

Academic year
2025/26 entry



Postgraduate master's courses in **Manufacturing and Materials**

Advanced Materials: Engineering and Industrial Applications MSc
Aerospace Manufacturing MSc
Aerospace Materials MSc
Digital and Technology Solutions MSc
Engineering and Management of Manufacturing Systems MSc

Global Product Development and Management MSc
Maintenance Engineering and Asset Management MSc
Management and Information Systems MSc
Manufacturing Technology and Management MSc
Metal Additive Manufacturing MSc
Through-life System Sustainment MSc
Welding Engineering MSc

Cranfield University

Our reputation

We are the UK's only specialist postgraduate university in technology and management, with longstanding relationships with some of the most prestigious global companies. Our close collaboration with industry, and passion for the areas we operate in, will help your career.



Specialist postgraduate

A research-focused professional community.

We work with over



1,500

businesses and governments based in over 40 countries.



Over £150m

of investment in new facilities over the past five years.



5,000+

postgraduate students from 100+ countries.



A network of

80,000+

alumni, from 173+ countries.

As we are postgraduate only, we are not listed in many league tables that help compare undergraduate universities.

What our alumni say

"My choice to study at Cranfield over other offers was influenced by three main factors: my desire to study this course, the university's strong ties to industry, and its impressive ranking and reputation."

Hassan Esmaeili, student, (Aerospace Manufacturing MSc)





Reasons to study Manufacturing and Materials with us

1

Industry links

Our students benefit from extensive contact with industry including guest lectures from BAE Systems and Rolls-Royce and industrial sponsorship of many group and individual projects.

2

Learning from the best academics

You will meet high-quality staff from around the world who have diverse backgrounds and experiences to create a rich teaching and research environment.

3

Teaching informed by industry

We design our courses with employers and combine high-calibre teaching with case studies and practical work experience.

4

Work on real-world projects

Almost two-thirds of your study is on projects to find solutions to real-world problems, working on developments initiated by industry.

5

Outstanding facilities

We have exceptional and large-scale facilities, many of which are unique in the university sector. These include clean rooms, high-temperature coating facilities, a virtual reality suite with a Samsung SUR40 touch table, an impressively equipped composites laboratory and impact testing facilities including FIA-approved (Federation Internationale de l'Automobile) Cranfield Impact Centre. We also have a wide range of software for modelling and simulation of manufacturing processes and an unparalleled additive manufacturing and welding laboratory with robotic, automated and advanced arc welding equipment. Cranfield has also recently invested £1.6 million in renewal of our materials characterisation facilities with a new electron microscopy suite.

6

Networking opportunities

Our industrial advisory panel members are regular visitors to Cranfield and, for example, attend student project presentations and many internal events. This provides an excellent opportunity for students to meet employers and forge valuable links and contacts for career development purposes.

Manufacturing courses

Today's manufacturing industry, in line with the arrival of the fourth industrial revolution, is challenging the traditional notions of manufacturing with a focus on digital data, connectivity and artificial intelligence, as well as sustainability.

Our postgraduate Manufacturing and Materials programmes deliver to the highest quality, providing our graduates with the relevant skills and expertise that are valued around the world.

Compulsory modules are listed in the order they are delivered. Elective modules are listed alphabetically.

The compulsory and (where applicable) elective modules offered in the 2024-25 academic year, are shown to give you an idea of course content. To keep our courses relevant and up-to-date, modules are subject to change so please check the latest information on our website.

Advanced Materials: Engineering and Industrial Applications

www.cranfield.ac.uk/advancedmaterials	Full-time, Part-time	MSc, PgDip, PgCert
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This MSc in Advanced Materials will develop your understanding of materials' properties, selection, processing and advanced design procedures.

Compulsory modules

- Industrial Applications of Advanced Materials,
- Advanced Materials Processing Technologies,
- Materials Selection and Design,
- Engineering with Nano and Functional Materials,
- Composites Design, Manufacturing and Applications,
- Materials for a Net Zero Future,
- Modelling for Materials.

