

A to Z of Courses

Manufacturing and Materials
reference catalogue



Aerospace Automotive Defence Energy Environment Healthcare Management Manufacturing Security

Advanced Materials

MSc/MTech/PgDip/PgCert

Entry requirements: Candidates must possess, or be expected to achieve, a 1st or 2nd class UK Honours degree or equivalent in a relevant science, engineering or related discipline. Other relevant qualifications, together with significant experience, may be considered. The Pre-Master's Course in Engineering is available for students whose prior qualifications do not reach the standard entry requirements for a Masters programme. Successful completion results in registration for this Cranfield MSc.

Duration: 1 year full-time, 2-5 years part-time.

Start date: Full-time: October. Part-time: throughout the year.

Number of places: 20

Funding: School scholarships available - up to £9k plus UK fees

Other funding opportunities exist, such as industrial sponsorship. For the majority of part-time students sponsorship is organised by their employers. Please note that a formal offer of a place on this course must have been received before consideration can be given for funding. For information on funding opportunities please see our website.

ATAS Certificate: Students requiring a Tier 4 General Student visa to study in the UK may need to apply for an ATAS certificate to study this course.

Application process: Application form. UK students are normally expected to attend an interview and financial support is best discussed at that time. Overseas and EU students may be interviewed by telephone.

Teaching Location: Cranfield campus, School of Applied Sciences.

Contact details: School of Applied Sciences Enquiries
T: +44 (0)1234 754086
E: appliedsciences@cranfield.ac.uk

Course description

Industry needs materials experts. Developments in the design of aircraft, cars, electronic equipment and domestic appliances depend critically upon the availability of novel materials. Of equal importance is an understanding of both advanced processing techniques and the latest computer-based design procedures, essential for product commercialisation from the concept phase. Technological, economic and environmental pressures will ensure that the demand for materials experts will increase in the future.

This course provides a fundamental understanding of materials' properties and their processing. It also aims to develop personal skills in problem solving, research methods, teamwork and management techniques. Students benefit from the use of a wide range of facilities, including exceptional materials preparation and characterisation equipment, 100 m² of clean rooms, extensive coatings facilities, composite, impact and motorsport laboratories.

The course comprises eight one-week assessed modules, a group project and an individual project. For the individual project, students can specialise in a number of areas, including advanced materials, aerospace materials, automotive materials, composites, materials processing, materials characterisation and analysis, materials recycling and sustainability, motorsport, nanotechnology and nanoscale engineering, polymer engineering, and surface science and engineering.

Students undertaking the Postgraduate Diploma (PgDip) complete the eight taught modules and group project. Postgraduate Certificate (PgCert) students complete six modules, which must include Materials Selection, Properties and Processing of Metals, and Engineering Polymers and Polymers for Composites.

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.

Individual project

Students select the individual project in consultation with the Course Director. The individual project provides students with the opportunity to demonstrate their ability to carry out independent research, think and work in an original way, contribute to knowledge, and overcome genuine problems.

Accreditation

This course is accredited by the Institute of Materials, Minerals and Mining (IOM³) on behalf of the UK Engineering Council as meeting the academic requirements for Chartered Engineer status (CEng MIMMM).

Modules

The modules include lectures and tutorials and are assessed through written examinations and assignments. Covering both the technical aspects and training in technology management and transferable skills, they provide the tools required for the group and individual projects.

- An Introduction to Materials Engineering
- Machining, Moulding and Metrology
- Failure of Materials and Structures
- General Management
- Finite Element Analysis and Materials Modelling
- Materials Selection
- Surface Science and Engineering
- Composites Manufacturing for High Performance Products

Further information

Suitable for science and engineering graduates with an interest in the development or exploitation of materials. The part-time option allows practitioners to enhance their professional development within their current employment.

Takes you on to a wide range of careers involving materials, with responsibilities in research, development, design, engineering, consultancy and management in industries including aerospace, automotive, medical, sports, food and drink processing, chemical processing and power generation.

You will be taught by a wide range of enthusiastic and internationally reputed experts from the academic staff at Cranfield.

Assessment Taught modules 40%, group project 20% (dissertation for part-time students), individual project 40%.

Cost Engineering

PgCert

Entry requirements: Candidates must possess, or be expected to achieve a 1st or 2nd class UK Honours degree in a relevant discipline, or the international equivalent of these UK qualifications. Other relevant qualifications together with significant experience may be considered.

Duration: 1-3 years part-time.

Start date: Throughout the year (October preferred).

Number of places: 10.

Funding: The majority of part-time students are either sponsored by their employer or self-funded. For further details on funding opportunities please see our website.

Application process: Application form. UK students are normally expected to attend an interview. Overseas and EU students may be interviewed by telephone.

Teaching Location: Cranfield campus, School of Applied Sciences.

Contact details: School of Applied Sciences Enquiries
T: +44 (0)1234 754086
E: appliedsciences@cranfield.ac.uk

Course description

Cost engineering is a well established area of research, training and development at Cranfield University.

Cost engineers urgently need recognition to promote their profession. It is recognised that improving cost engineering capabilities within the engineering industry contributes to the development of affordable products and technologies. There is a growing demand internationally for cost engineers who can impart cost and affordability engineering knowledge to support organisational effectiveness.

Our unique Postgraduate Certificate (PgCert) in Cost Engineering, developed in collaboration with industry, will create a new generation of cost engineers.

The course content provides a sound, broadly-based education covering the fundamental principles of cost engineering, data management, product and project life cycle and business processes. It also contributes to the increased efficiency of engineers and streamlines communication with both customers and suppliers. Learning is enhanced by the sharing of best practice across different industry sectors.

Students are introduced to general management concepts and practice in the teaching modules as well as individual projects. The facilities available include a CAD work station, SAP R/3, Cost Studio®, CAM facilities, 3D printer and industry-leading process modelling and simulation software.

The course comprises four one-week assessed modules which include lectures and tutorials, and an individual project.

Individual project

The individual project is selected in association with the student's sponsoring company to deliver results that are of relevance to the company, as well as meeting the academic requirements. The career ambitions of the individual student are also considered. The project is supervised by Cranfield University academic staff.

Modules

Students complete two compulsory modules with a further two optional modules selected from one of two 'streams', allowing students to specialise in cost engineering within the manufacturing or process industry sectors.

Compulsory modules

- Cost Engineering
- Information Management

Optional modules

Manufacturing Industry Stream

- Business Process Analysis and Engineering
- Enterprise Systems
- Knowledge Systems Design
- Management of Technology and Innovation
- Operations Management
- Product Quality Control and Optimisation
- Product Life Cycle Management
- Concept Development and Prototyping
- Whole System Design

Process Industry Stream

- Business Process Analysis and Engineering
- Enterprise Systems
- Introduction to Process Systems Engineering
- Knowledge Systems Design
- Process Plant Operations
- Project and Programme Management
- Concept Development and Prototyping
- Subsea Oil and Gas Exploitation
- Whole System Design

Further information

Suitable for existing and early career engineers, buyers and people with commercial backgrounds. It is also suitable for practitioners who seek recognition of their cost engineering profession.

Takes you on to positions as professional cost engineers within a range of sectors. In addition, students have secured positions in business risk awareness and reduction.

You will be taught by experts from Cranfield and industry with substantial experience in teaching, project supervision, research and consultancy in cost and affordability engineering.

Assessment Taught modules 65%, individual project 35%.

Design and Innovation for Sustainability

MDes/PgDip/PgCert

Entry requirements: Candidates must possess, or be expected to achieve, a 1st or 2nd class UK Honours degree in a relevant discipline, or the international equivalent of these UK qualifications. Other relevant qualifications, together with significant experience, may be considered.

Duration: 1 year full-time, 2-5 years part-time.

Start date: Full-time: October. Part-time: throughout the year.

Number of places: 20.

Funding: School scholarships available - up to £9k plus UK fees

Other funding opportunities exist, such as industrial sponsorship. For the majority of part-time students sponsorship is organised by their employers. Please note that a formal offer of a place on this course must have been received before consideration can be given for funding. For information on funding opportunities and details of conditions please see our website.

Application process: Application form. UK students are normally expected to attend an interview and financial support is best discussed at that time. Overseas and EU students may be interviewed by telephone.

Teaching Location: Cranfield Campus, School of Applied Sciences.

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Course description

Growing global concerns about environmental and social issues have placed increasing importance on sustainable development worldwide. Governments and companies recognise the need to innovate to meet competitive pressures. Design and innovation provide a vital tool for organisations to improve their competitive advantage while addressing environmental performance.

This course takes a design-led approach to product and service innovation. Graduates are able to apply design thinking across the business disciplines of design, management, engineering and science to meet the environmental, social and economic needs of consumers while improving organisational sustainability.

Students work within the Centre for Competitive Creative Design (C4D), voted one of the world's top 30 design schools by Business Week (Sept 2009). The Centre is a partnership between Cranfield University and the University of Arts London (UAL). It aims to inspire organisations to apply creative design capability and enhance competitiveness.

