# EASA
## Online
### E-Aviation

**European Aviation Institute**

# EASA Part 66 - Module 5 - Digital Techniques Electronic Instrument Systems - 4 Days

## INTRODUCTION

Module 5 covers the following subjects - Electronic Instrument Systems, Data Conversion and Buses, Basic Computers and Processors. Fibre Optics, ESD, Software Management, EM Environment and Typical Electronic/Digital Aircraft Systems

On completion of the module you will be able to sit a multi choice exam and on passing will receive a completion certificate.

All Part 66 training courses are provided under the direct control, oversight and guidance of EAI.

European Aviation Institute (EAI) is an EASA Part 147 approved Maintenance Training Organization (MTO) with Certificate of Approval No RO.147.0003. Providing Part 147 and other specialized "non EASA Part 147" training courses. Providing both integrated and modular packaged quality training solutions from our centre in Bucharest or at other preferred location.

European Aviation Institute was established with the goal of raising the standards of aeronautical training, with access to skilled instructors, the focus is on delivering best in class skills to existing and new generations of aviation technicians and engineers.

## Detailed Content / Topics - The following Subjects will be addressed

### 1. Electronic Instrument Systems

- Typical systems arrangements and cockpit layout of electronic instrument systems.

### 2. Numbering Systems

- Numbering systems: binary, octal and hexadecimal;
- Demonstration of conversions between the decimal and binary, octal and hexadecimal systems and vice versa.

### 3. Data Conversion

- Analogue Data, Digital Data; Operation and application of analogue to digital, and digital to analogue converters, inputs and outputs, limitations of various types.

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## Detailed Content / Topics - The following Subjects will be addressed

### 4. Data Buses

- Operation of data buses in aircraft systems, including knowledge of ARINC and other specifications. Aircraft Network/Ethernet.

### 5. Logic Circuits

- Identification of common logic gate symbols, tables and equivalent circuits; Applications used for aircraft systems, schematic diagrams.
- Interpretation of logic diagrams.

### 6. Basic Computer Structure

- Computer terminology (including bit, byte, software, hardware, CPU, IC, and various memory devices such as RAM, ROM, PROM);
- Computer technology (as applied in aircraft systems).
- Computer related terminology;
- Operation, layout and interface of the major components in a microcomputer including their associated bus systems;
- Information contained in single and multi address instruction words;
- Memory associated terms;
- Operation of typical memory devices;
- Operation, advantages and disadvantages of the various data storage systems.

### 7. Microprocessors

- Functions performed and overall operation of a microprocessor;
- Basic operation of each of the following microprocessor elements: control and processing unit, clock, register, arithmetic logic unit.

### 8. Integrated circuits

- Operation and use of encoders and decoders;
- Function of encoder types; Uses of medium, large and very large scale integration.

### 9. Multiplexing

- Operation, application and identification in logic diagrams of multiplexers and demultiplexers.

### 10. Fibre Optics

- Advantages and disadvantages of fibre optic data transmission over electrical wire propagation;
- Fibre optic data bus;

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### 10. Fibre Optics

- Fibre optic related terms;
- Terminations;
- Couplers, control terminals, remote terminals;
- Application of fibre optics in aircraft systems

### 11. Electronic Displays

- Principles of operation of common types of displays used in modern aircraft, including Cathode Ray Tubes, Light Emitting Diodes and Liquid Crystal Display.

### 12. Electrostatic Sensitive Devices

- Special handling of components sensitive to electrostatic discharges;
- Awareness of risks and possible damage, component and personnel anti-static protection devices.

### 13. Software Management Control

- Awareness of restrictions, airworthiness requirements and possible catastrophic effects of unapproved changes to software programmes.

### 14. Electromagnetic Environment

- Influence of the following phenomena on maintenance practices for electronic system:
- EMC-Electromagnetic Compatibility EMI-Electromagnetic Interference HIRF-High Intensity Radiated Field Lightning/lightning protection.

### 15. Typical Electronic / Digital Aircraft Systems

General arrangement of typical electronic/digital aircraft systems and associated BITE (Built In Test Equipment) such as:

- For B1 and B2 only: ACARS-ARINC Communication and Addressing and Reporting System EICAS-Engine Indication and Crew Alerting System FBW-Fly-by-Wire FMS-Flight Management System IRS-Inertial Reference System;
- For B1, B2 and B3: ECAM-Electronic Centralised Aircraft Monitoring EFIS-Electronic Flight Instrument System GPS-Global Positioning System TCAS-Traffic Alert Collision Avoidance System Integrated Modular Avionics Cabin Systems Information Systems.

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## Target groups

Mechanics & Technicians wishing to develop a detailed understanding of subject material in preparation for the sitting of EASA Part 147 Module examination.

## Pre-requisites

This is a review course so it is important that you spend time studying the material in preparation for your examination – see also www.easaonline.com Part 66 where you can enroll to review the material and practice the examination.

## Learning Objectives

To support the achievement of gaining a credit in the EASA Part 66 Basic Licence Module Exam

## Duration

2 days - Each training day will commence at 09.00 and finish at 17.00, with appropriate refreshment breaks.

Each day consists of 6 hours training.

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