

Module Title:	Instrument Systems
Language of Instruction:	English
Credits:	5
NFQ Level:	6
Module Delivered In	No Programmes
Teaching & Learning Strategies:	Lectures will be delivered using PowerPoint, handouts and interactive learning techniques. Theoretical material will be supported by a set of practical exercises.
Module Aim:	To provide the student with an appreciation of how the different electronic instruments function on a modern flight deck.
Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Describe and identify the different instruments and display types used on the flight deck
LO2	Explain the implication of software design in the development cycle of aircraft systems
LO3	Describe and categorise the phenomena of the electromagnetic and electrostatic environment on aircraft systems and examine the procedures required to reduce their effects
LO4	Discuss and illustrate the general arrangement of typical electronic and digital systems installed in civilian aircraft
LO5	Discuss the different types of databus systems on modern aircraft.
Pre-requisite learning	
Module Recommendations <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>	
No recommendations listed	
Incompatible Modules <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>	
No incompatible modules listed	
Co-requisite Modules	
No Co-requisite modules listed	
Requirements <i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>	
No requirements listed	

Module Content & Assessment

Indicative Content

Electronic Instrument Systems

Typical systems arrangements and cockpit layout of electronic instrument systems

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.

Electrostatic Sensitive Devices

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

Software Management Control

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

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

Typical Electronic/Digital Aircraft Systems

General arrangement of typical electronic/digital Aircraft Systems and associated BITE (Built In Test Equipment) testing such as: ACARS-ARINC Communication and Addressing and Reporting System, ECAM-Electronic Centralised Aircraft Monitoring, ADS,EFIS-Electronic Flight Instrument System, EICAS-Engine Indication and Crew Alerting System, FBW-Fly by Wire, FMS-Flight Management System, GPS-Global Positioning System, IRS-Inertial Reference System, TCAS-Traffic Alert Collision Avoidance System. . Integrated Modular Avionics, Cabin Systems, Information Systems. MEMS sensors

Databases

Operation of data bus in aircraft systems including knowledge of ARINC and other applications. Aircraft Network / Ethernet

Assessment Breakdown	%
Continuous Assessment	10.00%
Practical	20.00%
End of Module Formal Examination	70.00%

Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Other	Students will be assigned a number of assignments as part of this module.	1,2,3,5	10.00	Week 6

No Project

Practical

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Students will complete assignments during the course of the module. Students will be required to maintain a laboratory logbook and write a brief report on each assignment.	1,3,4	20.00	n/a

End of Module Formal Examination

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	A final written examination will assess the learning outcomes to the full extent.	1,2,3,4,5	70.00	End-of-Semester

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Every Week	2.50
Practicals	Every Week	1.00
Independent Learning	Every Week	1.00
Total Hours		4.50