The MDes comprises eight one-week assessed modules, a group project which includes individual concept development through collaboration, and an individual project. Students undertaking the Postgraduate Diploma (PgDip) complete the eight modules and the group project. Postgraduate Certificate (PgCert) students complete six modules.

Group project

The group project provides students with the opportunity to undertake a consultancy-type project, addressing a real-life design for sustainability problem, while working under academic supervision. Success is dependent on the integration of various activities and working within agreed objectives, deadlines and budgets. It develops and refines students' organisational, management and team-working skills. For part-time students a dissertation usually replaces the group project.

Individual project

The individual project provides students with the opportunity to demonstrate their ability to carry out independent research, think and work in an original way, contribute to knowledge, and overcome genuine problems in design and innovation for sustainability. Many of the projects are supported by external organisations.

Modules

The modules include lectures and tutorials, and are assessed through assignments.

- Principles of Sustainability
- Design Thinking
- Design Driven Innovation Processes
- Brand Management and Communication
- Creative Enterprise and Entrepreneurship
- Influencing Sustainable Behaviours
- Whole System Design
- Technology, Environment and Society

Further information

Suitable for graduates from a wide range of disciplines. A design or engineering background is not essential; the important considerations are an interest in sustainable development and a desire to be at the forefront of sustainable design-led innovation.

Takes you on to a range of positions where knowledge and experience of design, innovation, sustainability and management are essential attributes in engaging organisations with global sustainability issues and agendas. Graduates will be well equipped to lead multidisciplinary operations through the application of a design-led approach to sustainable business strategy.

You will be taught by a wide range of subject specialists at Cranfield, and practitioners from industry, who draw on their research expertise and industrial experience to provide a stimulating learning experience.

Assessment Taught modules 40%, group project 20% (dissertation for part-time students), individual project 40%.

Design, Strategy and Leadership

MDes/PgDip/PgCert

Entry requirements: Candidates must possess, or be expected to achieve, a 1st or 2nd class UK honours degree in a relevant business, engineering or design-based discipline, or the international equivalent of these UK qualifications. Other relevant qualifications together with industrial experience may be considered.

Duration: 1 year full-time, 2-5 years part-time.

Start date: Full-time: October. Part-time: throughout the year.

Funding: Funding opportunities exist, such as School bursaries and industrial sponsorship. For the majority of part-time students, sponsorship is organised by their employers. Please note that a formal offer of a place on this course must have been received before consideration can be given for funding. For information on funding opportunities please visit: www.cranfield.ac.uk/sas/funding

Application process: Application form. UK students are normally expected to attend an interview and financial support is best discussed at that time. Overseas and EU students may be interviewed by telephone.

Teaching Location: Cranfield campus, School of Applied Sciences.

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Course description

The successful use of strategic and tactical design within industry and private sector organisations is able to impact on business performance, build market share, generate and sustain growth, improve productivity and increase competitiveness (Design Council, 2011). The Cox Review Report (2005) stresses the importance of the creative sector in the national competitiveness of the UK. It highlights the notion that future growth can only be achieved through a long-term commitment to promoting and harnessing the wealth creating potential of creativity and innovation.

Offered by Cranfield's Centre for Competitive Creative Design (C4D), the MDes in Design, Strategy and Leadership exploits existing expertise within Cranfield's School of Applied Sciences and School of Management. This executive Master's course reflects the need for qualified professionals with a range of skills in both the creative and strategic domains, who can combine the disciplines of creative innovation strategy and design leadership in order to deliver growth and increased competitiveness.

The course integrates world-class design-driven innovation and strategic management teaching and research activities through a unique teaching approach. The MDes course comprises eight assessed modules, in which students engage in creative leadership, strategic design management, financial and business planning, design thinking and innovation strategy. Modules are delivered in facilities in London, supported by seminars, workshops and lectures in creative and design agencies, providing a closer link to professional practice. Residential elements will be delivered at Cranfield. Students also undertake a group project, in which students apply their skills to real business challenges, and an individual thesis project.

Postgraduate Diploma (PgDip) students complete eight modules and the group project. Postgraduate Certificate (PgCert) students complete six modules.

Group project

The group project involves students working in teams to fulfil demanding objectives within a tight timescale, applying state-of-the-art technologies and approaches to addressing major challenges in design strategy, and delivering results to a high professional standard. A dissertation may also replace the group project for part-time students.

Individual thesis project

The individual thesis project offers students the opportunity to develop their research capability, depth of understanding and ability to provide world-class solutions to real problems in design strategy and leadership.

Modules

- Induction
- Personal Leadership and Development
- Design Thinking
- Design Driven Innovation Processes
- Brand Management and Communication
- Creative Enterprise and Entrepreneurship
- Customer Lifestyle Engineering
- Whole System Design
- Strategic Management and Leadership

Further information

Suitable for mid-career professionals in the creative industries sector looking to improve their skills in the strategic, tactical and implementation aspects of the management of creativity and innovation in business.

Takes you on to essential leadership roles in the creative industries, public and private sectors, embedding creative and innovation techniques into all areas to fill the provision gap between creativity and commerce.

You will be taught by industry-active experts from Cranfield's Centre for Competitive Creative Design (C4D) and School of Management, with an established track record in design and innovation, supported by guest speakers from industry.

Assessment Taught modules 40%, group projects 20%, individual project 40%.

Engineering and Management of Manufacturing Systems

MSc/PgDip/PgCert

Entry requirements: Candidates must possess, or be expected to achieve, a 1st or 2nd class UK Honours degree or equivalent in a relevant discipline. Other relevant qualifications, together with significant experience, may be considered.

Duration: 1 year full-time, 2-5 years part-time.

Start date: Full-time: October. Part-time: throughout the year.

Number of places: 20.

Funding: Funding opportunities exist, such as industrial sponsorship. For the majority of part-time students sponsorship is organised by their employers. Please note that a formal offer of a place on this course must have been received before consideration can be given for funding. For information on funding opportunities and details of conditions please see our website.

Application process: Application form. UK students are normally expected to attend an interview and financial support is best discussed at that time. Overseas and EU students may be interviewed by telephone.

Teaching Location: Cranfield campus, School of Applied Sciences.

Contact details: School of Applied Sciences Enquiries
T: +44 (0)1234 754086
E: appliedsciences@cranfield.ac.uk

Course description

This course is continually developed to meet the requirements of the manufacturing sector. Current trends are in the development of lean and agile manufacturing systems and their supply chains, the design of web-based manufacturing information systems and the development of consulting skills.

Students gain a thorough understanding of the processes, skills and behaviours needed to create and manage competitive manufacturing operations. It concentrates on industrially relevant projects, team working and transferable skills.

The MSc course is accredited by the Institution of Engineering and Technology (IET), the Institution of Mechanical Engineers (IMechE), and the Royal Aeronautical Society (RAeS) for meeting the further learning requirements for Chartered Engineer registration.

Students benefit from dedicated state-of-the-art facilities, including cutting-edge manufacturing laboratories, specialist software for discrete event simulation, statistical analysis, systems analysis and preparation of multimedia task support systems.

Students undertake a carefully integrated and structured series of eight one-week assessed modules, a group project and an individual project.

Group project

The major learning experience for full-time students is the group project. This involves students working in teams to fulfil demanding objectives within a tight timescale, applying state-of-the-art technologies and approaches and delivering results to a high professional standard. Projects are industrially orientated and have the support of external organisations. Experience gained is highly valued by both students and prospective employers. For part-time students a dissertation usually replaces the group project.

Individual project

Either industrially or academically driven, students select the individual project in consultation with the Course Director. It provides students with the opportunity to demonstrate their ability to carry out independent research, think and work in an original way, contribute to knowledge, and overcome genuine manufacturing problems. Many of the projects are supported by external organisations.

Modules

The modules cover the technical aspects and training in technology management as well as transferable skills. Modules include lectures and tutorials, and are assessed through written examinations and assignments.

- Enterprise Systems
- General Management
- Manufacturing Strategy
- Manufacturing Systems Engineering
- Management of Technology and Innovation
- Operations Analysis
- Operations Management
- Supply Chain Management

Further information

Suitable for graduates keen to develop skills and knowledge in the design and operation of modern manufacturing systems and supply chains. The part-time option enables practitioners to extend their professional development within their current employment.

Takes you on to a wide range of manufacturing and associated roles such as management, operations, logistics, IT and consultancy within organisations throughout the world. Many graduates find employment with one of their project sponsors.

You will be taught by experts from Cranfield and industry, with substantial experience in teaching, project supervision, research and consultancy. The academics have published in leading journals and books and work closely with world-class manufacturers.

Assessment Taught modules 40%, group project 20% (dissertation for part-time students), individual project 40%.

Global Product Development and Management

MSc/PgDip/PgCert

Entry requirements: Candidates must possess, or be expected to achieve, a 1st or 2nd class UK Honours degree or equivalent in a relevant discipline. Other relevant qualifications, together with significant experience, may be considered.