Aerospace Manufacturing

www.cranfield.ac.uk/aerospacemanufacturing	Full-time, Part-time	MSc, PgDip, PgCert
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The Aerospace Manufacturing MSc, will help you gain the sought-after capabilities to manage major improvement programmes in the aerospace manufacturing industry or instigate intervention that delivers improvements to the performance of the businesses.

Compulsory modules

- Operations Management,
- Manufacturing Systems Engineering,
- Sustainable Aerospace Manufacturing Business,
- Supply Chain Management,
- Aircraft Assembly.

Elective modules. Three of the modules from the following list need to be taken as part of this course.

- Additive and Subtractive Manufacturing Technologies,
- Composites Manufacturing for High-Performance Structures,
- Failure of Engineered Assets,
- Manufacturing Strategy,
- Metal Additive Manufacturing Processes,
- Operations Analysis,
- Welding Processes and Equipment.

Aerospace Materials

www.cranfield.ac.uk/aerospacematerials	Full-time, Part-time	MSc, PgDip, PgCert
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This MSc develops specialist skills to enhance and design new materials for next-generation aircraft and spacecraft. You will play a major role in addressing environmental impact and sustainability within the sector and gain access to teaching and research geared towards decarbonising aviation.

Compulsory modules

- Introduction to Materials Engineering,
- Sustainable Aerospace,
- Failure of Materials and Structures,
- Materials Selection and Design,
- Functional Materials for Aerospace Sustainability,

- Composites Manufacturing for High-Performance Structures,
- Surface Engineering and Coating Systems Design.

Elective modules

- Finite Element Analysis,
- Modelling Engineering Materials.

Digital and Technology Solutions

www.cranfield.ac.uk/dts	Part-time	MSc
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This MSc is unique and innovative as it focuses on developing knowledge to design and develop digital technologies and solutions in areas such as AI/machine learning, digital twins, AR/VR, data analytics, data management across sectors that rely on complex products and services.

Compulsory modules

- Adaptive Visualisation,
- Introduction to Digital Engineering,
- Digital Integration and System Testing,
- Digital Twins,
- Integrated Data Management.

Elective modules

- Data Analytics and Artificial Intelligence,
- Digital Business Analysis,
- Digitalisation of Cost Engineering,
- Digitally Enabled Servitisation.

Engineering and Management of Manufacturing Systems

www.cranfield.ac.uk/emmsystems	Full-time, Part-time	MSc, PgDip, PgCert
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The MSc in Engineering and Management of Manufacturing Systems is an established course that develops professionals with a thorough understanding of the knowledge, skills and behaviours needed to design and manage competitive manufacturing and service operations.

Compulsory modules

- Operations Management,
- Managing Change in Manufacturing ,
- Operations Analysis,
- Manufacturing Systems Engineering,

- Sustainability in Manufacturing Systems,
- Smart Manufacturing,
- Supply Chain Management,
- Manufacturing Strategy.

Global Product Development and Management

www.cranfield.ac.uk/gpdm	Full-time, Part-time	MSc, PgDip, PgCert
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During this MSc, you will learn advanced techniques for integrating product development at different levels, and how to design and manufacture intelligent, sustainable and internationally competitive products.

Compulsory modules

- Operations Management,
- Digital Engineering,
- Engineering Leadership and Management,
- Design Technology and Prototyping,

- Enterprise Modelling,
- Design Driven Innovation Processes,
- Supply Chain Management,
- Lean Product Development.

Maintenance Engineering and Asset Management

www.cranfield.ac.uk/meam	Full-time, Part-time	MSc
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This MSc delivers the specialist knowledge, skills and experience required to work in this cutting-edge field, enabling you to become part of the bigger sustainability landscape. You will get a chance to contribute to the future of sustainable manufacturing by specialising in metal additive manufacturing processes, capabilities, system design and modelling.

Compulsory modules

- Industrial Maintenance,
- Asset Management,
- Probability and Statistics in Risk and Reliability Engineering,
- Failure of Engineered Assets,
- System Availability and Maintainability,
- Health Monitoring and Inspection,
- Diagnostics and Prognostics,
- Maintenance Planning, Scheduling and Control.

