

Liverpool John Moores University

Title: SURVEYING AND SETTING OUT
Status: Definitive
Code: **5614BECC** (128164)
Version Start Date: 01-08-2021

Owning School/Faculty: Civil Engineering and Built Environment
Teaching School/Faculty: Coleg Cambria

Team	Leader
Volkan Ezcan	Y

Academic Level: FHEQ5
Credit Value: 20
Total Delivered Hours: 56
Total Learning Hours: 200
Private Study: 144

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	12
Practical	27
Workshop	17

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Portfolio	AS1	Portfolio based on practical surveying task (2500 words)	70	
Essay	AS2	Essay (1000 words)	30	

Aims

To develop an understanding of the principles of site surveying and cartographic detailing of construction works. To develop skills in the use and application of site surveying instruments. To provide a mathematical base for the study of construction and surveying related subjects

Learning Outcomes

After completing the module the student should be able to:

- 1 Demonstrate the ability to establish a station network for horizontal and vertical control. Illustrate the methods of application, booking and calculation.
- 2 Apply industry-standard techniques in the production, transferring and staking out of co-ordinates of multiple construction elements. Illustrate the methods of application and transferring data to total stations.
- 3 Demonstrate the ability to undertake a topographic survey. Illustrate the methods of application.
- 4 Evaluate the causes of errors and techniques to improve accuracy, including the use of digital data.

Learning Outcomes of Assessments

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

Portfolio of Surveying	1	2	3
Task			
Essay (1000 words)	4		

Outline Syllabus

By the end of this course students will be able to calculate and adjust survey data to analyze errors and derive unknown bearings, distances, coordinates, curve elements and areas to include:

- *vertical control*
- *Description of types of control points.*
- *Primary controls, first and second order.*
- *Secondary control.*
- *Carrying out a full closed traverse survey for horizontal and vertical controls.*
- *Methods for checking the accuracy of the traverse.*
- *Purpose of a topographic survey.*
- *Techniques to communicate a completed survey.*
- *Methods of completing a topographic survey.*
- *Equipment to be used to capture topographic details.*
- *Setting out techniques.*
- *Use of free station, reference lines, stakeout, tie distances within a total station program.*
- *Techniques to obtain setting out data, including data transfer.*
- *Process of setting out structures and offsetting lines of structural elements.*
- *Errors in surveying and setting out.*
- *Instrumentation error: prism constants, reflector heights, atmospheric influences, calibration certification, free station errors, discrete setting out.*
- *Human errors: alignment of levelling staffs and hand- or tripod-mounted prisms,*

physical setting out constraints.

- *Comparing the accuracy of set out element to nationally recognised standards.*

Learning Activities

Key lectures will cover the general areas of the module content. Practical instruction sessions in the use of relevant equipment will form the core of this module. Some ICT work will be carried out in suitably equipped Labs.

Notes

This module develops an understanding of site surveying and its application in the construction industry.