2E3 COMPUTER ENGINEERING II [5 credits]

Lecturer(s): Professor of Visual Computing, Carol O’Sullivan

Module organisation
The module runs for the first half (12 weeks) of the academic year and comprises of three lectures, one tutorial and a one-hour laboratory per week (total of 55 hours contact time).

Module description, aims and contribution to programme
• to build on the Junior Freshman Engineering 1E3 Computer Engineering I module and to give students the ability to understand and apply object oriented programming principles to solve real problems;
• to teach students to develop and debug programs using an advanced integrated development environment (Microsoft Visual Studio VC++);
• to introduce students to standard data structures and algorithms and show how and when they can best be applied;
• to introduce students to both core and advanced programming skills

Learning outcomes
Upon completion of this module, students will be able to:
1. understand and apply object oriented programming principles to solve real problems
2. write and debug C++ object-oriented programmes identify and apply standard data structures and algorithms;
3. describe how C++ programmes are represented at runtime;

Module content
• C++ classes, constructors, destructors, overloading, simple inheritance;
• Pointers, dynamic and stack based memory allocation;
• File I/O;
• String, list, stack, queue and tree data structures;

Teaching strategies
The teaching strategy is a mixture of traditional lecturing and hands-on practical work. Practical work focuses on the development of complete working programmes.
Associated laboratory/project/tutorial programme
There are weekly laboratories which are marked as well as a term project which will extend over the Christmas period.

Assessment
Assessment is by means of continuous assessment (30%) and a two-hour end-of-year written examination (70%). Assessment in supplemental examinations is based on 100% exam.

Further information
http://www.tcd.ie/Engineering/undergraduate/baiyear2/