

Liverpool John Moores University

Title: SITE SURVEYING PROCEDURES AND CAD
Status: Definitive
Code: **4108BEHN** (118168)
Version Start Date: 01-08-2016
Owning School/Faculty: Civil Engineering
Teaching School/Faculty: Civil Engineering

Team	Leader
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Academic Level: FHEQ4 **Credit Value:** 24 **Total Delivered Hours:** 92
Total Learning Hours: 240 **Private Study:** 148

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	36
Practical	24
Workshop	30

Grading Basis: BTEC

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1		40	2
Practice	AS2		30	
Technology	AS3		30	

Aims

To introduce basic techniques for land surveying and setting out: methods of obtaining field measurements for the purpose of producing site drawings and hence the calculation of land areas and earthwork volumes, 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.

To introduce 3-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 in leveling: booking, calculation and application.
- 2 Carry out a field exercise to illustrate methods of angular measurement: booking calculation and application.
- 3 Describe the use of electronic and laser instruments in the construction industry.
- 4 Use measured values to compute and draw contours, longitudinal and cross sections, and to evaluate volumes of earthworks.
- 5 Produce completed booking sheets showing all calculations in the areas of leveling and angular measurement.
- 6 Identify and calculate data necessary for setting out of civil engineering works.
- 7 Carry out field exercise in setting out using information extracted from a drawing, map or other sources.
- 8 Produce 2D and 3D drawings using industry standard CAD software application.

Learning Outcomes of Assessments

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

Unseen exam	3	4	5	6
Practical- use of equipment	1	2	7	
Technological task- CAD	8			

Outline Syllabus

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

Horizontal control: Set up, use and adjustment of Total Station. Theodolite traverses and their adjustment.

Application of electronic and laser instruments and the use of computer packages in surveying.

Setting Out: Procedure for co-ordinated setting out, procedures and practices for setting out groundworks, road construction and drainage works.

Applications: Computation and drawing of contours, longitudinal sections and cross sections. Determination of areas of land and volumes of earthworks.

Introduction to CAD and applications of the software in practice. Creating, opening and saving CAD files using the latest version of AutoCAD. 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. Use of design and construction technology issues related to suitable structures through the evaluation of example production drawings and relevant regulation.

Production of site plans, floor plans, elevations 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.

Introduction to 3D design including views, UCS, extrude and draw solids commands.

Learning Activities

Lectures and tutorial exercises. Practical use of surveying instruments in the field. CAD workshops.

Notes

An introduction to basic land surveying techniques. The field measurements required to produce a contoured site plan to a chosen scale, the use of field information to compute land areas and earthworks volumes, and setting out simple features to full scale on site in both line and level. Students require access to personal computers with computer aided drawing software.