Management and Information Systems

www.cranfield.ac.uk/mis	Full-time, Part-time	MSc, PgDip, PgCert
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This course covers key topics in digital transformation, operations management, supply chain, business process analysis, change management and enterprise systems, all which have carefully been selected to provide you with the skillset necessary to thrive in the management of information systems aligned with innovative application of digital technology.

Compulsory modules

- Operations Management,
- Digital Engineering,
- Data Analytics and Artificial Intelligence,
- Data Analytics,
- Enterprise Modelling,
- Enterprise Systems,
- Supply Chain Management,
- Integrated Data Management.

Manufacturing Technology and Management

www.cranfield.ac.uk/mtm	Full-time, Part-time	MSc, PgDip, PgCert
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This MSc addresses the specialist technical and business skills required by high-tech industries, giving you the competence in problem-solving, commercial awareness, awareness of emerging manufacturing technologies and the leadership skills required to succeed in your career.

Compulsory modules

- Engineering Leadership and Management,
- Introduction to Sustainable Manufacturing,
- Lean Product Development.
- Introduction to Materials Engineering,
- Metal Additive Manufacturing Processes,
- Modelling Engineering Materials,
- Operations Analysis,
- Operations Management,
- Surface Engineering and Coating Systems Design.

Elective modules. Five of the following modules need to be taken as part of this course

- Additive and Subtractive Manufacturing Technologies,
- Composites Manufacturing for High-Performance Structures,
- Finite Element Analysis for Additive Manufacturing,

Metal Additive Manufacturing

www.cranfield.ac.uk/mam

Full-time, Part-time

MSc, PgDip, PgCert

This MSc delivers the specialist knowledge, skills and experience required to work in this cutting-edge field, enabling you to become part of the bigger sustainability landscape. You will get a chance to contribute to the future of sustainable manufacturing by specialising in metal additive manufacturing processes, capabilities, system design and modelling.

Compulsory modules

- Operations Management,
- Metal Additive Manufacturing Metallurgy,
- Metal Additive Manufacturing Processes,
- Additive Manufacturing System Design,
- Finite Element Analysis for Additive Manufacturing,
- Management of Manufacturing Quality,
- Post Processing for Additive Manufacturing.

Through-life System Sustainment

www.cranfield.ac.uk/tss

Part-time

MSc

This course offers through-life thinking to enable change leaders in organisations to embrace new and integrated approaches to develop superior through-life support capabilities to meet shareholder and stakeholder demands.

Compulsory modules

- Information Management,
- Managing Assets and Value,
- Leadership and Change Management,
- Through-Life System Effectiveness,
- Diagnostics and Prognostics,
- Through-Life Business Models and Servitisation,
- Operational Availability and Risk,
- Optimising Whole-Life Cost and Performance Management.

Welding Engineering

www.cranfield.ac.uk/welding

Full-time, Part-time

MSc, PgDip, PgCert

This course provides the practical and theoretical knowledge required to become a welding engineer and a materials and joining specialist. It covers modern welding techniques, automation, metallurgy, materials science, welding processes, weld design and quality.

Compulsory modules

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

Further recommended courses

There are other courses from across the University in this area which may be of interest to you. These include:

