

Birmingham City University
Technology Innovation Centre

BEng (Hons) Management of Manufacturing Systems



Formerly UCE Birmingham



BEng (Hons) Management of Manufacturing Systems

Introduction

Manufacturing industry is rapidly changing and the intense global competition from low cost manufacturing countries demands the application of modern manufacturing philosophies and technologies in order to survive and grow. In striving for competitive advantage, organisations have to evaluate their performance more effectively and make optimum use of all their resources. Talented, innovative, ambitious engineers are required to introduce essential systems such as Just-In-Time, Total Quality Management and Computer-Aided Engineering to ensure success in a global manufacturing environment.

Successful graduates will have the intellectual, creative and personal qualities necessary to apply new technologies to the solution of manufacturing problems.

Course Aims

To provide graduates with the following skills and knowledge:

- The principal features of the manufacturing enterprise including its major managerial, organisational, creative, technical, practical and operational functions, designs and processes
- Business management and organisational theories and techniques applied to successful manufacturing enterprise and the legal and regulatory systems within which they operate
- The principal management, design and manufacturing technologies and systems that underpin manufacturing practice, technology application, system design and design engineering
- The role, structure and organisation of the manufacturing industry within the European Community and the economic, social and ecological implications of engineering decisions, encouraging a sense of responsibility to society
- The communication of ideas through graphical and written media and by presentation techniques
- An understanding of the systems approach encompassing the themes of Industrial Systems, Manufacturing Systems, Manufacturing Processes and Design Engineering
- An understanding of new technologies and their application to the solution of problems in manufacturing industry
- The organisational, teamwork and practical management approaches employed throughout a typical product life cycle

Career Prospects

Typical routes of employment that could lead from this course include:

- Project Engineer, whether in a design scenario, production environment, manufacturing engineering, commissioning or operations management
- Technical appointments in information technology, manufacturing and research and development
- Managerial posts such as marketing, sales and advertising

Technology Innovation Centre

Courses at Birmingham City University's Technology Innovation Centre are designed with industry to produce highly employable graduates across a wide spectrum of Advanced Engineering, Design, Interactive Media and Information and Communications technologies.

Students will benefit from both the outstanding resources and facilities at our Millennium Point campus and our unique engagement with industry, which ensures that our courses equip students with up-to-date skills, relevant to the needs of employers. Located in Birmingham City Centre, **tic** students also enjoy all the facilities of a thriving international city, including culture and entertainment for all tastes and excellent local, regional and national transport links.

Industrial Placement

Students are encouraged to further enhance their career prospects by including an industrial placement in their course. This takes place after the second year of study and extends the course duration to four years.

As well as providing the workplace experience sought by many employers, a placement provides an invaluable opportunity for students to further develop their practical expertise, earn money and try out a potential career path. The **tic** placements team supports students throughout the placement process.

Learning approaches and Assessment

Students experience a wide variety of subjects and many different types of learning environments including lectures, tutorials, practicals and computer laboratories. Learning methods include the use of the latest networked computer systems and commercial standard software platforms. All courses incorporate a significant amount of project work to provide students with the opportunity to develop and apply their knowledge and are assessed through a combination of assignments, case studies, in-class tests, presentations and examinations.

Accreditation

The BEng (Hons) Management of Manufacturing Systems is accredited by the Institution of Engineering & Technology as satisfying academic requirements towards CEng. Holders of BEng (Hons) awards are required to complete further learning in order to meet the full requirements for CEng.

Entry Requirements

Applicants will be expected to have successfully completed at least one of the following or an equivalent qualification:

- Five GCSEs/GCEs with at least two GCE 'A2' levels, or an AVCE double award, with Mathematics to at least AS Level. English Language and a Science subject to at least GCSE Grade C.
- An Edexcel National Certificate/Diploma in Engineering with a significant Merit profile.
- A Degree Foundation Certificate, Access to HE Qualification, or equivalent, in Engineering.

A typical tariff point offer is 220 to 240 with AS qualifications used towards the tariff where appropriate.

Mature applicants who are able to demonstrate proficiency in Mathematics and written English will be considered for entry at Foundation Level.

Course Length

Full Time:	3 years
Sandwich:	4 years
Part Time:	3 years for entry with appropriate HNC or equivalent, 5 years if no exemptions apply. See Part Time grid for details.

For further Information

Course Enquiries
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Module Grid – Full Time

Year 3

Individual Project D3	Operations and Supply Chain Management D3	Business Process Improvement D3	Advanced Manufacturing D3	Design in Practice D3
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Year 2

Market-led Business for Engineers D2	Operations Systems D2	Environmental Performance D2	Computer Aided Manufacture D2	Design Elements and Methods D2
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Year 1

Mathematical Analysis D1	Engineering Design and Practice D1	Materials Science D1	Applied Mechanics D1	Applied Thermofluids D1
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Project Theme

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Operations Management Theme

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World Class Manufacturing Theme

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Manufacturing Technology Theme

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Design Management Theme

Module Grid Part- Time

Year 5

Individual Project
D3

Advanced
Manufacturing
D3

Operations and Supply
Chain Management
D3

Summer

Market – led Business for Engineers D2

Year 4

Business Process
Improvement
D3

Design in Practice
D3

Operations Systems
D2

Year 3

Environmental
Performance
D2

Design Elements
and Methods
D2

Computer Aided
Manufacture
D2

-----Normal HNC Entry-----

Year 2

Market-led Business
for Engineers
D2

Applied
Thermofluids
D1

Applied Mechanics
D1

Year 1

Mathematical
Analysis
D1

Materials Science
D1

Engineering Design
D1

Brief Module Description

Year 1

Mathematical Analysis D1

Algebra, calculus, complex numbers, vectors, statistics, computer packages. Matrices, partial differentiation, differential equations, Laplace transforms, computer packages.