Duration: 1 year full-time, 2-5 years part-time.

Start date: Full-time: October. Part-time: throughout the year.

Number of places: 20.

Funding: Funding opportunities exist, such as industrial sponsorship. For the majority of part-time students sponsorship is organised by their employers. Please note that a formal offer of a place on this course must have been received before consideration can be given for funding. For information on funding opportunities please see our website.

Application process: Application form. UK students are normally expected to attend an interview and financial support is best discussed at that time. Overseas and EU students may be interviewed by telephone.

Teaching Location: Cranfield campus, School of Applied Sciences.

Contact details: School of Applied Sciences Enquiries
T: +44 (0)1234 754086
E: appliedsciences@cranfield.ac.uk

Course description

The world is becoming increasingly connected, raising many challenges in terms of organisational management, product development and cross-border collaboration. Global product development is a new way of thinking that aims to utilise and manage the power of the global market to design and manufacture intelligent, sustainable and internationally competitive products.

This prestigious course develops highly employable leaders able to respond to the challenges and demands of modern globalised markets. Students are introduced to cutting-edge technologies for worldwide product development and management, including concept creation and creativity for practical product engineering.

The course has been developed in conjunction with Fectura, a leader in senior executive search and selection, which ensures it is aligned to industry needs and is well positioned to enable successful graduates to gain high profile careers.

Students benefit from use of state-of-the-art software and technical equipment such as a rapid prototyping machine, and access to a real-world global production environment through supporting industrial partners. Students are able to apply their skills in a hands-on mini project that culminates in the physical generation of a real industrial product.

The course comprises a carefully integrated and structured series of eight one-week assessed modules, a group project and an individual project.

Group project

The major learning experience for full-time students is the group project. This involves students working in teams to fulfil demanding objectives within a tight timescale, applying state-of-the-art technologies and approaches and delivering results to a high professional standard. Projects are industrially orientated and have the support of external organisations. Experience gained is highly valued by both students and prospective employers. For part-time students a dissertation usually replaces the group project.

Individual project

Either industrially or academically driven, students select the individual project in consultation with the Course Director. It provides students with the opportunity to demonstrate their ability to carry out independent research, think and work in an original way, contribute to knowledge and overcome genuine manufacturing problems. Many of the projects are supported by external organisations.

Modules

Core modules

- Enterprise Systems
- Concept Development and Prototyping
- General Management
- Product Development
- Product Lifecycle Management
- Supply Chain Management

Elective modules (choose two)

- Decision Engineering
- Design-driven Innovation
- Manufacturing Strategy
- Use of Novel Materials and Manufacturing Technologies

Further information

Suitable for mid-career professionals and ambitious international students wishing to boost their career prospects in the global market.

Takes you on to a range of international leadership positions in globalised organisations. Graduates will be equipped to manage integrated international projects and teams to successfully address the challenges of global product development and management.

You will be taught by experts from Cranfield University supported by international lecturers from leading universities such as Stanford (US), KAIST (Korea), TU Berlin (Germany), NUS (Singapore), with a strong background in distributed product development.

Assessment Taught modules 40%, group project 20% (dissertation for part-time students), individual project 40%.

Innovation and Creativity in Industry Master of Design

MDes/MTech/PgDip/PgCert

Entry requirements: Candidates must possess, or be expected to achieve, a 1st or 2nd class UK Honours degree in a relevant discipline, or the international equivalent of these UK qualifications. Other relevant qualifications, together with significant experience, may be considered.

Duration: 1 year full-time, 2-5 years part-time.

Start date: Full-time: October. Part-time: throughout the year.

Number of places: 20.

Funding: School scholarships available - up to £9k plus UK fees

Other funding opportunities exist, such as industrial sponsorship. For the majority of part-time students sponsorship is organised by their employers. Please note that a formal offer of a place on this course must have been received before consideration can be given for funding. For information on funding opportunities and details of conditions, please see our website.

Application process: Application form. UK students are normally expected to attend an interview and financial support is best discussed at that time. Overseas and EU students may be interviewed by telephone.

Teaching Location: Cranfield campus, School of Applied Sciences.

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Course description

In today's highly competitive world, business success depends increasingly on the ability to innovate. Business leaders need to recognise the importance of design thinking in shaping business strategy. Forward thinking professionals with the ability to integrate creativity and design thinking in the business functions of engineering, management, communication and commerce, will be sought after by employers across multiple sectors.

This innovative course develops modern business leaders able to exploit creativity and design thinking at a strategic level to achieve organisational competitiveness.

Cranfield has been named one of the world's top design schools by BusinessWeek for its Master of Design (MDes) in Innovation and Creativity in Industry. Students work within the Centre for Competitive Creative Design (C4D), a collaboration with the University of the Arts London (UAL), ensuring students benefit from the expertise of two organisations recognised as leaders in their fields.

The course comprises eight one-week assessed modules (seven compulsory and one elective), a group design project, which includes individual concept development through collaboration, and an individual design project resulting in a public exhibition.

Students undertaking the Postgraduate Diploma (PgDip) complete the eight modules and the group project. Postgraduate Certificate (PgCert) students complete six modules.

Group project

The group project provides students with the opportunity to take responsibility for a consultancy-type project, while working under academic supervision. Success is dependent on the integration of various activities and working within agreed objectives, deadlines and budgets. It addresses a real-life challenge in creative design practice and develops and refines students' organisational, management and teamwork skills. For part-time students a dissertation usually replaces the group project.

Individual design project

The individual project provides students with the opportunity to demonstrate their ability to carry out independent research, think and work in an original way, contribute to knowledge, and overcome genuine problems in creative design. Many of the projects are supported by external organisations.

Modules

The modules include lectures and tutorials, and are assessed through assignments. These provide the tools required for the group and individual projects.

- Technology and Prototyping
- Design Thinking
- Design Driven Innovation Processes
- Brand Management and Communication
- Creative Enterprise and Entrepreneurship
- Consumer Trends and Behaviours
- Whole System Design
- Smart Materials and Processes

Further information

Suitable for graduates of science, engineering, business, technology or related disciplines keen to pursue careers as engineering or management professionals with creative design capability. The part-time option allows practitioners from the engineering or science-based industries to enhance their knowledge of how creative practices can improve product and service development within their current employment.

Takes you on to positions within a range of sectors. Roles are varied, ranging from managers of people to design managers, creative engineers or consultants. Graduates of this course will possess a combination of science-based skills with creative insight which is increasingly desirable for employers looking to enhance productivity performance in an increasingly competitive marketplace.

You will be taught by a wide range of subject specialists from Cranfield and from outside the University, who draw on their research expertise and industrial experience to provide relevant and stimulating teaching.

Assessment Taught modules 40%, group project 20% (dissertation for part-time students), individual project 40%.

Integrated Vehicle Health Management

MSc/PgDip/PgCert

Entry requirements: Candidates must possess, or be expected to achieve, a 1st or 2nd class UK Honours degree in a relevant engineering, computing, or science-based discipline, or the international equivalent of these UK qualifications. A minimum of five years' post-qualification work experience in a relevant role is required. Candidates with other relevant qualifications together with industrial experience may be considered. Where applicable, students must also achieve a minimum of IELTS score of 6.5.

Duration: 2-5 years part-time.

Start date: April.

Number of places: 20.

Funding: For the majority of part-time students sponsorship is organised by their employers. School scholarships are available for employees of small business and self-funding students. Conditions apply. Please note that a formal offer of a place on this course must have been received before consideration can be given for funding. For information on funding opportunities please see our website.

Application process: Application form. UK students are normally expected to attend an interview and financial support is best discussed at that time. Overseas and EU students may be interviewed by telephone.

Teaching Location: Cranfield campus, School of Applied Sciences.

Contact details: School of Applied Sciences Enquiries
T: +44 (0)1234 754086
E: appliedsciences@cranfield.ac.uk

Course description

Integrated Vehicle Health Management (IVHM) is a multi-sector discipline applied to a wide range of vehicles that can transform system data into information to support operational decisions on vehicle condition, leading to improved availability and minimised maintenance.

This unique course was developed through the Cranfield Integrated Vehicle Health Management Centre, launched in 2008 in partnership with major industry organisations (Boeing, BAE Systems, Rolls-Royce, Meggitt, Thales, MOD, Alstom Transport) and EEDA, to enable the incorporation of IVHM technology into UK and global businesses. The technology enables businesses to realise significant benefits in business productivity, environmental impact, and vehicle performance.

Drawing on leading research being conducted in the IVHM Centre, the course is designed to deliver a holistic approach to IVHM. Students learn to identify business opportunities where IVHM can make a real difference. They are trained through the concepts and practice of the end-to-end process from sensing data from assets, communicating the data for analysis, and formulating operational decisions from the resulting database.

Students undertaking the Postgraduate Diploma (PgDip) complete the eight modules and the group project. Postgraduate Certificate (PgCert), students complete six modules.

