Module Code: CSU11E03
Module Name: Computer Engineering I
ECTS Weighting: 5 ECTS
Semester taught: Semester 2
Module Coordinator/s: Lucy Hederman

Module Learning Outcomes:

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

- LO1. Analyse simple programming problems
- LO2. Specify and design an algorithm to solve simple programming problems;
- LO3. Write C++ programmes to solve simple programming problems;
- LO4. Compile, run, test and debug C++ programmes;
- LO5. Select and use correctly appropriate control structures for specific programming sub-problems;
- LO6. Recognise the value of procedural abstraction and be able to use procedures to simplify programme design, hide detail and allow reuse of code;
- LO7. Use arrays where appropriate in the design and implementation of a programme;
- LO8. Predict the behaviour of a given C++ program that uses the concepts and constructs covered by the course.

Module Content:

This module aims to equip students with the skills to design and develop simple imperative programs. It provides a solid grounding in algorithm design and programming techniques, in preparation for later courses that require programming. Topics include:

- Introduction to computers and computing;
- Programming, compiling and running programmes;
- Basic C++ programmes; expressions, variables and data types, assignment;
- Selection and the IF-ELSE statement;
- Iteration, WHILE loops and FOR loops;
- Programme design process, algorithms and pseudocode;
- Advanced control flow: nested loops, nested Ifs;
- Procedural abstraction, functions in C++;
- Arrays and array algorithms.

Teaching and Learning Methods:

Lectures, & programming laboratories.

1 TEP Glossary
### Assessment Details

<table>
<thead>
<tr>
<th>Assessment Component</th>
<th>Brief Description</th>
<th>Learning Outcomes Addressed</th>
<th>% of total</th>
<th>Week set</th>
<th>Week due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examination</td>
<td>2 hour written examination</td>
<td>LO1, LO2, LO3, LO5, LO6, LO7, LO8</td>
<td>80%</td>
<td>n/a</td>
<td>n/a</td>
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<tr>
<td>Coursework</td>
<td>11 weekly exercises carried out during laboratory sessions</td>
<td>LO4, LO1, LO2, LO3, LO5, LO6, LO7, LO8</td>
<td>20%</td>
<td>Each week</td>
<td>The same week</td>
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### Reassessment Details

Examination (2 hours, 100%)  

### Contact Hours and Indicative Student Workload

<table>
<thead>
<tr>
<th>Contact Hours (scheduled hours per student over full module), broken down by:</th>
<th>55 hours</th>
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</thead>
<tbody>
<tr>
<td>lecture</td>
<td>33 hours</td>
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<tr>
<td>laboratory</td>
<td>22 hours</td>
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<table>
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<tr>
<th>Independent study (outside scheduled contact hours), broken down by:</th>
<th>47 hours</th>
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<tbody>
<tr>
<td>preparation for classes, preparation for laboratories/assignments and review of material (including preparation for examination)</td>
<td>45 hours</td>
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<tr>
<td>completion of examination</td>
<td>2 hours</td>
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**Total Hours**: 102 hours

### Recommended Reading List


### Module Pre-requisites

None

**Other/alternative non-module prerequisites**: This module assumes a grasp of high school mathematics.

### Module Co-requisites

None

### Module Website

http://www.tcd.ie/Engineering/Courses/BAI/JF_Subjects/1E3/

### Last Update

1th June 2019 by Lucy Hederman

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2 TEPS Guidelines on Workload and Assessment