

Module Title:	Engineering Drawing II and Surveying And Setting Out I
Language of Instruction:	English
Credits:	10
NFQ Level:	6
Module Delivered In	1 programme(s)
Teaching & Learning Strategies:	Lectures Information technology practicals Drawing Practicals Private study
Module Aim:	The aims of Engineering Drawing II are: (1) to introduce students to information and communication technology. (2) to develop a knowledge of both manual and computer generated engineering drawing. (3) to produce both manual and CAD engineering drawings. The aims of Surveying & Setting out I are: (1) to develop a knowledge of basic surveying techniques; (2) to train the student in field levelling procedures; (3) to introduce the student to surveying software packages. Students must participate in class work, practical work & project work and must achieve a minimum of 50% in these elements of continuous assessment in order to have satisfied the module learning outcomes listed above.

Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	to communicate effectively in a modern technical environment;
LO2	to construct and present quality engineering drawings in a well drafted manner.
LO3	to present correct lettering, figures and dimensions to a defined style and standard.
LO4	to produce details in orthographic, isometric and oblique projections.
LO5	to produce both manual and CAD drawings for typical details such as: (a) Foundation section (b) Drainage pipe cross section (c) Manhole sections (d) Road cross section (e) Drainage layout (f) Longitudinal section (g) Base plate detail
LO6	understand & use the engineering level competently in the area of construction & for collection of data for preparation of contour maps & longitudinal sections;
LO7	understand & apply surveying techniques for collecting surveying data in basic linear surveying of small sites;
LO8	understand & use manual drafting and surveying software packages to produce contour maps and longitudinal sections

Pre-requisite learning
Module Recommendations <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>
No recommendations listed
Incompatible Modules <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>
No incompatible modules listed
Co-requisite Modules
No Co-requisite modules listed
Requirements <i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>
No requirements listed

Module Content & Assessment

Indicative Content

(1) Manual Drawing (10 hours)

(a) Paper size, Lettering & title blocks (b) Orthographic projection (c) Isometric and oblique projection (d) Perspective drawing (e) Freehand sketching (f) Basic geometrical solids (g) Development of surfaces

(2) Practical manual drawing exercises (10 hours)

(a) Foundation detail (b) Pipe layout and sections (c) Road layout and sections (d) Typical manhole plan and section (e) Typical road gully plan and section (f) Base plate detail (g) House Plan

(3) Computer Aided Drafting (20 hours)

(a) Introduction to basic CAD concepts using AutoCAD. (b) Basic file management techniques. (c) Use and identify key components of the software relating to the 2D drawing environment. (d) Use the AutoCAD software co-ordinate system to aid accurate drawing. (e) Set up the drawing environment with the correct units in order to start producing drawings. (f) Use absolute/relative/polar X, Y co-ordinate system to produce basic measured objects through keyboard entry. (g) Use AutoCAD function keys. (h) Use hatch, text and simple dimensioning routines. (i) Basic editing and drawing commands. (j) Scale/load linetypes (k) Use a layering system and different linetype styles and assign lineweights. (l) Create/edit basic block (m) Create isometric drawings in 2D AutoCAD (n) Use of polar and circle array (o) Introduction to dynamic blocks (p) Enhancing CAD drawings with text, symbols and blocks. (q) Transferring data using the Design Centre. (r) Create basic dimension styles to suit viewport scales. (s) Adding and editing dimensions with different dimensioning styles. (t) Create/edit basic .ctb files (colour dependant plots styles) (u) Share data working with other applications Word and Excel. (v) Using paper space to print a variety of drawing layouts to scale. (w) Extract a coordinate list from a survey. Import the coordinate list into Pythagoras, generate a model and export the information in AutoCAD maintaining a real-world scale. (x) Scan raster images and import them into AutoCAD. (y) Create and use templates which will set the drawing environment ready for your projects, and an understanding of the benefits of using templates. (z) Create, edit and print a wide variety of civil drawings generally following a set of civil drawing conventions that are widely accepted in the industry.

(4) Practical CAD drawing exercises (20 hours)

(a) Foundation detail (b) Pipe layout and sections (c) Road layout and sections (d) Typical manhole plan and section (e) Typical road gully plan and section (f) Base plate detail

(1) Linear Surveying

(a) Field Procedures (b) Field Obstacles (c) Booking Procedures (d) Ordnance Survey Mapping

(2) Area Computation

(a) By triangulation (b) Simpsons Rule for Area Evaluation (c) Trapezoidal Rule for area evaluation

(3) Engineering Level

(a) Surveying For Height (b) Ordnance datum and Bench Marks (c) Optical Levels (d) Field Procedures (e) Permanent Adjustments (f) Longitudinal Sections (g) Contour Maps (h) Use of level for Building work, drainage and sewage

(4) Computer Application

(a) Introduction to software packages for production of Contour maps, sections and digitised maps

Assessment Breakdown

	%
Continuous Assessment	100.00%

Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Other	Various	1,2,3,4,5,6,7,8	100.00	n/a

No Project

No Practical

No End of Module Formal Examination

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Practicals	12 Weeks per Stage	1.00
Practicals	12 Weeks per Stage	2.00
Practicals	12 Weeks per Stage	2.00
Lecture	12 Weeks per Stage	2.00
Practicals	12 Weeks per Stage	2.00
Estimated Learner Hours	12 Weeks per Stage	16.00
Total Hours		300.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_CMHCE_B	Bachelor of Engineering (Honours) in Civil Engineering	2	Mandatory