<table>
<thead>
<tr>
<th><strong>Module Code</strong></th>
<th>CEU44E03 (also M5)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Module Name</strong></td>
<td>Research Methods</td>
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<tr>
<td><strong>ECTS Weighting</strong>[^1]</td>
<td>5 ECTS</td>
</tr>
<tr>
<td><strong>Semester taught</strong></td>
<td>Semester 1</td>
</tr>
<tr>
<td><strong>Module Coordinator/s</strong></td>
<td>Assistant Prof. David O’Connell (<a href="mailto:david.oconnell@tcd.ie">david.oconnell@tcd.ie</a>)</td>
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**Module Learning Outcomes with reference to the Graduate Attributes and how they are developed in discipline**

Learning outcomes

On successful completion of this module, students will be able to:
1. Plan and manage a postgraduate research project
2. Critically appraise of existing research tools, methods and publications
3. Identify scope of future research and design a research proposal
4. Summarise, communicate (in written and oral form) research within and outside their own field
5. Recognise issues of plagiarism, confidentiality, data protection and other ethical issues
6. Design engineering experiments and analyse and interpret quantitative information collected
7. Identify and apply appropriate statistical software tool for experimental problem solving

**Graduate Attributes: levels of attainment**

To act responsibly - Attained
To think independently - Attained
To develop continuously - Attained
To communicate effectively - Enhanced
Module Content

This course covers research philosophies in engineering, research in academia, research scopes & problems, research process and design. Also covered are characteristics of good research and choice of research topic. Components of research proposal preparation, literature review, research strategies, research ethics, research access sources and processes are covered.

The module covers and explores data collection and analysis, sample analysis, software application, report writing and presentation.

Teaching and Learning Methods

Lectures & seminars given by lecturers, potentially other academics and research experts if deemed appropriate and possible.

Group/Individual learning of statistical software.
### 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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</thead>
<tbody>
<tr>
<td>Ethics Approval Report</td>
<td>1,2,5</td>
<td>15</td>
<td>Week1, Sem 2</td>
<td></td>
</tr>
<tr>
<td>Experimental Design</td>
<td>1,6,7</td>
<td>40</td>
<td>Week1, Sem 2</td>
<td></td>
</tr>
<tr>
<td>Literature Review</td>
<td>1-4</td>
<td>45</td>
<td>Week 4, Sem 2</td>
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### Reassessment Requirements

### Contact Hours and Indicative Student Workload

**Contact hours:** 22hrs (2 hrs lecture per week)

**Independent Study (preparation for course and review of materials):** 50hrs

**Independent Study (preparation for assessment, incl. completion of assessment):** 50 hrs

### Recommended Reading List


### Module Pre-requisite

None

### Module Co-requisite

None

### Module Website

Are other Schools/Departments involved in the delivery of

No – this module is exclusively offered to the Department of Civil, Structural and Environmental Engineering.
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 the case of a possible new lockdown scenario during teaching term:

- All lectures, tutorials and labs will be delivered online using Blackboard. Some of these sessions will be live sessions and your attendance at live sessions is required.
- Assignments and examinations will be conducted and submitted online.