Engineering Design and Practice D1

Drawing skills and techniques in design, design process, assembly drawings, CAD. Engineering applications, basic analysis of ac and dc circuits, instrumentation, sensor types and their uses.

Materials Science D1

Material testing, structure of metals, failure of materials, structure and properties of ceramics, structure and properties of polymers, structure and properties of composites, surface engineering, material selection, introduction to manufacturing technologies.

Applied Mechanics D1

Study and experimental skills, data analysis, experimental applications. Dynamics: Newton's laws, circular motion, free, damped, and forced vibrations. Statics: Stresses in beams and shafts, principal stresses, experimental stress analysis techniques.

Applied Thermofluids D1

Study and experimental skills, data analysis, experimental applications. Heat transfer, first law of thermodynamics, gas laws. Thermodynamic properties, gas laws, fluid flow.

Year 2

Market-led Business for Engineers D2

Market-led business analysis and planning: Marketing; Finance; Strategy and Change; General Management Principles; Business Applications of ICT; Professional Development; Communications.

Operations Systems D2

Capacity management and work analysis, activity scheduling, materials management, design of quality control systems. Operations planning, work measurement and work standards, operations scheduling and control.

Environmental Performance D2

Environmental impacts & legislation. Sustainability. Waste management & minimisation. Environmental management systems. Health and safety. Pneumatic and hydraulic power distribution. Electrical power distribution. Energy efficiency & management.

Computer Aided Manufacture D2

Failure of materials - ductile and brittle failure, fatigue, creep, corrosion, friction and wear, metal cutting, sheet and metal work. CNC machines and programs, CAD/CAM systems, flexible and dedicated automation, work holding systems, tooling systems and management, performance testing.

Design Elements and Methods D2

Mechanisms, design and redesign, concepts, materials and manufacturing processes, component selection, joining methods, ergonomics, presentation of design solutions. Design for manufacture, problem solving, economic decision making.

Year 3

Individual Project D3

To provide opportunity to develop in-depth knowledge and skills in an area relevant to the course including the ability to manage activities and resources, and to generate, implement and report on solutions to meet project objectives.

Operations and Supply Chain Management D3

Risk analysis and decision making processes, material flow analysis, maintenance and replacement, development of manufacturing strategy. Logistics, distribution and transport, simulation techniques.

Business Process Improvement D3

Application of Total Quality Management techniques. Historical context of Q&R. Design and apply sampling plans; apply statistical techniques to perform process evaluation; calculate and predict the reliability of a system; improve system reliability; analyse failure data.

Advanced Manufacturing D3

CAD/CAM, CNC data forms, simulation of machining operations, manufacturing cells, calibration, measurement and testing, 3-D system simulation, assembly systems, post processor configuration and application, advanced process simulation and product development and advanced product quality planning

Design in Practice D3

Tools of design quality, FMEA/FTA, DFx, risk and hazard analysis, reliability. Management of design, design reviews, design planning, design information systems, design optimisation.

Disclaimers

Birmingham City University's Disability Service aims to enable students with disabilities or learning support needs to make the most of their time at university. We regard disclosure of a disability as a positive thing and think it is important that students feel they can tell us about any disability they may have so we can try to support their individual needs.

If students have not made us aware of their disability or they feel they may have a disability please contact the Disability Service on 0121 331 5128, or email disability@bcu.ac.uk

This information is intended as a general guide to the University's (Faculty's) courses and facilities and forms no part of any contract between students and the University. Although reasonable steps are taken to provide the courses as described, the University cannot guarantee the provision of any course or facility. Any course may be altered or withdrawn owing to circumstances beyond the University's control. It is strongly recommended that prospective students contact the (relevant) faculty to obtain the most up-to-date course information. For full terms and conditions please log on to www.bcu.ac.uk/misc/legal.html

Birmingham City University promotes equality of opportunity in respect of every aspect of its provision. University policy and practice will seek to provide an environment that is free from discrimination against students, staff and others. The University and its staff will ensure that all prospective students are treated solely on the basis of their merits, abilities and potential.

The University will seek to prevent discrimination on the grounds of race, colour, ethnic origin, nationality, religious belief, gender, sexual orientation, disability, age, marital status, family circumstances, citizenship, social and economic status, or any other irrelevant individual differences.

For full details of the University's Equal Opportunities Policy please log on to www.bcu.ac.uk

All courses described as being delivered by Birmingham City University include those provided or delivered by the University and by companies within the Birmingham City University group.

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A member of the Birmingham City University Group

Qualification awarded by Birmingham City University