

Module Title:	UAS Technology
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 exercises and demonstrations will be used. Emphasis will be placed on active learning including problem / project bases learning
Module Aim:	Students will develop an operational knowledge in maintenance, propulsion, communication and instrumentation associated with unmanned aerial systems (UAS) This module prepares students with the knowledge to determine and identify basic technical problems associated with unmanned aerial systems.
Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Inspect UAS platforms for material and electrical defects.
LO2	Describe small UAS design, components and current applications
LO3	Plan and execute, in a safe and ethical manner, small UAS missions in order to collect, process and analyse data.
LO4	Evaluate the maintenance of UAS systems including ground control stations, and support equipment.
LO5	Apply technical knowledge in understanding the interaction between the various sensors that make up the sensor suite fitted to UAS platforms and the role of detect and avoid technology for UAS.
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

Introduction to UAS systems

Introduction to Unmanned Aerial Systems (UAS), applications and examples. Line of sight and beyond line of sight operation. Components of a typical UAS rotary and fixed wing system.

Avionics and navigation systems

Core avionics, architecture, flight control, GPS navigation, health monitoring, guidance, first person view and propulsion systems. Detect and avoid techniques. Mission systems sensors, UAS installation and integration.

Mission control and data communications

Ground command segment, control station, take off / launch support system, landing and recovery. Air / ground communication and data links. UAS loading and payload considerations. Maintenance of UAS and documentation. Ethical, safety and regulatory requirements when maintaining and flying UAS missions.

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.	1,2,3,4,5	10.00	Week 6

No Project

Practical

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

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 students 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	2.00
Independent Learning Time	15 Weeks per Stage	5.13
Total Hours		125.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_EEAER_B	Bachelor of Engineering (Honours) in Aerospace Engineering	5	Mandatory