# M2 Research Methodology

<table>
<thead>
<tr>
<th>Module Title:</th>
<th>M2 Research Methodology</th>
<th>Code:</th>
<th>M2</th>
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<tbody>
<tr>
<td>Level:</td>
<td>MSc (Level 9)</td>
<td>Credits:</td>
<td>10 ECTS</td>
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<tr>
<td>Co-ordinator:</td>
<td>Dr. Bidisha Ghosh</td>
<td>Other Lecturers:</td>
<td>Dr. Francesco Pilla</td>
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<td>Terms:</td>
<td>Semester 1</td>
<td>Lectures/week:</td>
<td>2 hrs.</td>
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<td>Duration (weeks):</td>
<td>Wk 1-10</td>
<td>Total:</td>
<td>18 hrs.</td>
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## Aims/Objectives

This course will provide an introduction to students the key aspects of research in engineering, research methods & designs, data collection and analysis, ethical and legal perspectives.

The course aims to:

- Develop a critical outlook in students regarding published research
- Support students in the development of their research project
-Expose students to the organisation, conduct & implementation of research in universities & institutes
- Enable students to utilise the available research resources and develop a supportive research environment

## Course Content & Syllabus

Research Philosophies in Engineering, Research in Academia, Research scopes & problems, Research process and design, Characteristics of good research and choice of research topic.

Components of research proposal, Literature review, Research strategies, Research ethics, Research access.

Data collection, Data analysis, Sampling analysis, Software training (Statistical & GIS), Report writing and Presentation.

## Recommended Text(s)


## 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
8. Demonstrate understanding of GIS software and apply the same for data analysis.

### TEACHING STRATEGIES
Lectures provided by lecturers & researchers
Seminars given by lecturers, other academics and industrial experts
Group/Individual learning of use of statistical software
*(Lecture notes and presentation will all be available online in Blackboard)*

### ASSESSMENT
Assessment is through written coursework and presentations, linked to the individual research project being completed by each student (see M3). Completion by end of semester 2.

#### METHODS
1. A comprehensive literature review on a chosen research topic (30%) *(marked by project supervisor)* (due at the end of week 1, Semester 2) *(marked by project supervisor)*
2. Preparation & presentation of a research plan & proposal (15%) (due at the end of week 7) *(marked by project supervisor)*
3. Assignment on data analysis and interpretation using a chosen software tool (15%)
4. A short research paper appropriate for peer-reviewed publication (15%) *(marked by project supervisor)*
5. A short discussion on plagiarism, confidentiality, data protection and ethics of research related to the research topic chosen in M3 (5%) *(marked by project supervisor)*
6. Executive summaries of lunch time lectures (Any 4 of them will be marked) (5%)
7. Assignment using GIS software tool (15%)