Liverpool John Moores University

Title:	Sensors and Data Analysis
Status:	Definitive
Code:	**7305DRO** (125809)
Version Start Date:	01-08-2020
Owning School/Faculty:	Engineering
Teaching School/Faculty:	Engineering

Team	Leader
Frederic Bezombes	Y

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

Delivery Options
Course typically offered: Semester 2

Component	Contact Hours
Lecture	22
Practical	11

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	AS1	Write a report on the selection, specification and deployment of sensor systems on a UAV for a specified application.	50	
Test	AS2	Complete a series of image and data processing tasks.	50	

Aims

To provide a comprehensive overview of possible sensor payloads for a variety of sensing applications. This will include imaging, 3D monitoring and environmental monitoring.

Learning Outcomes

After completing the module the student should be able to:

1 Select and specify appropriate environmental sensors for a specified application.
2 Select and specify an appropriate 3D measurement system for a specified application.
3 Select and specify an appropriate optical system for the capture of still and video images in different light spectra.
4 Demonstrate the knowledge and skills which are required to perform data analysis and image processing tasks for a specified application.

Learning Outcomes of Assessments

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

Sensor Deployment Plan	1	2	3
Data Processing	4		

Outline Syllabus

- *3D measurement: LIDAR, stereovision, structure from motion*
- *Specialist camera selection*
- *Environmental sensor technology*
- *Odometry*
- *Data analysis and image processing*

Learning Activities

The module will be taught by a combination of lectures and practical sessions. Students will gain practical experience of data and image processing. They will also be exposed to state of the art methods using 3D mapping software.

Notes

This module provides a theoretical and practical knowledge and skills required to deploy appropriate sensors in the field and to process and present the data which is captured.