Modules

Compulsory modules

- IVHM Business Context
- Diagnostics and Prognostics
- Instrumentation and Signal Processing
- System Engineering and Integration
- IVHM Architecture and Design
- IVHM Data Management

Elective modules (select two)

- Management of Technology and Innovation
- Product Lifecycle Management
- Concept Development and Prototyping
- Product Engineering and Costing
- Supply Chain Management
- Air Transport Engineering (Maintenance Operations)

Further information

Suitable for managers and engineers wishing to work nationally or internationally with companies that use or provide Integrated Vehicle Health Management (IVHM) solutions in the aerospace, automotive, rail, ship and other sectors. The course is also suitable for those wishing to work in the public/government sector on policy and strategy in economic and industry competitiveness and development.

Takes you on to a role in the rapidly developing field of IVHM in industries as varied as water treatment and Formula 1, leading the effective and competitive deployment of IVHM solutions and organisation.

You will be taught by experts from across Cranfield University who are currently undertaking leading research projects in the area of IVHM for international organisations.

Assessment Taught modules 40%, group project or dissertation 20%, individual project 40%.

Knowledge Management for Innovation

MSc/MTech/PgDip/PgCert

Entry requirements: Candidates must possess, or be expected to achieve, a 1st or 2nd class UK Honours degree in a relevant discipline, or the international equivalent of these UK qualifications. Other relevant qualifications, together with significant experience, may be considered.

Duration: 1 year full-time, 2-5 years part-time.

Start date: Full-time: October. Part-time: throughout the year.

Number of places: 20.

Funding: Funding opportunities exist, such as industrial sponsorship. For the majority of part-time students sponsorship is organised by their employers. Please note that a formal offer of a place on this course must have been received before consideration can be given for funding. For information on funding opportunities please see our website.

Application process: Application form. UK students are normally expected to attend an interview and financial support is best discussed at that time. Overseas and EU students may be interviewed by telephone.

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Course description

In an increasingly competitive environment, where new business practices and products are regularly introduced, organisations have to be innovative to survive. Such innovation is dependent upon companies developing effective knowledge management internally as well as through external interaction.

This course aims to create the next generation of technical and business leaders who can drive strategic innovation and collaboration by effective management of organisational knowledge within their specialised domains.

The course develops leadership skills, teamworking skills, creativity and knowledge, enabling individuals to implement management practice to aid the development of business.

It prepares students for a career in engineering extended enterprise by combining rigorous academic activity and practical work with the use of industry software and real-life experience through industry sponsored project work.

Students benefit from access to SAP R/3, a CAD workstation, state-of-the-art software, engineering server facilities and CAM facilities.

The MSc course comprises eight assessed modules, a group project and an individual project.

Group project

This project, usually undertaken within a company, provides students with the opportunity to take responsibility for a consultancy-type project, while working under academic supervision. Success is dependent on the integration of various activities, working within agreed objectives, deadlines and budgets. For part-time students a dissertation usually replaces the group project.

Individual project

Students select the individual project in consultation with the Course Director. The individual project provides students with the opportunity to demonstrate their ability to carry out independent research, think and work in an original way, contribute to knowledge, and overcome genuine problems. The projects are sponsored by external organisations.

Modules

The modules include lectures and tutorials and are assessed either by written examination or assignment. Guest lecturers from industry are invited to provide real-life case studies for the taught modules.

- Knowledge Acquisition and Creation
- Enterprise Systems
- Information Management
- Strategic Knowledge Management
- General Management
- Knowledge System Design
- Design Driven Innovation
- Enterprise Modelling

Further information

Suitable for science, engineering, IT and business graduates who want to develop their creativity, knowledge, leadership and team working skills to enable them to implement knowledge management practice to drive business innovation and collaboration.

Takes you on to positions of influence in most aspects of business, manufacturing, banking, consultancy, healthcare and government, as one of the new generation of knowledge practitioners.

You will be taught by experts from Cranfield University and the business community with substantial experience in teaching, project supervision and consultancy.

Assessment Taught modules 40%, group project 20% (dissertation for part-time students), individual project 40%.

Management and Information Systems

MSc/PgDip/PgCert

Entry requirements: Candidates must possess, or be expected to achieve, a 1st or 2nd class UK Honours degree or equivalent in a relevant discipline. Other relevant qualifications, together with significant experience, may be considered.

Duration: 1 year full-time, 2-5 years part-time.

Start date: Full-time: October. Part-time: throughout the year.

Number of places: 10-20.

Funding: Funding opportunities exist, such as industrial sponsorship. For the majority of part-time students sponsorship is organised by their employers. Please note that a formal offer of a place on this course must have been received before consideration can be given for funding. For information on funding opportunities and details of conditions please see our website.

Application process: Application form. UK students are normally expected to attend an interview and financial support is best discussed at that time. Overseas and EU students may be interviewed by telephone.

Teaching Location: Cranfield campus, School of Applied Sciences.

Contact details: School of Applied Sciences Enquiries
T: +44 (0)1234 754086
E: appliedsciences@cranfield.ac.uk

Course description

This multidisciplinary and practical course prepares students for careers where the timely provision and management of information is essential to business success. It provides knowledge of both management and information systems, and closes the gap that exists in industrial, commercial and governmental organisations between managers who understand the business but are 'frightened' of the technology, and the 'techies' who are good at their jobs but have little knowledge of how to run a business.

The MSc course is accredited by the Institution of Engineering and Technology (IET), the Institution of Mechanical Engineers (IMechE), and the Royal Aeronautical Society (RAeS) for meeting the further learning requirements for Chartered Engineer registration.

The course objectives are achieved through a carefully integrated and structured series of eight one-week assessed modules, a group project and an individual project. 60% of the course involves industrial project work within UK organisations. In many cases this has led directly to employment opportunities with the companies concerned.

Group project

The group project provides students with the opportunity to take responsibility for a consultancy-type project, while working under academic supervision. Success is dependent on the integration of various activities and working within agreed objectives, deadlines and budgets. Experience gained is highly valued by both students and prospective employers. For part-time students a dissertation usually replaces the group project.

Individual project

Students select the individual project in consultation with the Course Director. The individual project provides students with the opportunity to demonstrate their ability to carry out independent research, think and work in an original way, contribute to knowledge, and overcome genuine problems in management and IT systems. Many of the projects are supported by external organisations.

Modules

The modules include lectures and tutorials and are assessed through written examinations and assignments. These modules provide the tools required for the group and individual projects.

- Operations Management
- Enterprise Systems
- Enterprise Modelling
- Business Management
- General Management
- Business Process Analysis and Engineering
- Business Change Management
- Project and Programme Management

Further information

Suitable for graduates keen to develop their careers in the application of information-based technologies to manufacturing and other industries. The part-time option allows practitioners to extend their professional development within their current employment.

Takes you on to positions such as business systems analysts, management consultants, information systems managers, IT consultants, IS and e-commerce developers, knowledge managers, lecturers and researchers. Past students have progressed to positions of IT Director, Chief Information Officer and Managing Director.

You will be taught by experts from Cranfield and industry with substantial experience in teaching, project supervision, research and consultancy. The academics have published in leading journals and books and worked closely with world-class manufacturers.

Assessment Taught modules 40%, group project 20% (dissertation for part-time students), individual project 40%.

Manufacturing Consultancy

MSc/PgDip/PgCert

Entry requirements: Candidates must possess, or be expected to achieve, a 1st or 2nd class UK Honours degree or equivalent in a relevant discipline. Other relevant qualifications, together with significant experience, may be considered.

Duration: 1 year full-time, 2-5 years part-time.

Start date: Full-time: October. Part-time: throughout the year.

Number of places: 20.

Funding: Funding opportunities exist, such as industrial sponsorship. For the majority of part-time students sponsorship is organised by their employers. Please note that a formal offer of a place on this course must have been received before consideration can be given for funding. For more information on funding opportunities and details on conditions please see our website.

Application process: Application form. UK students are normally expected to attend an interview and financial support is best discussed at that time. Overseas and EU students may be interviewed by telephone.

Teaching Location: Cranfield campus, School of Applied Sciences.

Contact details: School of Applied Sciences Enquiries
T: +44 (0)1234 754086
E: appliedsciences@cranfield.ac.uk

Course description

Change is the common theme within today's manufacturing industry. Sustainable growth depends on organisations meeting changing customer expectations and embracing new technologies and business processes.

This course has been developed in response to the growing demand for multi-skilled professionals with the knowledge of, and ability in, implementing change across an organisation, from the factory floor to management, to achieve competitive advantage.

There is a strong emphasis on applying knowledge in the industrial environment, and all teaching is in the context of industrial application. Many features of this course are shared with the Engineering and Management of Manufacturing Systems MSc, but it favours individuals who already have industrial experience as it better prepares them for a career in consultancy.

Students benefit from our wide range of state-of-the-art equipment, analysis tools and specialist software packages. The course objectives are achieved through a carefully integrated and structured series of eight one-week assessed modules, a group project and an individual project.

