

Liverpool John Moores University

Title: Drone Technology
Status: Definitive
Code: **7300DRO** (125804)
Version Start Date: 01-08-2020

Owning School/Faculty: Engineering
Teaching School/Faculty: Engineering

| Team | Leader |
|----------------------|--------|
| Mohamed Kara-Mohamed | Y |
| Frederic Bezombes | |

Academic Level: FHEQ7 **Credit Value:** 20 **Total Delivered Hours:** 33
Total Learning Hours: 200 **Private Study:** 167

Delivery Options

Course typically offered: Semester 1

| Component | Contact Hours |
|-----------|---------------|
| Lecture | 22 |
| Tutorial | 11 |

Grading Basis: 50 %

Assessment Details

| Category | Short Description | Description | Weighting (%) | Exam Duration |
|----------|-------------------|--------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|
| Report | AS1 | Prepare a report describing the technical requirements of an aircraft and payload. | 50 | |
| Test | AS2 | Complete a test which requires the student to specify components and equipment for a drone, based on operational requirements. | 50 | |

Aims

To provide a comprehensive overview of drone technology at a conceptual and

practical level.

Learning Outcomes

After completing the module the student should be able to:

- 1 Identify the component elements of a drone system.
- 2 Identify the role, limitations and purpose of the various sub-systems that make up a multi-rotor drone.
- 3 Perform calculations aimed at determining the power and navigational system requirements for a drone to perform a specified task.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

| | | | |
|-----------------------------|---|---|---|
| Technical Report | 1 | 2 | 3 |
| Selection and Specification | 1 | 3 | |

Outline Syllabus

Drone Systems Technology:

- *Anatomy of a multirotor drone system.*
- *Types of drones; fixed-wing and multi-rotor.*
- *Power and propulsion systems.*
- *Energy storage and management. Battery monitoring and state-of-charge.*
- *Control systems; radio equipment, flight controllers, auto-pilots.*
- *Performance envelop of drone systems. Navigation and location systems; basics of GPS, inertial navigation systems.*
- *Failure modes and effects. Pre and post-flight technical checks.*
- *Technical threats to safe operation and anti-drone technologies.*

Learning Activities

The module will be taught by a series of lectures and tutorial sessions.

Notes

This module provides knowledge of Drones at a systems level.