- 11.2 Airframe Structures - General Concepts
- 11.3 Airframe Structures - Aeroplanes
- 11.4 Air Conditioning and Cabin Pressurisation (ATA 21)
- 11.5 Instruments / Avionic Systems
- 11.6 Electrical Power (ATA 24)
- 11.7 Equipment and Furnishings (ATA 25)
- 11.8 Fire Protection (ATA 26)
- 11.9 Flight Controls (ATA 27)
- 11.10 Fuel Systems (ATA 28)
- 11.11 Hydraulic Power (ATA 29)
- 11.12 Ice and Rain Protection (ATA 30)
- 11.13 Landing Gear (ATA 32)
- 11.14 Lights (ATA 33)
- 11.15 Oxygen (ATA 35)
- 11.16 Pneumatic/Vacuum (ATA 36)
- 11.17 Water/Waste (ATA 38)
- 11.18 On Board Maintenance Systems (ATA 45)

# MODULES ANALYTICAL SYLLABUS

## MODULE 12: HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS

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- This extensive module builds upon the knowledge from earlier modules and provides explanations of aerodynamics and all the main systems applicable to rotary wing aircraft: airframe, flight control systems, blade tracking & vibration analysis, transmission (gear boxes, clutches etc), air conditioning, instruments, electrical power, equipment & furnishings, fire protection, fuel systems, hydraulic power, ice & rain protection, landing gear, lights, pneumatics, integrated modular avionics (IMA), onboard maintenance systems and information systems.
- The content is applicable for those studying towards A3, A4, B1.3 and B1.4 helicopter licences.

# MODULES ANALYTICAL SYLLABUS

## MODULE 12: HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS

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- 12.1 Theory of Flight - Rotary Wing Aerodynamics
- 12.2 Flight Control Systems
- 12.3 Blade Tracking and Vibration Analysis
- 12.4 Transmissions
- 12.5 Airframe Structures
- 12.6 Air Conditioning (ATA 21)
- 12.7 Instruments/Avionic Systems
- 12.8 Electrical Power (ATA 24)
- 12.9 Equipment and Furnishings (ATA 25)
- 12.10 Fire Protection (ATA 26)
- 12.11 Fuel Systems (ATA 28)
- 12.12 Hydraulic Power (ATA 29)
- 12.13 Ice and Rain Protection (ATA 30)
- 12.14 Landing Gear (ATA 32)
- 12.15 Lights (ATA 33)
- 12.16 Pneumatic/Vacuum (ATA 36)

# MODULES ANALYTICAL SYLLABUS

## MODULE 13: AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS (AVIONIC)

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- This extensive module builds upon the knowledge from earlier modules and provides explanations of aerodynamics and all the main systems found in modern civil aircraft to a level applicable for those studying towards B2 licences: general concepts of aircraft structures, autoflight, communication, navigation, electrical power, equipment & furnishings, flight controls, instruments, lights, onboard maintenance systems, air conditioning, cabin pressurisation, fire protection, fuel systems, hydraulic power, ice & rain protection, landing gear, oxygen, pneumatics, water & waste, integrated modular avionics (IMA), cabin systems and information systems.



# MODULES ANALYTICAL SYLLABUS

## MODULE 13: AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS (AVIONIC)

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- 13.1 Theory of Flight
- 13.2 Structures - General Concepts
- 13.3 Autoflight (ATA 22)
- 13.4 Communication / Navigation (ATA 23/34)
- 13.5 Electrical Power (ATA 24)
- 13.6 Equipment and Furnishings (ATA 25)
- 13.7 Flight Controls (ATA 27)
- 13.8 Instrument Systems (ATA 31)
- 13.9 Lights (ATA 33)
- 13.10 On Board Maintenance Systems (ATA 45)

# MODULES ANALYTICAL SYLLABUS

## MODULE 14: PROPULSION

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This module provides the knowledge of aircraft engines at a level applicable for those studying towards B2 licences (as they do not study the much more in-depth Module 15: Gas Turbines). It includes a general overview of turbine engines followed by explanations of engine indicating systems and starting & ignition systems.