The MSc course is accredited by the Institution of Engineering and Technology (IET), the Institution of Mechanical Engineers (IMechE), and the Royal Aeronautical Society (RAeS) for meeting the further learning requirements for Chartered Engineer registration.

Group project

The major learning experience for full-time students is the group project. This involves working in teams to fulfil demanding objectives within agreed deadlines, applying state-of-the-art technologies and approaches, and delivering results to a high professional standard. Industrially oriented, projects have support from industry and other external organisations. For part-time students a dissertation usually replaces the group project.

Individual project

Students select the individual project in consultation with the Course Director. The individual project provides students with the opportunity to demonstrate their ability to carry out independent research, think and work in an original way, contribute to knowledge, and overcome genuine manufacturing problems. Many of the projects are supported by external organisations.

Modules

The modules include lectures, workshops, case studies, tutorials and company visits, and are assessed through written examinations and assignments. These modules provide the tools required for the group and individual projects.

- Consultancy Skills
- Enterprise Systems
- General Management
- Manufacturing Systems Engineering
- Manufacturing Strategy
- Operations Analysis
- Operations Management
- Supply Chain Management

Further information

Suitable for graduates keen to develop the manufacturing knowledge and skills necessary for a career in consultancy. The part-time option allows practitioners to extend their professional development within their current employment.

Takes you on to positions in consultancy organisations or within large manufacturing organisations that employ internal consultants as major change agents. Many graduates find employment with one of their project sponsors.

You will be taught by experts from Cranfield and industry with substantial experience in teaching, project supervision, research and consultancy. The academics have published in leading journals and books and worked closely with world-class manufacturers.

Assessment Taught modules 40%, group project 20% (dissertation for part-time students), individual project 40%.

Manufacturing Technology and Management

MSc/PgDip/PgCert

Entry requirements: Candidates must possess, or be expected to achieve, a 1st or 2nd class UK Honours degree in a relevant engineering or technology-based discipline, or the international equivalent of these UK qualifications. Other relevant qualifications together with industrial experience may be considered.

Duration: 1 year full-time, 2-5 years part-time.

Start date: Full-time: October. Part-time: throughout the year.

Funding: School scholarships available - up to £9k plus UK fees

Other funding opportunities exist, such as industrial sponsorship. For the majority of part-time students sponsorship is organised by their employers. Please note that a formal offer of a place on the course must have been received before consideration can be given for funding. For information on funding opportunities and details of conditions, please see our website.

Application process: Application form. UK students are normally expected to attend an interview and financial support is best discussed at that time. Overseas and EU students may be interviewed by telephone.

Teaching Location: Cranfield campus, School of Applied Sciences.

Contact details: School of Applied Sciences Enquiries
T: +44 (0)1234 754086
E: appliedsciences@cranfield.ac.uk

Course description

The Government's manufacturing strategy is focused on high value manufacturing, which is seen as critical to economic growth. Central to this are the disruptive technologies that will drive forward the dramatic changes in manufacturing over the next 15-20 years.

A significant number of highly trained manufacturing engineers will be essential to provide the leadership skills necessary to drive UK manufacturing forward and provide the vision for future prosperity. The Sector Skills Council for Science, Engineering and Technologies estimates that over 30,000 engineers will be required to meet demand in the next three years alone. The rapid growth in technology also presents an opportunity for re-skilling for professionals already in industry.

The MSc in Manufacturing Technology and Management develops professionals with the ability to transform knowledge into action, providing students with the breadth of both technical and business skills to make a real impact in their chosen career.

The MSc course comprises eight assessed modules (four core and four elective), in which students gain an understanding of world-class manufacturing technology and management practice, a group project and an individual project.

Postgraduate Diploma (PgDip) students complete the eight modules and the group project. Postgraduate Certificate (PgCert) students complete six modules.

Group project

The group project involves students working in teams to fulfil demanding objectives within a tight timescale, applying state-of-the-art technologies and approaches to addressing major challenges in manufacturing technology and management, and delivering results to a high professional standard. A dissertation may also replace the group project for part-time students.

Individual thesis project

The individual thesis project offers students the opportunity to develop their research capability, depth of understanding and ability to provide world-class technical and business engineering service solutions to real problems in manufacturing.

Modules

Core modules

- Introduction to Manufacturing, Materials and Research Techniques
- Introduction to Materials Engineering
- Managing Innovation and New Product Development
- General Management

Elective modules (choose four)

- Composites Manufacturing for High Performance
- Advanced Process Monitoring and Control in Composite Manufacture
- Nano and Micro Scale Rapid Prototyping Manufacture
- Nano and Microtechnologies for Energy
- Applied Nanotechnology
- Advanced Welding Processes
- Microsystems Manufacturing Processes
- Machining, Moulding and Metrology
- Surface Science and Engineering
- Finite Element Analysis and Materials Modeling
- Precision Engineering
- Computer-aided Engineering for Ultra Precision

Further information

Suitable for manufacturing engineers keen to develop the skills and knowledge in the development and application of disruptive technologies needed to address the Government's high value manufacturing agenda.

Takes you on to essential leadership roles in a range of sectors, required to drive UK high value manufacturing forward and provide the vision for future prosperity.

You will be taught by industry-active research academics from Cranfield with an established track record in manufacturing technology and materials engineering. Cranfield plays a key role in ensuring the UK stays at the cutting edge of manufacturing research, with the lead role in three (with involvement in a further two), of the nine new EPSRC Centres for Innovative Manufacturing across the UK.

Assessment Taught modules 40%, group projects 20%, individual project 40%.

Microsystems and Nanotechnology

MSc/MTech/PgDip

Entry requirements: Candidates must possess, or be expected to achieve, a 1st or 2nd class UK Honours degree in a relevant discipline, or the international equivalent of these UK qualifications. Other relevant qualifications, together with significant experience, may be considered.

Duration: 1 year full-time, 2-5 years part-time.

Start date: Full-time: October. Part-time: throughout the year.

Number of places: 15.

Funding: School scholarships available - up to £9k plus UK fees

Other funding opportunities exist, such as industrial sponsorship. For the majority of part-time students sponsorship is organised by their employers. Please note that a formal offer of a place on this course must have been received before consideration can be given for funding. For information on funding opportunities please see our website.

ATAS Certificate: Students requiring a Tier 4 General Student visa to study in the UK may need to apply for an ATAS certificate to study this course.

Application process: Application form. UK students are normally expected to attend an interview and financial support is best discussed at that time. Overseas and EU students may be interviewed by telephone.

Teaching Location: Cranfield campus, School of Applied Sciences.

Contact details: School of Applied Sciences Enquiries
T: +44 (0)1234 754086
E: appliedsciences@cranfield.ac.uk

Course description

Nanotechnology is moving from the realm of science fiction into manufacturing reality. Many large organisations such as Unilever and QinetiQ see the value of integrating miniature and nanosystems.

This course provides students with a thorough grounding in the skills necessary for a technical-based career in new high-tech industries coupled with skills in general and technology management. It covers technologies used to design, realise and analyse micro and nano-scale devices, materials and systems. Examples include 3D micromanufacture, sensors and actuators and microelectronic mechanical systems (MEMS). This, supported by project work, ensures graduates emerge trained in a wide range of technical and management skills, and have a critical appreciation of the relevance of the subject to industrial needs.

Students benefit from extensive state-of-the-art analytical facilities, and 100 m² of clean-room space dedicated to the fabrication of microsystems devices which are equipped with a wide range of thin film deposition, photolithographic and test facilities.

This course is accredited by the Institute of Materials, Minerals and Mining (IOM³) on behalf of the UK Engineering Council as meeting the academic requirements for Chartered Engineer status. Students also benefit from automatic entry as Student Members of the Institute of Nanotechnology (IoN).

The course comprises eight assessed modules, a group project, and an individual project. Students undertaking the Postgraduate Diploma (PgDip) complete the eight modules and the group project.

Group project

The group project experience is highly valued by both students and prospective employers. They provide students with the opportunity to solve an industrial problem while working under academic supervision. Success is dependent on the integration of various activities and working within agreed objectives, deadlines and budgets. Part-time students can prepare a dissertation on an agreed topic in place of the group project.

Individual project

The individual project is either based within a company or a relevant research area within Cranfield University. It provides students with the opportunity to demonstrate their ability to carry out independent research, think and work in an original way, contribute to knowledge, and overcome genuine problems.

Modules

The modules include lectures and tutorials and are assessed through written examinations and assignments. These modules provide the tools required for the group and individual projects:

- Foundation in Materials for Microsystems and Nanotechnology
- Applied Nanotechnology
- General Management
- Microsystems Design
- Microsystems Manufacturing Processes
- Nano and Microtechnologies for Energy
- Nano and Micro Scale Rapid Prototyping Manufacture
- Surface Engineering and Coatings

Further information

Suitable for graduates from science, engineering and related disciplines who are keen to develop skills and knowledge at the cutting edge of micro engineering. The part-time option allows practitioners to extend their professional development within their current employment.

