

AVIO H3627: Instrument & Autopilot Systems

Module Title:			Instrument and Autopilot Systems		
Language of Instruction:		n:	English		
Cradite:		5			
orcuits.		0			
NFQ Level:		8			
Module Delivered In			No Programmes		
Teaching & Learning Strategies:			Lectures will be delivery using PowerPoint, handouts and interactive learning techniques.		
Module Aim	:		To give the student the competency and skills set for automatic fight control systems on aircraft.		
Learning Ou	itcomes				
On successfi	ul completio	n of th	nis module the learner should be able to:		
LO1	Describe a	Describe and analyse the operation of the different types of air and gyro instruments used on an aircraft			
LO2	Describe and explain the operation of the flight controls on an aircraft and their function as part of the overall autopilot control system				
LO3	Describe the principle of operation of an aircraft autopilot system and explain how the inner and outer interfaces operate as part of the overall automatic flight control system for the aircraft				
LO4	Discuss the basics of open and closed loop control systems in relation to autopilot systems				
Pre-requisit	e learning				
Module Recommendations This is prior learning (or a practical skill) that is recommended before enrolment in this module.					
No recomme	ndations list	ted			
Incompatible Modules These are modules which have learning outcomes that are too similar to the learning outcomes of this module.					
No incompatible modules listed					
Co-requisite Modules					
No Co-requisite modules listed					
Requirements This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.					

No requirements listed



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Module Content & Assessment

Indicative Content

Instrument Systems (ATA 31)

Classification; Atmosphere; Terminology; Pressure measuring devices and systems; Pitot static systems; Altimeters; Vertical speed indicators; Airspeed indicators; Machmeters; Altitude reporting/alerting systems; Air data computers; Instrument pneumatic systems; Direct reading pressure and temperature gauges; Temperature indicating systems; Fuel quantity indicating systems; Gyroscopic principles; Artificial horizons; Attitude Indicator; Horizontal Situation Indicator; Turn and Slip Indicator, Turn Coordinator; Slip indicators; Directional gyros; Ground Proximity Warning Systems; Compass systems; Direct Reading; Remote Reading; Flight Data Recording systems; Electronic Flight Instrument Systems; Instrument warning systems including master warning systems and centralised warning panels; Stall warning systems and angle of attack indicating systems; Vibration indication systems. HUMS, Other aircraft system identification Glass cockpit,MEMS sensors

Flight Controls (ATA 27) Primary controls: aileron, elevator, rudder; spoiler; Trim control; Active load control; High lift devices; Lift dump, speed brakes; System operation: manual, hydraulic, pneumatic; Artificial feel, Yaw damper, Mach trim, rudder limiter, gust locks. Stall protection systems System operation: electrical, fly by wire, Digital servos and applications

Autoflight (ATA 22)

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 System in helicopters; 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. Communications (ATA 23) VHF radio systems, Air traffic control systems Navigation Systems (ATA 34) ADF, VOR, GPS landing systems, UAV autoflight technology

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
Examination	Students will sit a number of written examinations during the module.	1,3,4	10.00	Week 26

No Project

Practical				
Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	The student will complete a number practical assignments during the module and write a report on each assignment	1,2,3,4	15.00	n/a
Practical/Skills Evaluation	The student will complete a test during the module	1,2,3	5.00	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	70.00	End-of- Semester

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



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Module Workload

Workload: Full Time			
Workload Type	Frequency	Average Weekly Learner Workload	
Lecture	Every Week	2.50	
Practicals	Every Week	1.00	
Independent Learning	Every Week	2.00	
	Total Hours	5.50	