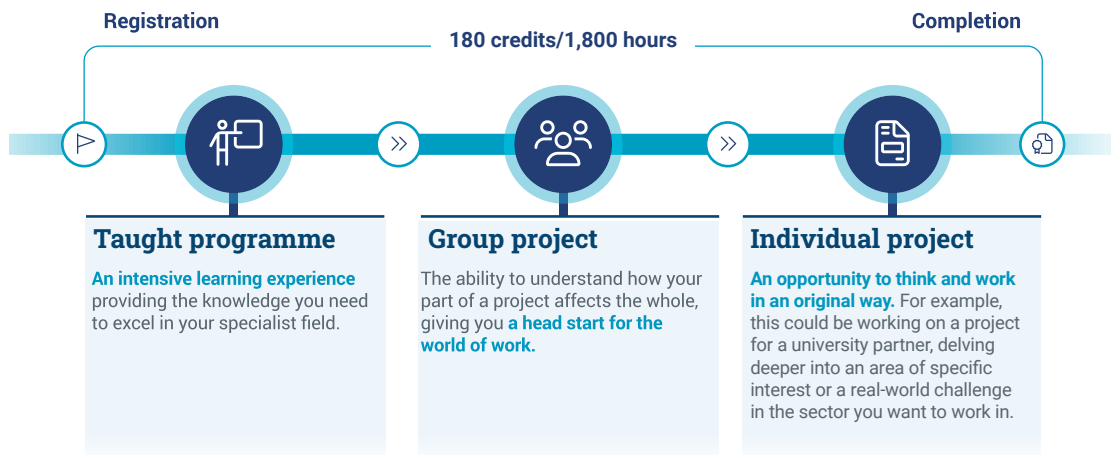
Design Thinking MDes - www.cranfield.ac.uk/designthinking

Design Engineering MSc by Research - www.cranfield.ac.uk/design-engineering-msc-by-research

Course structure

Our specialist, sector-focused master's courses are set up and developed in close collaboration with industry partners, ensuring the content of our courses remains industry-relevant and employers are impressed with our graduates' business-readiness.

This diagram illustrates the standard course structure for our master's programmes. Please check your course structure online for more detailed information.



Industry sponsored group projects

Cranfield's group project experience provides you with the opportunity to take responsibility for a consultancy-type project while working under academic supervision.

Some recent projects include:

- Sustainability evaluation tool for manufacturing and assembly of floating offshore wind platforms.
- Application of knowledge graph with ontologies for autonomous vehicle multi-model development.
- Augmented reality-infused training in battery manufacturing.
- Comprehensive fault diagnosis for wind turbines: A unified model approach using SCADA datasets
- Artificial intelligence and image analysis for astronomical applications
- Fibre-to-fibre recycling of end-of-life textiles for the sustainable fashion industry

Industry links

Cranfield has unrivalled links with industry, and you will benefit from our extensive contacts and track record of close collaboration with decision-makers in your chosen sector.

These benefits range from the high-profile guest speakers we are able to attract, to the ability to network with future employers at our group presentation days and careers fairs held on campus.



Industrial advisory panel

Our courses are reviewed each year by panels of industry advisors from leading companies and institutions in the sector. This ensures that the skills you acquire are up-to-date and what employers want. Some of the companies represented on our manufacturing courses industrial advisory panels include:

AkzoNobel,
Ansys,
AWE,
BAE Systems,

GKN
Marshall Aerospace,
National Composites Centre (NCC),
Rolls-Royce,

Safran,
Scott Bader.



Careers

Our alumni can be found around the world in leading roles. Here are a few examples of the roles our alumni have secured in recent years.

Read more on our website www.cranfield.ac.uk/careers

Roles:

- Air Systems Engineer,
- Applications Engineer,
- Business Analyst,
- Capability Acquisition Engineer,
- Composites Engineer,
- Design Engineer,
- Development Engineering Manager,
- Innovation Manager,
- Manufacturing and Operations Engineer,
- Materials Engineer,
- Strategic Planner,
- Systems Developer,
- Technical Analyst.

Organisations:

- Airbus,
- BAE Systems,
- Bentley Motors,
- Bombardier,
- British Airways,
- Coca-Cola,
- GKN Aerospace,
- Jaguar Land Rover,
- Liebherr Aerospace and Transportation Systems,
- PwC,
- Ricardo plc,
- Rolls-Royce,
- Safran,
- Samsung Electronics,
- Thales.

Academic staff

You will be taught by a wide range of subject specialists at Cranfield and industry professionals who draw on their research and industrial expertise to provide stimulating and informed input to your learning experience. Here are some of the staff you will be taught by:

The list of academics below represents a small proportion of our staff; we also have a large number of highly-experienced guest lecturers.



Dr David Ayre,

Senior Lecturer in Composites and Polymers

www.cranfield.ac.uk/dsayre

David is the Course Director for Advanced Materials Engineering and Industrial Applications MSc. After working for 10 years in the nuclear power generation industry he moved into academia.



