



# Computational and Software Techniques in Engineering – Option in Software Engineering for Technical Computing

MSc

This course is unique in that it combines software engineering with high performance computing, giving you the tools and techniques that employers are looking for and an advantage in the job market. This specialist option of the MSc Computational and Software Techniques in Engineering offers a unique insight into the development of computer applications across a wide spectrum of modern computing environments, from multi-core CPUs to specialist GPUs to Cloud Computing, all of which are relevant to the IT industry today. If you intend to make a career in software development, whether it is in the data centre, on the desktop or in the rapidly expanding mobile application space, you need to have a strong basis in software engineering. This course is unique in that it combines software engineering with high performance computing, giving you the tools and techniques that employers are looking for and an advantage in the job market. Cranfield University has many years of specialist knowledge and experience in High Performance Computing. We are able to offer a unique insight into the development of computer applications across a wide spectrum of modern computing environments, from multi-core CPUs to specialist GPUs to Cloud Computing, all of which are relevant to the IT industry today.

## Course structure

The course consists of core modules, including a group design project, plus an individual research project.

## Individual project

The individual research project allows you to develop specialist skills by taking the theory from the taught modules and combining it with practical application. The research project gives you the opportunity to produce a detailed piece of work either in close collaboration with industry, or on a particular topic which you are passionate about.

## Group project

This aims to provide you with invaluable experience of delivering a project within a software development team. The project allows you to develop a range of skills including learning how to establish team member roles and responsibilities, project management, delivering technical presentations, and working with members who have a variety of backgrounds and experience.

## Future career

Students of this course attract interest from companies across the EU and beyond who wish to recruit high quality software development graduates. There is considerable demand for students with expertise in engineering software development, with strong technical programming skills in industry standard languages and tools. Our graduates are in demand by developers of financial software, mobile applications and commercial engineering software across a wide range of industries. In recent years, our graduates have been employed by companies such as; Ocado; SAP; HSBC; IBM; BluAge; FDM; UBS; Mindsnacks; Mandara Capital; Commerzbank AG; and Oracle.

## Example modules

Modules are delivered via a combination of lectures, tutorial sessions and computer-based workshops.

### Compulsory:

- Advanced Java,
- C Programming (pre-requisite),
- C++ Programming,
- Cloud Computing,
- Computational Methods,
- Computer Graphics Occ B (ESTIA),
- High Performance Technical Computing,
- Management for Technology,
- Requirements Analysis and System Design,
- Small-Scale Parallel Programming,
- Software Testing and Quality Assurance.

### Duration:

MSc: Full-time - one year, Part-time - up to three years.

### Start date:

September.

### Location:

Cranfield Campus.

### Entry requirements:

A first or second class UK Honours degree (or equivalent), in applied mathematics, aeronautical, mechanical or electrical engineering, or computer science. We accept applications as part of a recognised double degree programme. Entry level C programming.

Applicants who do not fulfil the standard entry requirements can apply for the Pre-master's in Engineering programme, successful completion of which will qualify them for entry to this course for a second year of study.

### ATAS Certificate:

Students requiring a visa to study in the UK may need to apply for an ATAS certificate to study this course.

## Contact details

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For further information please visit

[www.cranfield.ac.uk/courses/taught/  
software-engineering-for-technical-computing](http://www.cranfield.ac.uk/courses/taught/software-engineering-for-technical-computing)