Module Code	CEU33A10
Module Name	3A10 SURVEYING AND GEO-SPATIAL PLANNING
ECTS credit weighting	5 ECTS
Semester taught	Semester 2
Module Coordinator/s	Julie Clarke
Module Learning Outcomes with embedded Graduate Attributes	On successful completion of this module, students should be able to: LO1. Design and organise levelling, total station and global positioning survey (GPS) surveys, including estimation of probable errors. LO2. Undertake reconnaissance exercises to establish best possible surveying methods to be used in different stages of engineering projects. LO3. Perform instrument checks to ensure the equipment meets specifications for quality assurance of surveying tasks. LO4. Learn how to use different surveying instruments by undertaking basic surveying procedures. L05. Explain the concepts and theories that underpin GIS and outline their application to the real world. L06. Demonstrate technical proficiency in the use of an industry standard GIS software package. L07. Apply GIS technologies in problem-solving LO8. Collate and map different forms of geo-spatial data using Geographical Information System (GIS) software to support surveying activities. LO9. Analyse, report, and where appropriate, distribute, the survey errors. **Graduate Attributes: levels of attainment** To act responsibly - Enhanced To think independently - Enhanced To develop continuously - Enhanced To communicate effectively – Attained

Module Content	Surveying and geo-spatial planning is a single semester module that will help you gain a foundation understanding of the principles of surveying and planning practices, intermediate knowledge of the methods and procedures used on site, and familiarity with a full range of geospatial surveying equipment and tools. This module will give students the ability to plan and manage surveying projects in a wide range of contexts and environments. Students will gain an appreciation of the importance of accuracy and precision when translating detailed plans when setting out any civil engineering project. This will include addressing the challenges faced for surveyors working in different construction environments and consider the impact of spatial design changes during project development. This practical work will be grounded by mathematical theory of analysing for possible errors that may occur in both surveying instrumentation and the methods used for calculating spatial-related data. The following topics are covered. • Levelling • Totals Stations • Linear and Angular Measurement • Setting Out • Global Positional Systems (GPS) • Geospatial (GIS) Mapping and Modelling • Remote Sensing
Teaching and Learning Methods[1]	During the practical's and computer laboratories, students will work on independent and team tasks relating to the different life cycle stages of an engineering project: from site investigations to preliminary design, and through to construction and development checks. These tasks are designed to enable students develop a competency in operating surveying equipment and use surveying data for different project planning and development activities covered during the lectures: ▪ Levelling survey ▪ Totals Station survey and traverse ▪ GPS survey ▪ Geo-spatial planning assignments using GIS Coursework practical's requires the submission of a report containing tabular result, sketch, error reporting, and commentary on the methods used.

[1] Trinity-INC provides tips and resources on how to make your curriculum more inclusive.

Assessment Details[2]
Please include the following:

- **Assessment Component**
- **Assessment description**
- **Learning Outcome(s) addressed**
- **% of total**
- **Assessment due date**

It is recommended that module co-ordinators consider assessment types used across the year to ensure varied assessment methods.

Assessment Component	Assessment Description	LO Addressed	% of total	Week due
Examination	2-hour written examination	LO1-9	50%	
Coursework	Individual: 2 No. geo-spatial planning (GIS) laboratory assignments	LO2,5-8	5+5%	5
Coursework	Individual: 3 No. basic survey demonstrations and reports	LO1,3,4 & 9	10%	9
Coursework	Group: 3 Advanced surveying practical's and group project	LO1-4, 6-9	30%	12

Reassessment Requirements

100% written examination

Contact Hours and Indicative Student Workload[3]

Contact hours: 48 (27 hours of lectures; 15 hours of surveying practical's; 6 hours of geospatial planning tutorials)
Independent Study (preparation for course and review of materials): 20 hours
Independent Study (preparation for assessment, incl. completion of assessment): 57 hours

Indicative Reading List (approx. 4-5 titles)

Relevant textbooks

Uren & Price, Surveying for Engineers, Palgrave Publ. 5th Ed.

Schofield & Breach, Engineering Surveying, 6th Ed.

Banister, Raymond & Baker Surveying, Longman

Wolf & Ghilani, Elementary Surveying, Prentice Hall Publ.

Longley, Geographic Information Systems & Science, Wiley, 3rd Ed

Heywood, An Introduction to Geographical Information Systems, Prentice Hall, 4th Ed

Module Pre-requisite

Module Co-requisite

Module Website

Year Three - Engineering | Trinity College Dublin (tcd.ie)

[2] https://www.tcd.ie/academicpractice/resources/assessment/
[3] https://www.tcd.ie/academicpractice/resources/assessment_workload/

Are other Schools/Departments involved in the delivery of this module? If yes, please provide details.	
Academic Year of Date	2024-25