Dr Konstantinos Georgarakis,

Senior Lecturer in Low Energy and Novel Casting

www.cranfield.ac.uk/kgeorgarakis

Konstantinos is Course Director for Aerospace Manufacturing MSc. He holds a PhD in Materials Science and Engineering and has an Engineering degree in Metallurgy, both from the National Technical University of Athens, Greece.



Dr Ahmed Al-Ashaab,

Reader in Lean Product Development

www.cranfield.ac.uk/aalashaab

Dr Al-Ashaab is the Course Director for Global Product Development and Management MSc. He has over 28 years of teaching experience and his research focuses on lean product development and its applications in industry.



Dr Sue Impey,

Senior Lecturer in Corrosion Science and Technology

www.cranfield.ac.uk/saimpey

Sue is the Course Director for Aerospace Materials MSc. Sue has over 35 years' experience in delivering research and education. Her current interests are in coatings and thin films for sustainable energy solutions.



Dr Jeff Rao,

Senior Research Fellow Coatings Technology

www.cranfield.ac.uk/jrao

Jeff's interests lie in coating technologies, biomimicry and how nature can influence coating designs. He has over 10 years' experience in coatings depositions.



Dr Samir Khan,

Senior Lecturer in Intelligent Systems

www.cranfield.ac.uk/sskhan

Samir is a senior lecturer in Internet of Things and Course Director for the Management and Information Systems MSc. He was also the leading researcher on the No Fault Found research project.

Key facts and statistics

Course information



Full-time

One year.



Part-time

Up to three years. See the course page for more information about part-time study.



Start date

Various. Please visit course pages for more information.



Award

MSc/PgDip/PgCert.

Not all courses offer all awards, see course information on pages 4 and 5 for details of awards offered.



Fees

Please see the individual course pages on our website for full fee information and full-time or part-time options. Terms and conditions apply. See www.cranfield.ac.uk/fees

Cohort profile*



Geographic spread

48% UK.
52% International.



Average cohort age range

20–55.



Average cohort size

26.



Gender

17% female
83% male

*These figures give an indication of the course make-up at registration across for the entry year 2023-2024.



Useful information



Financing your studies

Whether you are a UK-based or international student, we provide information, advice and a range of online tools to help you put together the funding package you need. Take a look at our funding finder which provides a searchable database of sources of financial support. We also offer bursaries for high quality applicants. Visit our website where we provide a range of additional sources of potential funding and helpful organisations and contacts for information, advice and guidance.

Learn more at www.cranfield.ac.uk/funding

More than a degree with the **Cranfield Enhance programme**

Cranfield graduates are valued for their distinctive skills and capabilities. We have developed these programmes to complement and enhance what you learn on your chosen qualification. On the Cranfield Enhance programme, you will be able to earn 'digital badges' in areas such as employability and entrepreneurship to showcase your new skills to prospective employers.

Read more at www.cranfield.ac.uk/enhance

“

This course provided me with in-depth knowledge and practical skills in engineering management, including the principles of manufacturing systems and their management, as well as the practical skills needed to design and implement effective manufacturing processes.”

Anamika Pokharel, student, (Engineering and Management of Manufacturing Systems MSc)



Life at Cranfield

A welcoming, professional campus community.



Explore our University

You can personalise your virtual visit to our campus by choosing the subject area you are interested in on our interactive tool:

virtualexperience.cranfield.ac.uk



How to apply

Read more about our entry requirements and how to apply at **www.cranfield.ac.uk/apply**



Our location



Located just over an hour from London in the English countryside, Cranfield's campus environment supports close, working relationships between our multinational postgraduate students and academic and industry experts.

www.cranfield.ac.uk/visit



www.cranfield.ac.uk/manufacturing-and-materials

Our sector study areas:

Aerospace,
Defence and Security,
Energy and Sustainability,
Environment and Agrifood,

School of Management,
Manufacturing and Materials,
Transport Systems,
Water.



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blogs.cranfield.ac.uk

For a full list of Cranfield courses, please see our **prospectus** and website.

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