



Welding Engineering

MSc/PgDip/PgCert

Welding is integral to the manufacture of a wide-range of products. This course provides the practical and theoretical knowledge required to become a welding engineer and a materials and joining specialist. The course covers modern welding techniques, automation, metallurgy, materials science, welding processes, weld design, and quality. It will provide you with a fundamental understanding of welding technologies and an awareness of recent technical developments within the relevant industries. It will also improve your communication, presentation, analytical and problem solving skills. Our graduates are highly sought after by international companies using welding and joining technologies, and are able to attain positions of significant engineering responsibility. Welding is integral to the manufacture of a wide-range of products, from high power laser welding of large ships, to microjoining of thin wires to circuit boards. This MSc addresses these needs, and covers a wide-range of areas that are part of modern welding technology such as automation, metallurgy and materials science, welding processes, design, and quality. In addition, you will be qualified to act as responsible persons as defined by European and international quality standards, and will have met a major part of the requirements for membership of the appropriate professional organisations with knowledge, skills and experience of managing research and development projects.

Course structure

The course comprises seven assessed modules, a group project and an individual research project. The modules include lectures and tutorials, and are assessed through practical work, written examinations, case studies, essays, presentations and tests. These provide the 'tools' required for the group and individual projects.

Individual project

This provides experience of undertaking research into a specific welding issue that is of interest and benefit to a company. The research project is usually on a topic of direct relevance to industry, and for full-time students is performed using the wide-range of welding equipment in our Welding Engineering Research Centre.

Group project

The group project experience is highly valued by both students and prospective employers. Teams of students work to solve an industrial problem. The project applies technical knowledge and provides training in teamwork and the opportunity to develop non-technical aspects of the taught programme. Part-time students can prepare a dissertation on an agreed topic in place of the group project.

Future career

Successful students develop diverse and rewarding careers in engineering management in a wide-range of organisations deploying welding technologies. Roles include the management of welding manufacturing operations, and management of design and fabrication of welded structures. The international nature of such activities means that career opportunities are not restricted to the UK. Cranfield graduates develop careers around the world in oil and gas, automotive, and aerospace sectors.

Example modules

Modules form only part of the course, with the project(s) and theses making up the balance. Please see the course structure for details.

The list below shows the modules offered in the 2019-20 academic year, to give you an idea of course content. To keep our courses relevant and up-to-date, modules are subject to change – please see the webpage for the latest information.

Compulsory:

- Introduction to Materials Engineering for Welding Engineering,
- Welding Processes and Equipment,
- Design of Welded Structures,
- Management of Weld Quality,
- Advanced Welding Processes,
- Welding Metallurgy,
- Welding Systems and Research Methods.

Duration:

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

Start date:

Full-time: October, part-time: throughout the year.

Location:

Cranfield Campus.

Entry requirements:

A first or second class UK Honours degree in a relevant science, engineering or related discipline, or the international equivalent of these UK qualifications. Other sufficient and relevant qualifications, together with industrial experience, may be considered.

Applicants who do not fulfil the standard entry requirements can apply for the Pre-master's course, 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/welding