- 14.1 Turbine Engines
- 14.2 Engine Indicating Systems

# MODULES ANALYTICAL SYLLABUS

## MODULE 15: GAS TURBINES

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The substantial content within this module covers gas turbine engine fundamentals, performance, detailed explanations of each section of the engine and the supporting systems. Different types of gas turbine engine are considered and the module also includes installation, monitoring, ground running and storage.

# MODULES ANALYTICAL SYLLABUS

## MODULE 15: GAS TURBINES

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- 15.1 Fundamentals
- 15.2 Engine Performance
- 15.3 Inlet
- 15.4 Compressors
- 15.5 Combustion Section
- 15.6 Turbine Section
- 15.7 Exhaust
- 15.8 Bearings and Seals
- 15.9 Lubricants and Fuels
- 15.10 Lubrication Systems
- 15.11 Fuel Systems
- 15.12 Air Systems
- 15.13 Starting and Ignition Systems
- 15.14 Engine Indication Systems
- 15.15 Power Augmentation Systems
- 15.16 Turbo-prop Engines
- 15.17 Turbo-shaft Engines
- 15.18 Auxiliary Power Units (APUs)
- 15.19 Powerplant Installation
- 15.20 Fire Protection Systems
- 15.21 Engine Monitoring and Ground Operation
- 15.22 Engine Storage and Preservation



# MODULES ANALYTICAL SYLLABUS

## MODULE 16: PISTON ENGINES

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This module provides the knowledge required for those studying towards licences to work on piston engine aircraft (A2, A4, B1.2 and B1.4). The content covers piston engine fundamentals, performance, construction, explanations of the supporting systems and also includes installation, monitoring, ground running and storage.

- 16.1 Fundamentals
- 16.2 Engine Performance
- 16.3 Engine Construction
- 16.4 Engine Fuel Systems
- 16.5 Starting and Ignition Systems
- 16.6 Induction, Exhaust and Cooling Systems
- 16.7 Supercharging/Turbocharging
- 16.8 Lubricants and Fuels
- 16.9 Lubrication Systems
- 16.10 Engine Indication Systems
- 16.11 Powerplant Installation
- 16.12 Engine Monitoring and Ground Operation
- 16.13 Engine Storage and Preservation

# MODULES ANALYTICAL SYLLABUS

## MODULE 17: PROPELLERS

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This module covers the fundamentals of propeller design, construction, pitch control, synchronizing, ice protection, maintenance and storage.

- 17.1 Fundamentals
- 17.2 Propeller Construction
- 17.3 Propeller Pitch Control
- 17.4 Propeller Synchronising
- 17.5 Propeller Ice Protection
- 17.6 Propeller Maintenance
- 17.7 Propeller Storage and Preservation

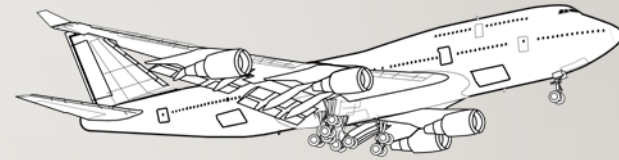
# MANDATORY ON JOB TRAINING

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- For an individual to gain a License, he must:
  - – Have completed with a PART 147 his Modules and thus have the certificates for the Category that he is applying for
  - – Have the appropriate working experience, which is:
    - 1. TWO Years if he has successfully completed a Part 147 (full basic course)
    - 2. THREE Years if he has graduated a Technical College that it is recognized by the Competent Authority that he is applying to
    - 3. FIVE years if he has no educational background as the above
    - 4. ONE year in Civil Aircraft Environment, for personnel that have work in military or police aviation for more than four years
- Holders of Modular Certificates by any Part 147 Organization can apply to any Competent Authority for the License.

THANK YOU

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# PATRAS AVIATION TRAINING PROGRAMS

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