Module Organisation

The module runs for 12 weeks of the academic year and comprises 4 hours of labs per week. Total contact time is 48 hours.

<table>
<thead>
<tr>
<th>Start Week</th>
<th>End Week</th>
<th>Lectures/Labs per week</th>
<th>Lectures/labs total</th>
<th>Tutorials per week</th>
<th>Tutorials total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12</td>
<td>4</td>
<td>48</td>
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Module Description

This module aims to develop 3D computer aided design (CAD) and 3D printing skills. Students will learn the use of 3D CAD (Solidworks) and use the software to design and print a basic prototype.

Learning Outcomes

On successful completion of this module, students will be able to:

1. Create 3D models of complex engineering components using CAD software (Solidworks)
2. Build engineering assemblies of components using CAD software
3. Interpret manufacturing engineering drawings
4. Construct manufacturing drawings of components and assemblies using CAD software
5. Analyse engineering components using simulation techniques
6. Create a 3D prototype based on a 3D model using 3D printing

Module Content

- Building upon previous skills developed in Engineering Drawing in year one, students will now transfer their design skills from paper to computer using CAD software (Solidworks).
- Students will learn the importance of CAD in the context of biomedical, mechanical and manufacturing engineering and the integration of CAD software into other Computer Aided Engineering (CAE) software such as Finite Element Analysis (FEA) and Computer Aided Manufacturing (CAM).
- The module will focus on developing detailed engineering design skills such as 3D modelling of complete engineering components and assemblies, the production and understanding of engineering drawings and an introduction to simulations and engineering analysis of product designs and assemblies using CAD.
- Students will use 3D printing to produce a basic prototype from their 3D model/assembly.
Module Notes

Outline notes will be provided on Blackboard

Teaching Strategies

Students learn CAD in the module and then apply it to the design of their own basic prototype. The module is student led with substantial supporting documentation provided on Blackboard and laboratory sessions supported by teaching assistants.

Assessment Modes

The module is fully continuously assessed via exercises submitted throughout the course of the module.

Recommended or Core Text

No prescribed texts – class notes and instruction should suffice.

The following texts may provide useful additional information:


Note:

This module has no exams, it is evaluated fully through continuous assessment. Therefore, there are no associated supplemental exams which can be taken if the subject is failed.

For students who do not pass the module but who have engaged satisfactorily with the module during the semester, they will be required to complete an individual project over the summer as an alternative to supplemental exams. This is due to the practical nature of the module.