

Liverpool John Moores University

Title: SURVEYING, HIGHWAYS AND TRANSPORTATION
Status: Definitive
Code: **5501CVQR** (127372)
Version Start Date: 01-08-2021

Owning School/Faculty: Civil Engineering and Built Environment
Teaching School/Faculty: Oryx Universal College WLL

Team	Leader
Denise Lee	Y
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Academic Level: FHEQ5
Credit Value: 20
Total Delivered Hours: 92

Total Learning Hours: 200
Private Study: 108

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	20
Off Site	30
Practical	20
Tutorial	10
Workshop	10

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Technology	AS1	SURVEYING FIELD COURSE	40	
Exam	AS2	EXAMINATION	60	2

Aims

*To introduce methods of infrastructure route planning.
To introduce highway geometry, design & construction.*

*To introduce geodetic and satellite surveying.
 To demonstrate how total stations and GNSS receivers, can capture data for use in software packages to produce contoured plans and sections.
 To develop practical surveying skills*

Learning Outcomes

After completing the module the student should be able to:

- 1 Explain methods used and data requirements for infrastructure planning
- 2 Apply mathematical methods and design standards proficiently to the effective use of surveying information and the design of highways.
- 3 Obtain position and orientation of and from remote points and set out and control on site infrastructure works.
- 4 Use a standard computer software package to process total station and satellite surveying observations and produce appropriate drawings
- 5 Use a range of land surveying equipment effectively for setting out engineering works

Learning Outcomes of Assessments

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

SURVEYING FIELD COURSE EXAMINATION	2	3	4	5
	1	2		

Outline Syllabus

*Evaluation of infrastructure route choices.
 Basic highway alignment design.
 Orientation: The use of the Reference Object (RO) and orientation to the National Grid system of the Ordnance Survey and other coordinate systems. Standard maps and plans, scales and symbols.
 Safety and Risk Assessment in surveying and construction operations.
 Horizontal Control: Set up, use and adjustment of the theodolite and Total Station.
 Introduction to Global Navigational Satellite Systems.
 Setting out of highways works: Field positioning of points and lines using the Total Station.
 Applications: Production of site drawings.
 Orientation and Position: Resection and intersection techniques.
 Total stations: Demonstrations of the field measurements and coding systems available with total stations and GNSS receivers and their use with a computer software package.*

Learning Activities

Lectures, computational problems, practical use of surveying instruments in the field,

treatment of field data and subsequent production of site drawings in IT workshops.

Notes

Students will develop their understanding of, and competence in using, land surveying techniques. They will extend their understanding to be able to apply these techniques to highway design.