Takes you on to careers in the developing microsystems and nanotechnology-based industries as well as more traditional industries requiring skills related to those taught, such as aerospace, automotive, medical, healthcare and precision engineering.

You will be taught by a wide range of experts at Cranfield and from outside the University, including experienced practitioners from industry. Most of the academics have established international reputations for their work on industrially relevant R&D programmes, which is regularly published at major conferences and in leading journals.

Assessment Taught modules MSc 40%, PgDip 66.6%. Group project (dissertation for part-time students) MSc 20%, PgDip 33.3%. Individual project MSc 40%.

Operations Excellence

MSc

Entry requirements: Candidates must possess, or be expected to achieve, a 1st or 2nd class UK Honours degree in a relevant discipline, or the international equivalent of these UK qualifications. Other relevant qualifications, together with significant experience, may be considered.

Duration: 2 years part-time.

Start date: October.

Number of places: 20.

Funding: Students must be company sponsored.

Application process: Application form. UK students are normally expected to attend an interview and financial support is best discussed at that time. Overseas and EU students may be interviewed by telephone.

Teaching Location: Cranfield campus, School of Applied Sciences and University of Cambridge, Institute for Manufacturing.

Contact details: School of Applied Sciences Enquiries
T: +44 (0)1234 754086
E: appliedsciences@cranfield.ac.uk

Course description

The Operations Excellence MSc has been developed in conjunction with Rolls-Royce plc and is accredited by the Institution of Engineering and Technology (IET), the Institution of Mechanical Engineers (IMechE), and the Royal Aeronautical Society (RAeS) for meeting the further learning requirements for Chartered Engineer registration.

The course is delivered at both Cranfield and the University of Cambridge.

The course is not intended to be a knowledge transfer exercise, but an educational experience that will help develop students to lead the implementation of change in business. Rather than just being presented with accepted classic business theory, students are exposed to the latest research and thinking, challenging them to debate and test what they have learned.

Students study all aspects of the supply chain, from introducing new products, operating effective factories, through to managing new technology and working with suppliers.

The course comprises eight one-week taught modules, in which students gain an understanding of world-class business practice and work on a group project as well as an individual thesis project.

In the group project, students apply their learning in delivering major change to the business. For the thesis, they research, develop and apply frameworks in their chosen area, developing a breadth of understanding in delivering a world-class business. There is also a non-assessed one-week study tour.

Modules

- Business and Manufacturing Strategy (Cambridge)
- Effective Factories (Cranfield)
- Management Accounting and HRM (Cranfield)
- Manufacturing Assessment and Improvement (Cranfield)
- Innovation Management (Cranfield)
- Production Planning and Control (Cranfield)
- Realising Competitive Manufacture (Cranfield)
- Technology Management (Cambridge)

Further information

Suitable for professionals who have the potential for senior management roles in the development of the operations supply chain, both domestic and procured. This includes manufacturing engineers, capacity owners, plant leaders and logistics professionals, as well as members of the procurement community.

Takes you on to positions that enable you to deliver significant business benefits within your current role. In addition the greater depth and breadth of skills will better equip you for more challenging future roles.

You will be taught by academic specialists from Cranfield University and the Institute for Manufacturing at the University of Cambridge, with support from industry practitioners who are experts in their field.

Assessment Taught modules 40%, group project 20%, individual project 40%.

Operations Leadership - Fellowship in Operations Leadership

PgCert

Entry requirements: Candidates must possess, or be expected to achieve a 1st or 2nd class UK Honours degree in a relevant discipline, or the international equivalent of these UK qualifications. Other relevant qualifications together with significant experience may be considered.

Duration: 9 months part-time.

Start date: July 2012.

Number of places: 20.

Funding: Fellowship students are sponsored by their employer. There is no other funding available.

Application process: Potential Fellows go through a rigorous selection process which includes an interview and monitored role-play scenarios.

Teaching Location: Taught modules at Cranfield Campus, School of Applied Sciences and Individual project within the sponsoring company.

Contact details: School of Applied Sciences Enquiries
T: +44 (0)1234 754086
E: appliedsciences@cranfield.ac.uk

Course description

This is a vocational programme developed to meet the needs of industry for high calibre managers and leaders who can drive performance improvements and manage change. It combines intensive teaching at Cranfield with company based project work.

The programme enables an employee to resolve an existing and relevant in-company business issue. At the same time they will be developing operations and service leadership skills, through access to Cranfield expertise, both during attendance at Cranfield and during individual in-company coaching sessions.

The investment in the employee attending the course delivers tangible business results that can make the investment self financing. In addition the employee develops skills that ensure their ability to improve business performance is increased.

Individual Project

An industrial project will be undertaken during the course. Each project will focus on resolving a real-life issue that is important for the sponsoring company. The delegate will use the tools, techniques and skills learnt at Cranfield during the four taught modules to resolve the operational or service issue. This issue may relate to a performance improvement, designing and implementing a change programme or resolving an operations or service problem.

Modules

Students complete four one-week modules

- Advanced Operations, Project and Cost Management
- Service Operations and Supply Chain Management
- Developing and Using Leadership Skills
- Delivering Effective Change

Further information

Suitable for employees working in a mid level operations area who want to boost their career. Operations or service professionals who are required to lead or deliver a significant change programme or operations intervention to drive Business Performance.

It is also suitable for early career professionals with BSc or equivalent level qualification wishing to build leadership and change management skills for application in an operations or service environment.

Takes you on to positions delivering change in service, operations and manufacturing environments. The close collaboration of the course with industry sponsors improves the ability to apply the learning quickly.

You will be taught by leading academics, operations and service management professionals who will give support throughout the programme and during the project phase.

The Fellowship in Operations Leadership has been developed to build on the success of the Fellowship in Manufacturing Management which over the past 30 years has become a highly respected programme in the UK manufacturing sector, and will develop service and operations leaders of the future.

Assessment Taught modules 67% by assignment. Industrial Project 33% by written report and a presentation.

Sustainable Manufacturing

MSc/PgDip/PgCert

Entry requirements: Candidates must possess or be expected to achieve, a 1st or 2nd class UK Honours degree or equivalent in a relevant discipline. Other relevant qualifications, together with significant experience, may be considered.

Duration: 1 year full-time, 2-5 years part-time.

Start date: Full-time: October. Part-time: throughout the year.

Number of places: 20.

Funding: Funding opportunities exist, such as industrial bursaries. For the majority of part-time students sponsorship is organised by their employers. Please note that a formal offer of a place on this course must have been received before consideration can be given for funding. For more information on funding opportunities and details of conditions please see our website.

Application process: Application form. UK students are normally expected to attend an interview and financial support is best discussed at that time. Overseas and EU students may be interviewed by telephone.

Teaching Location: Cranfield campus, School of Applied Sciences.

Contact details: School of Applied Sciences Enquiries
T: +44 (0)1234 754086
E: appliedsciences@cranfield.ac.uk

Course description

There is growing evidence that the manufacturing sector is responding to the challenge of sustainability. Companies are improving processes and technologies with an ever increasing focus on environmental and social as well as economic performance.

Developed with leading organisations, this innovative new Masters course will provide you with the ability to combine the manufacturing and sustainability knowledge required to lead projects that will promote renewable material use, lower energy use and minimise waste.

With an acknowledged skills shortage in this developing area of manufacturing, graduates from this programme will be highly sought after by industry.

The course objectives are achieved through a carefully integrated and structured series of eight one-week assessed modules, a group project and an individual project. 60% of the course involves industrial project work. The course is designed to meet the further learning requirements for Chartered Engineer registration.

The Postgraduate Diploma (PgDip) comprises eight modules and the group design project. Postgraduate Certificate (PgCert) students complete five modules and a design project.

Group design project

The major learning experience for full-time students is the industrial group project. This involves working in teams to fulfil demanding objectives within a tight time schedule, applying state-of-the-art technologies and approaches, and delivering results to a high professional standard. Industrially oriented, projects have support from industry and other external organisations.

Individual project

The individual research project is either industrially or academically driven. Individual projects provide students with the opportunity to demonstrate independent research skills working on industry sponsored projects. Part-time students usually undertake their individual project with their employer.

Modules

- Environmental Valuation
- Evaluating Sustainability
- General Management
- Manufacturing Strategy for Sustainability
- Manufacturing Systems Engineering
- Operations Analysis
- Supply Chain Management
- Sustainable Operations

Further information

Suitable for graduates with science, engineering, IT or business related degrees keen to pursue careers in manufacturing or related industries, as well as academia, with a particular emphasis on sustainability. The part-time option allows practitioners to extend their professional development within their current employment.

Takes you on to careers with a wide range of manufacturing enterprises or, increasingly, sectors from financial services through to health care. Graduates will benefit from increased opportunities for individual specialism in industry and/or consultancy and the capability to make a real contribution to the competitiveness of business organisations.

You will be taught by experts from Cranfield and industry with substantial experience in teaching, project supervision, research and consultancy. The academics have published work in leading journals and books and worked closely with world-class manufacturers.

