Module Code: ME7B25
Module Name: Experimental and Research Methods in Engineering
ECTS Weighting: 10
Semester taught: Full Academic Year
Module Coordinator/s: Prof. Kevin O’Kelly

Module Learning Outcomes:
On completion of this module, the student will be able to:
1. Evaluate the role of fundamental research in engineering, differentiating between the concepts of research, design and development in an engineering context
2. Experience and employ different elements of the research process including project planning, investigating background literature, designing and conducting experiments, analysing results, documenting processes, and ultimately reporting and presenting findings
3. Clearly understand the ethical considerations of research including the implications of plagiarism on their work
4. Demonstrate an ability to engage in team-based research incorporating the latest cloud-based collaborative tools
5. Communicate the results of a research task to their peer group for analysis of the results in a discussion
6. Assess their desire to engage in fundamental engineering research at a graduate level or in industry

Module Content:
Students will conduct practical tasks representative of the process of engineering research over the course of this module. These tasks will involve the analysis of a physical experiment and a numerical research problem. The task will involve the design of a novel approach to solve a chosen research challenge.

Students will work both individually and in teams representing a research group and with a division of tasks amongst the members.

Teaching and Learning Methods:
There are no formal timetabled hours associated with the project but students are expected to dedicate the time necessary to make reasonable progress, and to keep in regular contact with their supervisor. It is recommended that students make a formal arrangement with their supervisors to meet on a weekly or fortnightly basis, preferably at a regular appointed time. Student timetables do facilitate free blocks which are very accommodating to the execution of the project. Project titles will be assigned in the second week of term which can be commenced immediately following this. There are ample durations between the first and second semester and during the summer semester during which research can be performed.
### Assessment and Workload Details

<table>
<thead>
<tr>
<th>Assessment Component</th>
<th>Assessment Description</th>
<th>LO Addressed</th>
<th>% of Total</th>
<th>Week Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Proposal</td>
<td>Written research proposal to include extensive literature review and research plan to be submitted to Blackboard</td>
<td>1-3, 13</td>
<td>50</td>
<td>10</td>
</tr>
<tr>
<td>Interim Oral Presentation</td>
<td>Powerpoint Presentation</td>
<td>1-8, 13</td>
<td>50</td>
<td>33</td>
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#### Reassessment
There is no reassessment for the MSc

#### Contact Hours and Indicative Student Workload
Contact hours: 1 hour/week/fortnight with supervisor
Independent Study (preparation for assessment, including completion of assessment): average of 5-10 hours/week

#### Recommended Reading List
- Journal articles and case studies related to research topic

#### Module Website
Not applicable

#### Other Schools/Departments involved in the delivery of this module
Not applicable

#### Module Approval Date
Approved by Prof. Kevin O’Kelly

#### Academic Start Year

#### Academic Year of Date