<table>
<thead>
<tr>
<th>Module Code</th>
<th>CEU33A01</th>
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</thead>
<tbody>
<tr>
<td>Module Name</td>
<td>3A1 ENGINEERING SURVEYING</td>
</tr>
<tr>
<td>ECTS Weighting¹</td>
<td>5 ECTS</td>
</tr>
<tr>
<td>Semester taught</td>
<td>Semester 2</td>
</tr>
<tr>
<td>Module Coordinator/s</td>
<td>John Gallagher</td>
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</tbody>
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**Module Learning Outcomes** with reference to the **Graduate Attributes** and how they are developed in discipline

1. Design and organise a survey, including estimation of probable errors
2. Undertake reconnaissance exercises to establish best possible methods to be used in engineering surveying
3. Perform instrument checks to ensure they meet specifications as quality assurance of surveying
4. Learn about basic surveying techniques and procedures
5. Collate and map survey coordinates using GIS software
6. 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**

Engineering surveying is a single semester module that will help you gain a foundation understanding of the principles of surveying, intermediate knowledge of the methods and procedures used on site, and familiarity with a full range of surveying instruments and equipment.

This module will give students the ability to design 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 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

¹ TEP Glossary
The following topics are covered.

- Linear Measurement
- Levelling
- Angular Measurement
- Totals Stations
- Setting Out
- Horizontal & Vertical Curves
- Global Positional Systems (GPS)
- Mapping and Modelling using mapinfo
- Remote Sensing

**Teaching and Learning Methods**

During the practical’s the students work in teams to carry out basic engineering tasks that would be encountered in a surveying team. These tasks are designed to enable students develop a competency in operating surveying equipment and accessories covered during the lectures:

- Levels: Level survey
- Theodolites: Theodolite traverse
- Totals Stations: Total station traverse, detail survey
- GPS Survey: Using a GPS to conduct a survey
- GIS assignment

Coursework practicals requires the submission of a report containing tabular result, sketch, error reporting, and commentary on the methods used.

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**Assessment Details**

Please include the following:

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

<table>
<thead>
<tr>
<th>Assessment Component</th>
<th>Assessment Description</th>
<th>LO Addressed</th>
<th>% of total</th>
<th>Week due</th>
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<tbody>
<tr>
<td>Examination</td>
<td>2-hour written examination</td>
<td>LO1-6</td>
<td>50%</td>
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<tr>
<td>Coursework Individual</td>
<td>2No. GIS laboratory assignments</td>
<td>LO5</td>
<td>5+5%</td>
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<tr>
<td>Coursework Individual</td>
<td>3No. basic survey demonstrations</td>
<td>LO4-6</td>
<td>10%</td>
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<tr>
<td>Coursework Group</td>
<td>3 advanced surveying practicals</td>
<td>LO1-6</td>
<td>30%</td>
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</table>

**Reassessment Requirements**

100% written examination
### Contact Hours and Indicative Student Workload

<table>
<thead>
<tr>
<th>Contact hours:</th>
<th>51 (27 Lectures; 15 practicals; 9 GIS tutorials)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Study (preparation for course and review of materials):</td>
<td>20</td>
</tr>
<tr>
<td>Independent Study (preparation for assessment, incl. completion of assessment):</td>
<td>40</td>
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### Recommended Reading List

- **Relevant textbook**
  - *Uren & Price*, Surveying for Engineers, Palgrave Publ. 5th Ed.
  - *Schofield & Breach*, Engineering Surveying, 6th Ed.
  - *Banister, Raymond & Baker*, Surveying, Longman

### Module Pre-requisite

### Module Co-requisite

### Module Website


### Are other Schools/Departments involved in the delivery of this module? If yes, please provide details.

### Module Approval Date

- **Approved by:**
- **January 2021**

### Academic Start Year

- **2020-21**

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**COVID-19 contingency statement:**

While the intention is to deliver some lectures, tutorials and labs face-to-face, there is uncertainty due to the Covid-19 situation and the entire module delivery may need to change to an online delivery if required by government restrictions. In particular, the hands-on use of surveying equipment may be limited due to the challenges in social distancing and physically interacting with the equipment. In the case of a possible new lockdown scenario during teaching term:

- All lectures, tutorials and labs will be *live* sessions and your attendance at live sessions is required.
- Assignments and examinations will be conducted and submitted online.