Assessment Taught modules MSc 40%, PgDip 66.6%, PgCert 83.3%. Group project (design project for part-time students) MSc 20%, PgDip 33.3%, PgCert 16.7%. Individual project MSc 40%.

Through-life System Sustainment

MSc

Entry requirements: Candidates are expected to have at least two years relevant experience in industry together with a 1st or 2nd class UK Honours degree in a relevant engineering or technology-based discipline, or the international equivalent of these UK qualifications. Alternative qualifications together with additional industrial experience may be considered.

Duration: 2-3 years (part-time).

Start date: October.

Funding: Students must be company sponsored.

Application process: Application form. UK students are normally expected to attend an interview. Overseas and EU students may be interviewed by telephone.

Teaching Location: Cranfield campus, School of Applied Sciences and Shrivenham campus, Cranfield Defence and Security.

Contact details: School of Applied Sciences Enquiries
T: +44 (0)1234 754086
E: appliedsciences@cranfield.ac.uk

Course description

The cost and environmental impact of keeping complex, long-life assets and infrastructure operating efficiently is significant. The ability of owners and maintainers to deploy superior through-life support capability will be increasingly critical to meeting shareholder and public demands in tomorrow's world.

These demands increasingly require improved availability with a simultaneous reduction in the cost of supporting the service and equipment. This results in the need for a new and integrated approach to education within engineering and operations management.

With this rapidly developing interest in 'service and support engineering', the MSc in Through-life System Sustainment provides an essential foundation for future leaders in organisations who wish to maximise the 'value in use' from complex, long-life product systems, and become the change leaders for system sustainment.

The MSc course comprises eight assessed modules, in which students gain an understanding of world-class business practice, a number of industry experience days, a multi-sector group project and an individual project. Students are also supported through individual coaching and mentoring and an online learning platform.

Group project

The group project involves students working in teams to fulfil demanding objectives within a tight timescale, applying state-of-the-art technologies and approaches to addressing major challenges in long-life equipment support and sustainment, and delivering results to a high professional standard.

Individual thesis project

The individual thesis project offers students the opportunity to develop their research capability, depth of understanding and ability to provide world-class technical and business engineering service solutions to real problems in system sustainment.

Modules

- System Sustainment
- Effective Through-life Support
- System Effectiveness
- Diagnostics and Prognostics
- Information Management
- Supply Network Analysis and Modelling
- Cost Engineering
- Leadership and Service Skills

Further information

Suitable for experienced engineering and technology professionals wishing to develop capability in the leadership of long-life system sustainment programmes and through-life engineering services.

Takes you on to careers with higher levels of responsibility, a broader base of skills and capability and a greater level of professionalism.

You will be taught by industry-active research academics from Cranfield with an established track record in product-service and maintenance systems, and through-life capability management. To ensure the programme is aligned to industry needs, the course has the support of a number of organisations in the through-life engineering services industry including Rolls-Royce.

Assessment Taught modules 40%, group project (or dissertation) 20%, individual project 40%.

Ultra Precision and Nanoengineering

MSc/MTech/PgDip/PgCert

Entry requirements: Candidates must possess, or be expected to achieve, a 1st or 2nd class UK Honours degree in a relevant engineering or science-based discipline, or the international equivalent of these UK qualifications. Other relevant qualifications together with industrial experience may be considered.

Duration: 1 year full-time, 2-5 years part-time.

Start date: October.

Number of places: 20.

Funding: School scholarships available - up to £9k plus UK fees

Other funding opportunities exist, such as industrial sponsorship. For the majority of part-time students sponsorship is organised by their employers. Please note that a formal offer of a place on this course must have been received before consideration can be given for funding. For information on funding opportunities please see our website.

Application process: Application form. UK students are normally expected to attend an interview and financial support is best discussed at that time. Overseas and EU students may be interviewed by telephone.

Teaching Location: Cranfield campus, School of Applied Sciences.

Contact details: School of Applied Sciences Enquiries
T: +44 (0)1234 754086
E: appliedsciences@cranfield.ac.uk

Course description

The next generation of products for energy production, medical diagnostics, aerospace, space, displays, telecommunications, semiconductor devices, optics and optoelectronics demand ultra precision engineering of surfaces, down to the nanoscale, to achieve their superior functionality.

The MSc in Ultra Precision and Nanoengineering has been designed to equip engineers and scientists with the knowledge, skills, and practical experience that allow next generation high technology products and processes to be realised.

Students will study the essential aspects of ultra precision technologies and nanoengineering including the philosophy of determinism, fundamental precision design and metrology principles, critical computer-based design and application tools, and detailed knowledge of ultra precision and nanoengineering processes. Many applications of the technology are addressed, with particular emphasis on optics, renewable energy generation (solar, wind, wave), medical diagnostics, space and aerospace.

Students benefit from access to the best equipped precision machining laboratories in Europe, including the Hexagon Loxham Precision Laboratory, a 400m² state-of-the-art temperature and humidity controlled workspace, and over 100m² of clean rooms within the Microsystems and Nanotechnology Centre.

Full-time students compete for the McKeown Prize for the Best Thesis in Precision Engineering, presented by Pat McKeown OBE.

MSc students complete eight modules, the group project and an individual thesis. Postgraduate Diploma (PgDip) students complete eight modules and the group project. Postgraduate Certificate (PgCert) students complete five modules.

Group project

There is a strong emphasis on applying knowledge in the industrial environment. This involves working in teams to fulfil demanding objectives within a tight timescale, applying state-of-the-art technologies and approaches, and delivering results to a high professional standard. For part-time students a dissertation usually replaces the group project.

Individual thesis project

The individual thesis project, usually undertaken as a company placement, offers students the opportunity to develop their research capability, depth of understanding and ability to provide ultra precision and nanoengineering solutions to real problems.

Modules

- Precision Engineering
- Nanotechnology and Medical Applications
- Renewable Energy Technology
- Metrology and Optical Testing
- Modern Optical Technologies
- Computer Aided Engineering for Ultra Precision
- Managing Innovation and New Product Development
- Surface Engineering and Coatings

Further information

Suitable for science and engineering graduates with an interest in the development of ultra precision and nanoengineered surfaces and their applications.

Takes you on to careers in a range of international research and industry sectors which are dependent on ultra precision and nanoengineering. Our significant industrially supported research allows access to a range of aerospace, space, medical, optics, optoelectronics, energy generation, displays, telecommunications, and semiconductor orientated companies.

You will be taught by internationally leading experts from within Cranfield's Precision Engineering Centre, a NASA approved supplier for space telescope mirrors, with additional modules from the Microsystems and Nanotechnology Centre, the Centre for Energy and Renewable Technologies, and Cranfield School of Management.

Assessment Taught modules MSc 40%, PgDip 66.6%, PgCert 100%. Group project (dissertation for part-time students) MSc 20%, PgDip 33.3%. Individual project MSc 40%.

Ultra Precision Technologies

MSc/MTech/PgDip/PgCert

Entry requirements: Candidates must possess, or be expected to achieve, a 1st or 2nd class UK Honours degree in a relevant science, engineering or related discipline, or the international equivalent of these UK qualifications. Other relevant qualifications, together with significant experience, may be considered. The Pre-Master's Course in Engineering is available for students whose prior qualifications do not reach the standard entry requirements for a Masters programme. Successful completion results in registration for this Cranfield MSc.

Duration: 1 year full-time, 2-5 years part-time.

Start date: October.

Number of places: 20.

Funding: School scholarships available - up to £9k plus UK fees

Other funding opportunities exist, such as industrial sponsorship. For the majority of part-time students sponsorship is organised by their employers. Please note that a formal offer of a place on the course must have been received before consideration can be given for funding. For more information on funding opportunities please see our website.

Application process: Application form. UK students are normally expected to attend an interview and financial support is best discussed at that time. Overseas and EU students may be interviewed by telephone.

Teaching Location: Cranfield campus, School of Applied Sciences.
Opto-electronics Technology and Incubation Centre (OpTIC), North Wales
Downing College, University of Cambridge.

Contact details: School of Applied Sciences Enquiries
T: +44 (0)1234 754086
E: appliedsciences@cranfield.ac.uk

Course description

High-technology products fundamentally depend on a range of ultra precision systems and processes. Next generation products for space, aerospace, energy production, displays, sensors and advanced medical devices demand ultra precision technologies in order to achieve their superior functionality.

The course has been designed to equip engineers and scientists with an understanding of the underlying principles of important ultra precision technologies as well as provide exposure and understanding of their state-of-the-art applications.

Students will study all aspects of ultra precision technologies including the philosophy of determinism, fundamental precision design and metrology principles, critical computer-based design and application tools, detailed knowledge of ultra precision processes and their applications. Strategic approaches to safeguard technology management, intellectual property and product innovation are reviewed.

