Module specification

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Module Code	ENG762
Module Title	UAS Operations & The Law
Level	7
Credit value	20
Faculty	FAST
HECoS Code	100229
Cost Code	GAME

Programmes in which module to be offered

Programme title	Is the module core or option for this programme
MSc Unmanned Aircraft System Technology MSc Unmanned Aircraft System Technology with Advanced Practice	Core

Pre-requisites

None

Breakdown of module hours

Learning and teaching hours	30 hrs
Placement tutor support	0 hrs
Supervised learning e.g., practical classes, workshops	0 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
Total active learning and teaching hours	**30** hrs
Placement / work-based learning	0 hrs
Guided independent study	170 hrs
Module duration (total hours)	200 hrs

For office use only	
Initial approval date	Jun 2018
With effect from date	Sept 2022
Date and details of revision	Aug 2022: learning outcomes and assessment update in engineering revalidation
Version number	3

Module aims

- To provide the student with an up to date and in-depth understanding of the legal issues relating to UAS operations in the UK and abroad and to ensure that the student is fully aware of the legal responsibilities of both the Operator and the Remote Pilot of a UAS mission.

- To provide the student with an advanced understanding of: UAS system operations e.g. Mission planning, mission programming; Meteorology; Telemetry options for UAS monitoring; UAS transmission systems; Payload stability and security.

Module Learning Outcomes - at the end of this module, students will be able to:

In addition to the module learning outcomes, students will also cover the following accreditation of higher education programme (AHEP) fourth edition learning outcomes: **M4**

1	Critically assess the legal and regulatory aspects of a planned UAS activity and where appropriate be able to advise alternative compliant operational practices.
2	Manage complex UAS operational issues in accordance with legislation, airworthiness regulations and published advisory material.
3	Critically analyse and predict the implications of data and privacy legislation for UAS operations, and evaluate the effects of drone operations relating to UAS payloads, telemetry and transmission systems.

Assessment

Indicative Assessment Tasks:

This section outlines the type of assessment task the student will be expected to complete as part of the module. More details will be made available in the relevant academic year module handbook.

Assessment 1: An individually prepared portfolio consisting of a range of assessments such as case studies, laboratory work and Moodle Quiz, introducing the topic areas of each learning outcomes. Guidance material will be provided, which the students will use to generate a Portfolio of work. Assessment one is an individual prepared portfolio and represents 100% of the overall module mark.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1-3	Portfolio	100%

Derogations

Credits shall be awarded by an assessment board for those Level 7 modules in which an overall mark of at least 50% has been achieved with a minimum mark of 40% in each assessment element

Learning and Teaching Strategies

This module will be delivered as a series of lectures, case-study seminars and break-out sessions during which students will be encouraged to discuss the legal aspects of various mission scenarios. The student will also be required to undertake significant reading of regulatory material. This module will also follow the ALF (Active Learning Framework) guidelines, which will include alternative methods of assessment and a blended approach to delivery, with some theory and software sessions being delivered online (depending on requirements and student experience).

Indicative Syllabus Outline

- Evolution of historical milestones in aviation (and UAS related) legislative history, e.g. The Chicago Convention, the Montreal Convention, the Riga Declaration etc.

- Introduction of the latest detailed UK Civil Aviation Authority (CAA) and UK Government Home Office regulations and guidelines relating to UAS operations, e.g., Air Navigation Order (CAP 393), latest revisions / expansions to CAP 722 and CAP 658.

- The development & relevance of an 'Article 16 Authorisation' for flying UAS and UAVs as a sport or hobby.

- The UK Government framework to facilitate Beyond Visual Line of Site (BVLOS) UAS Operations.

- Interpreting restrictions and no-fly zones on Aviation Sector Charts, co-relating these to OS maps and learning to identify hazards to airspace users will be done practically along with developing an understanding of meteorological factors in safe UAS operations.

- The regulations for the safe transportation of UAV batteries and the law.

- UAS payload stability and security

Indicative Bibliography:

Essential Reads

Easy Access Rules for Unmanned Aircraft (Regulation (EU) 2019/947 and Regulation (EU) 2019/945) (Revised Sept 2021). available at: https://www.easa.europa.eu/document-library/easy-access-rules/easy-access-rules-unmanned-aircraft-systems-regulation-eu

Other indicative reading

The BMFA Article 16 Authorisation. available at: https://rcc.bmfa.uk/article-16

CAA CAP722: *Unmanned Aircraft System Operations in UK Airspace* – Guidance. available at: https://publicapps.caa.co.uk/modalapplication.aspx?appid=11&mode=detail&id=415

Marshall, D. M. et al. (2016) *Introduction to Unmanned Aircraft Systems.* 2nd ed. CRC Press

Air Navigation Order (2016) CAP 393. *Civil Aviation Authority,* Gatwick, UK*.* Available at: http://www.caa.co.uk.

Model Aircraft: *A Guide to Safe Flying: CAP 658 & CAP 1763. Civil Aviation Authority,* Gatwick, UK. Available at http://www.caa.co.uk.

Plus, various others to be signposted on Moodle.

Employability skills – the Glyndŵr Graduate

Each module and programme is designed to cover core Glyndŵr Graduate Attributes with the aim that each Graduate will leave Glyndŵr having achieved key employability skills as part of their study. The following attributes will be covered within this module either through the content or as part of the assessment. The programme is designed to cover all attributes and each module may cover different areas.

Core Attributes
Engaged
Enterprising
Creative
Ethical

Key Attitudes
Commitment
Curiosity
Resilience
Confidence
Adaptability

Practical Skillsets
Digital Fluency
Organisation
Critical Thinking
Emotional Intelligence
Communication