

Module Title:	Avionics 2
Language of Instruction:	English
Credits:	5
NFQ Level:	7
Module Delivered In	1 programme(s)
Teaching & Learning Strategies:	A combination of lectures, class discussion, tutorial, laboratory, flight simulator exercises and demonstrations will be used. Emphasis will be placed on active learning including problem / project bases learning.
Module Aim:	To provide the student with the competency and skills for radio and navigation systems on modern aircraft.
Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Evaluate the principle of operation of AM, FM radio transmitters, receivers and their use in avionic systems.
LO2	Explain the operation of ground based navigation beacons and their associated airborne based receivers / transmitters and understand the use of avionic test equipment to analyse their operation.
LO3	Access the operation of satellite and inertial based navigation systems.
LO4	Describe the operation of an aircraft autopilot system and explain how the inner and outer interfaces operate as part of the automatic flight control system for the aircraft.
LO5	Discuss the operation of the flight controls on an aircraft and their function as part of the overall autopilot control system.
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

Communication and Navigation

Fundamentals of radio wave propagation, antennas, transmission lines, communication, receiver and transmitter; Working principles of the following systems: Very High Frequency (VHF) communication; High Frequency (HF) communication; Audio; Emergency Locator Transmitters; Cockpit Voice Recorder; Very High Frequency omnidirectional range (VOR); Automatic Direction Finding (ADF); Instrument Landing System (ILS); Flight Director systems; Distance Measuring Equipment (DME); ; Area navigation, RNAV systems; Flight Management Systems; Global Positioning System (GPS); Global Navigation Satellite Systems (GNSS); Inertial Navigation System; Air Traffic Control transponder, secondary surveillance radar; Traffic Alert and Collision Avoidance System (TCAS); Weather avoidance radar; Radio altimeter; MEMS and range sensors, systems programming, data filtering.

Autoflight

Fundamentals of automatic flight control including working principles and current terminology; Command signal processing; Modes of operation: roll, pitch and yaw channels; Yaw dampers; Stability Augmentation Systems; Automatic trim control; Autopilot navigation aids interface; Autothrottle systems. Automatic Landing Systems: principles and categories, modes of operation, approach, glideslope, land, go-around, system monitors and failure conditions. , GPS augmented landing systems,

Assessment Breakdown	%
Continuous Assessment	10.00%
Practical	30.00%
End of Module Formal Examination	60.00%

Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Examination	Students will sit an examination during the module.	1,2,5	10.00	Week 7

No Project

Practical

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Students will complete a number of practical assignments during the module and produce a report on each assignment	1,2,3,4,5	30.00	n/a

End of Module Formal Examination

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Formal Exam	The written examination, at the end of the module, will evaluate the extent of the student's knowledge of the learning outcomes.	1,2,3,4,5	60.00	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	12 Weeks per Stage	2.00
Practicals	12 Weeks per Stage	4.00
Independent Learning Time	15 Weeks per Stage	3.53
Total Hours		125.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_EEACS_D	Bachelor of Engineering in Aircraft Systems	5	Mandatory