4E04 Engineering Project Internship [30 credits]

Lecturer(s)/Discipline Internship Coordinators:

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Introduction
The Engineering Project Internship (EPI) module is a practical internship in a professional engineering setting. This setting can be a company, a government institution, research centre, clinic, etc. as deemed appropriate. The School of Engineering has selected hosts for the EPI which are already in collaboration with School of Engineering academics, or are forming new relationships of mutual benefit.

Purpose
The EPI gives the student the opportunity to translate engineering theory into practice in a professional engineering environment. A central requirement of the EPI is that it must be based around significant engineering research work. The EPI is principally assessed on the basis of defined engineering work. The technical activity should be related to both the student’s engineering studies and to the host’s activities, and it should constitute a significant body of engineering work at the appropriate level. It should involve tasks and methods that are more appropriately completed in a professional engineering environment and should, where possible, make use of human and technology resources provided by the host. It consolidates the student’s prior learning and provides a context for later research studies. The student remains a full time registered student at Trinity College Dublin during the EPI and this activity is therefore wholly distinct from any industrial interactions which may occur over vacation periods.

Module organisation
The EPI module ordinarily runs from Mid January to Mid June. The EPI accounts for half of the student effort in the fourth-year of their five-year MAI1 studies. Students who take the EPI cannot take any other modules in the second semester of their fourth year.

Prerequisites
This is an optional module in the Senior Sophister (4th) year for MAI students who are following a five-year study programme, and is not available to students who have chosen any of the four year routes (BAI2 or BSc3). In order to be eligible to apply for

1 Integrated five year Masters programme in Engineering at Trinity College Dublin.
2 Traditional four year Bachelors programme in Engineering at Trinity College Dublin.
3 Traditional four year Engineering with Management programme
and be considered to undertake the 4E4 Industrial Partnership/Internship modules in the second semester of the Senior Sophister year, students MUST have a minimum grade of II.1 (60 – 69%) at the annual Junior Sophister Engineering examinations. Those required to sit supplemental Junior Sophister Engineering examinations will be deemed ineligible to apply. No exceptions to this rule will be considered.

Implications
Participation in the EPI can limit MAI module choices for the fifth-year, due to the prerequisite requirements for some modules. Accordingly, it will be necessary to ensure that MAI students who go on Internship in their fourth year will be able to avail of a suitable menu of modules in their fifth-year. It will be allowable in some circumstances for fifth-year students to take up to 10 ECTS of appropriate fourth-year modules. These modules must be chosen to strengthen their chosen area of specialism and, where possible, also support their fifth-year project work. The choice of modules for the fifth-year for all students going on the EPI must be made with the agreement of the Year/Stream Coordinator(s), and the Head of Discipline.

Application Process for Students
See 4E04 handbook for more details and instructions how to apply.

Assessment Details
The Academic Supervisor is responsible for managing and assessment of the EPI. This includes a Reflective Diary which is updated throughout the internship, an Interim Project Report, a Final Report with Learning Agreement/Outcomes and a Final Presentation & Viva which should ideally involve the Host Mentor, Academic Supervisor and Discipline Co-Ordinator. A hard copy and electronic copy of all reports are required. Advice from the host Mentor will be sought with regard to the awarding of marks. A suggested weighting for the assessments is as follows (these weightings should be agreed at the outset of each internship):

<table>
<thead>
<tr>
<th>Activity</th>
<th>Submission date</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reflective diary</td>
<td>End of internship</td>
<td>5%</td>
</tr>
<tr>
<td>Goals report</td>
<td>End of week 3 of internship</td>
<td>10%</td>
</tr>
<tr>
<td>Midway report</td>
<td>Mid point of internship</td>
<td>10%</td>
</tr>
<tr>
<td>Final report</td>
<td>End date of internship</td>
<td>60%</td>
</tr>
<tr>
<td>Oral and poster presentations and viva</td>
<td>Dates to be decided</td>
<td>15%</td>
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Learning Agreement/Learning Outcomes
The learning outcomes for the EPI module are focussed on the implementation of technical knowledge to address engineering problems, communications, group work, professional and social ethics, sustainability, risk assessment and engineering design practice. The project work undertaken as part of the EPI is diverse. As a result, the
Learning Agreement/Outcomes will vary, but on completion of the module, students will have achieved several learning outcomes from the following list:

- Be able to identify and use appropriate mathematical methods, numerical techniques and software tools for application to new and ill-defined engineering problems;
- Be able to integrate knowledge, handle complexity and formulate judgements with incomplete or limited information;
- Have the ability to redesign products, processes or systems in order to improve productivity, quality, safety and other desired needs;
- Have the ability to apply design methods, processes and techniques to unfamiliar, ill-defined problems, involving other disciplines;
- Be able to design according to codes of practice and industry standards; to identify limitations of codes of practice and the need for their application;
- Have the ability to investigate and define a need and identify constraints including health, safety and legal issues and the impact of engineering solutions in a societal and environmental context;
- Be able to make engineering judgements that take cognisance of the social, environmental, ethical, economic, financial, institutional and commercial considerations affecting the exercise of their engineering discipline;
- Have the ability to consult and work with experts in various fields in the realisation of a product or system;
- Have knowledge and understanding of concepts from a range of areas outside engineering;
- Be able, via knowledge and understanding of group dynamics, to exercise leadership;
- Be able to select and apply appropriate communication tools and write technical papers and reports;
- Be able to describe succinctly, the relevant advantages and disadvantages of various technologies to a lay audience, and to communicate effectively in public.

Module content

Teaching strategies

Assessment

Required textbook