The Ultra Precision Technologies programme is truly world-class, led by Cranfield University, with support from the Optical Science Laboratory of University College London, the Institute for Manufacturing at the University of Cambridge and OpTIC Glyndwr. Course modules are delivered at three locations - Cranfield, OpTIC and Cambridge.

The course is accredited by the Institute of Materials, Minerals and Mining (IOM³) on behalf of the UK Engineering Council as meeting the academic requirements for Chartered Engineer status.

The MSc course comprises eight one-week assessed modules, a group project and an individual project. Postgraduate Diploma (PgDip) students complete eight modules and the group project. Postgraduate Certificate (PgCert) students complete five modules and an assignment.

Group project

There is a strong emphasis on applying knowledge in the industrial environment. This involves working in teams to fulfil demanding objectives within a tight timescale, applying state-of-the-art technologies and approaches, and delivering results to a high professional standard. For part-time students a dissertation usually replaces the group project.

Individual thesis project

The individual thesis project, usually undertaken as a company placement, offers students the opportunity to develop their research capability, depth of understanding and ability to provide ultra precision solutions to real problems.

Modules

- Precision Engineering
- Metrology and Optical Testing
- Managing Innovation and New Product Development
- Computer-aided Engineering for Ultra Precision
- Optical Design and Fabrication
- Surface Engineering and Coatings
- Modern Optical Technologies
- Laser Micromachining and Surface Structuring

Further information

Suitable for science and engineering graduates with an interest in the development of ultra precision systems and processes for high-technology products. The part-time option will allow practitioners to enhance their professional development within their current employment.

Takes you on to a wide range of careers involving ultra precision systems and processes, with responsibilities in research, development, design, production and management, in a range of sectors including aerospace, space, defence, energy generation, medical devices, optics, displays and semiconductor devices.

You will be taught by world-renowned experts in ultra precision from Cranfield University, with support from subject specialists at University College London and the University of Cambridge.

Assessment Taught modules MSc 40%, PgDip 66.6%, PgCert 100%. Group project (dissertation for part-time students) MSc 20%, PgDip 33.3%. Individual project MSc 40%.

Welding Engineering

MSc/PgDip/PgCert

Entry requirements: Candidates must possess, or be expected to achieve, a 1st or 2nd class UK Honours degree in a relevant science, engineering or related discipline, or the international equivalent of these UK qualifications. Other relevant qualifications, together with significant experience, may be considered. The Pre-Master's Course in Engineering is available for students whose prior qualifications do not reach the standard entry requirements for a Masters programme. Successful completion results in registration for this Cranfield MSc.

Duration: 1 year full-time, up to 4 years part-time.

Start date: October.

Number of places: 10.

Funding: School scholarships available - up to £9k plus UK fees

Other funding opportunities exist, such as industrial sponsorship. For the majority of part-time students sponsorship is organised by their employers. Please note that a formal offer of a place on this course must have been received before consideration can be given for funding. For more information on funding opportunities please see our website.

Application process: Application form. UK students are normally expected to attend an interview and financial support is best discussed at that time. Overseas and EU students may be interviewed by telephone.

Teaching Location: Cranfield campus, School of Applied Sciences.

Contact details: School of Applied Sciences Enquiries
T: +44 (0)1234 754086
E: appliedsciences@cranfield.ac.uk

Course description

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. The application of welding and joining continues to expand in the oil, gas, and petrochemical industries, in transport (including automotive, aerospace and shipbuilding), in the manufacture of electronic systems, in defence industries and in general manufacturing.

This course covers areas such as automation, metallurgy and materials science, welding processes, design and quality. It provides students with a fundamental understanding of welding technologies and an awareness of recent technical developments, such as laser welding.

Students benefit from dedicated state-of-the-art welding facilities, including the latest robotic, laser, and arc welding equipment, and also have access to modern metallographic and testing facilities.

The MSc comprises eight one-week assessed modules, a group design project and an individual thesis project. Postgraduate Diploma (PgDip) students complete the eight modules and the design project. Postgraduate Certificate (PgCert) students complete five modules and a short design project. Part-time students can complete the course using distance learning methods combined with attendance on campus, for two-to-three weeks each year.

Group design project

This provides experience of working in response to a design brief. The aim is to provide conclusions and recommendations that an engineer might present to senior management, based on either an experimental program to solve a technical issue, or an information-based study. Full-time students normally undertake the design project as part of a group of three or four students. Part-time students usually prepare an individual design dissertation, often based around one of their work projects.

Individual research project

This provides experience of undertaking research into a specific welding issue that is of interest and benefit to a company. The project is usually on a topic of direct relevance to industry. Part-time students must have access to appropriate facilities in order to carry out the research project, usually based around a work project.

Accreditation

This course is accredited by the Institute of Materials, Minerals and Mining (IOM³) on behalf of the UK Engineering Council as meeting the academic requirements for Chartered Engineer status (CEng MIMMM).

This qualification may also contribute to the assessment of candidates applying via the Alternative Route to study for the International Welding Engineer/Technologist/Specialist Diploma available through The Welding Institute (TWI).

Modules

The modules include lectures, workshops, case studies, tutorials and company visits covering the following areas:

- Welding Systems and Research Methods
- Design of Welded Structures (e-learning)
- Management of Weld Quality (e-learning)
- An Introduction to Materials Engineering
- Advanced Welding Processes
- Welding Metallurgy (e-learning)
- Welding Processes and Equipment 1 (e-learning)
- Welding Processes and Equipment 2 (e-learning)

Further information

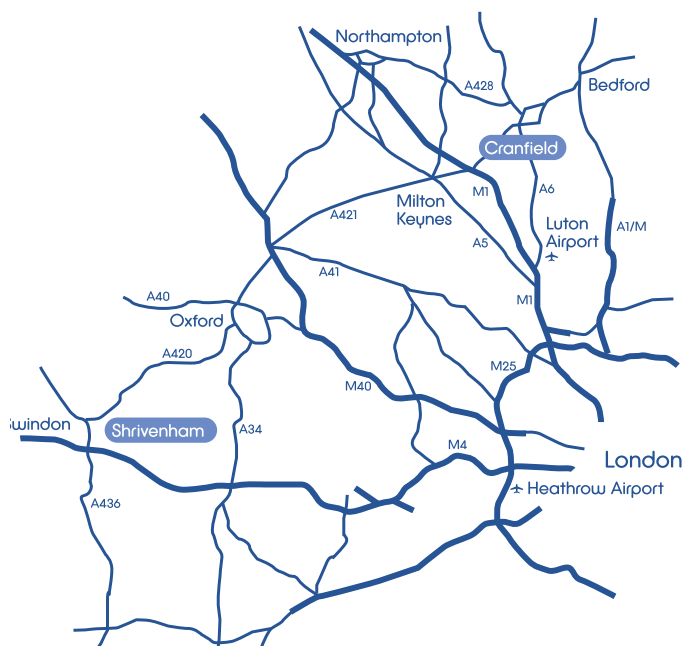
Suitable for science, materials and engineering graduates and those working in welding manufacturing, design of welded structures, welding process applications, robotic and automated welding and management of welding operations.

Takes you on to positions of engineering and management responsibility in a wide range of organisations using welding technologies. These include management of welding manufacturing operations and management of design and fabrication of welded structures.

You will be taught by experts from Cranfield's academic staff with extensive experience in the industrial application of welding and in welding research. Lectures are also given by industry experts in specific areas.

Assessment Taught modules MSc 40%, PgDip 67%, PgCert 83%. Design project MSc 20%, PgDip 33%, PgCert 17%. Individual research project MSc 40%.

How to find us



Cranfield campus – Bedfordshire, MK43 0AL

The Cranfield campus is located just outside the village of Cranfield on the Bedfordshire-Buckinghamshire border, between Milton Keynes and Bedford and is conveniently situated between junctions 13 and 14 of the M1.

By air: London Luton, London Heathrow, London Stansted, East Midlands and Birmingham airports are within 90 minutes' drive from the campus. The campus also has its own business airport, used by corporate, private and charter aircraft owners.

By rail: Bedford and Luton are on a direct line into London's St Pancras International station and on to Brighton and the south coast. Milton Keynes is on the London Euston to Glasgow west coast main line rail link.

By road: Cranfield campus is located ten minutes from the M1 motorway and can be accessed from either junction 13 or 14 of the M1.

Shrivenham campus – Wiltshire, SN6 8LA

The Shrivenham campus is located on the edge of Shrivenham village just off the A420 between Oxford and Swindon. Swindon is approximately 10km west of the campus and Oxford is around 34km east.

By air: The major UK airports are easy and quick to reach – Heathrow is less than two hours by road along the M4, and the M25 has now reduced travelling time from Gatwick. Bristol, Southampton and Cardiff airports are within easy reach.

By rail: Nearby Swindon is the best rail link to London (less than an hour); the Great Western Trains service also links Swindon with South Wales, and other services provide easy access to the Midlands and North.

By road: Shrivenham campus is close to the M4 motorway, which links London and South Wales.

For detailed maps and travel information www.cranfield.ac.uk/visit





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