

Liverpool John Moores University

Title: SURVEYING AND CAD
Status: Definitive
Code: **4203CIV** (122908)
Version Start Date: 01-08-2021

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

Team	Leader
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Academic Level: FHEQ4 **Credit Value:** 20 **Total Delivered Hours:** 66
Total Learning Hours: 200 **Private Study:** 134

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	22
Practical	20
Workshop	22

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Artefacts	AS1	SURVEYING AND CAD DRAWINGS	50	
Exam	AS2	EXAMINATION	50	2

Aims

To provide an introduction to basic techniques for land surveying and setting out. It includes methods of obtaining field measurements for the purpose of producing site drawings, and setting out points using line-of sight.

To develop an understanding of the use and application of Computer Aided Design in the Built Environment and the development of 2-dimensional drafting techniques and conventions.

Learning Outcomes

After completing the module the student should be able to:

- 1 Carry out a field exercise to illustrate methods of levelling and angular measurement: booking, calculation and application.
- 2 Use measured values to compute and draw site plans, longitudinal and cross sections.
- 3 Produce completed booking sheets showing all calculations in the areas of levelling and angular measurement.
- 4 Identify and calculate data necessary for setting out of civil engineering works.
- 5 Demonstrate proficient use of CAD software to produce 2D engineering drawings using standard construction industry conventions.

Learning Outcomes of Assessments

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

SURVEYING AND CAD DRAWINGS EXAMINATION	1	3	5
	2	3	4

Outline Syllabus

Vertical control: Set up, use and adjustment of the level. Ordnance Bench Marks. Levelling techniques. Accuracy checks.

Horizontal control: Set up, use and adjustment of Total Station. Traverse surveys and their adjustment.

Application of digital instruments and the use of computer packages in surveying. Setting Out: Procedure for co-ordinated setting out, procedures and practices for setting out ground works, road construction and drainage works.

Applications: Computation and drawing of site plans, longitudinal sections and cross-sections. Introduction to CAD and applications of the software in practice. Creating, opening and saving CAD files using the current industry standard CAD software. Setting up system preferences, drawing scales, drawing sheet size, borders, title block. Use of view, zoom and pan commands, layers, line types, text styles, and dimension styles.

Drawing and modifying 2D objects using standard construction industry conventions. Editing, enhancing, annotating and setting up drawings for plotting.

Production of site plans, longitudinal sections, cross-sections, and detail drawings. Use of format, draw, tools and modify commands. Use of layers, line type and weight, lock, freeze and thaw. Creating and editing text and dimensions.

Learning Activities

Surveying will be taught through lectures and tutorial exercises. Practical sessions will provide hands on experience with surveying equipment. IT workshops will introduce students to CAD and how survey measurements are applied in civil engineering drawings.

Notes

This module introduces students to land surveying techniques and to CAD drawing, as required for a Civil Engineer working either on site or in a design context.