Course Specification

Part A

MSc Production Engineering & Operations Management

EECT055

Faculty of Engineering, Environment and Computing

School of Mechanical, Aerospace and Automotive Engineering

Academic Year:2021/2022

Please note: This specification provides a concise summary of the main features of the course and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if s/he takes full advantage of the learning opportunities that are provided.

We regularly review our course content, to make it relevant and current for the benefit of our students. For these reasons, course modules may be updated

More detailed information on the learning outcomes, content, and teaching, learning and assessment methods of each module can be found in the Module Information Directory (MID), student module guide(s) and the course handbook.

The accuracy of the information contained in this document is reviewed by the University and may be verified by the Quality Assurance Agency for Higher Education.
Coventry University's accreditation with CMI is currently ongoing for the relevant modules and is regularly reviewed and monitored by the CMI through their quality systems. Whilst Coventry University anticipates that these reviews will continue to be successful, if they were to be unsuccessful, the relevant module in this course would no longer be accredited and we would notify applicants and students of this change as soon as possible.

PART A Course Specification (Published Document)

MSc Production Engineering & Operations Management

1. Introduction

In our increasingly competitive global marketplace, modern manufacturing companies are being placed under even greater pressure to reduce the time and cost of producing high quality products. To respond effectively to these challenging market requirements, there is a growing demand for highly trained individuals with skills and expertise across engineering, business and management. This Master's course is designed to meet that need, developing multidisciplinary production engineers capable of designing lean and competitive manufacturing facilities and delivering operational excellence.

Ranked in the UK's top 15 universities for four years running*, Coventry University has a reputation for teaching excellence and proud history of educating engineers who work in manufacturing across many different industry sectors – automotive, mechanical, process industries (e.g. cement), aerospace, consumer products and complex engineering systems. Our extensive industry links include Jaguar Land Rover, Nissan, MIRA, BAE System and Unipart, with whom we partnered to launch the £32 million Institute for Advanced Manufacturing and Engineering (AME) – the UK's first 'Faculty on the floor'. Since leading the Industrial Revolution, Britain has remained a pioneer of new materials and manufacturing processes. Manufacturing contributes £6.7 trillion to the global economy and the UK is currently the 8th largest manufacturing nation in the world**, accounting for 54% of exports and directly employing 2.6 million people.

Manufacturing and Production engineering is recognized as highly specialized field for which there is a global shortage of highly skilled professionals. Combining manufacturing technology and engineering sciences with management, production engineers identify new and innovative solutions to optimize production processes in the smoothest, most judicious, economic and sustainable way. If students are seeking a management career in factory operations and require additional production knowledge, this course provides opportunities to work on real-world problems, such as optimization of production layouts, introduction of new products, production problem solving and product/process redesign for sustainability etc.

Our industry connections enable us to deliver a programme of exciting guest speakers, which in the past have included speakers from the BSI (British Standards Institution), Jaguar Land Rover, Rolls Royce and others from within the UK supply chain. Student's studies will be split between our £55m Engineering and Computing Building and the Institute for Advanced Manufacturing and Engineering (AME), based at Unipart's Coventry site where they can experience the latest technology on the manufacturing front line, which includes £3m of state-of-the-art robotic automation, forming, joining, analysis and simulation, metrology and product verification technology.

As part of this course you will undertake a professional development module which is currently accredited by the Chartered Management Institute (CMI). Upon successful completion of the module, you will gain the CMI Level 7 Certificate in Strategic Management and Leadership Practice at no additional cost.

Research informed teaching is the norm, especially with individual projects. The majority of academics in the school have considerable industry background. An Activity Led Learning (ALL) approach (student centered) is promoted within the course, with group work introduced to develop transferable skills helping the students to be industry ready.

They will learn to identify opportunities for the application of new materials and processes and evaluate appropriate production control system. At the same time, they will develop the skills to assess manufacturing issues with regards to strategic and financial implications, as well as work effectively in a team environment.

Upon completion of the course, graduates can expect to find employment within a wide range of manufacturing companies from Tier 1, 2 and 3 levels in a variety of engineering jobs ranging from production engineering, robotics, industrial automation, etc.

For students in today's competitive employment markets having work experience can significantly enhance employment prospects. For this reason, the course offers students the opportunity to undertake a work placement, extending the main provision to a two-year course. The work placement could be International or UK with a focus which may be industry or research. Following a selection process within the first semester and subject to securing an approved placement opportunity, students would move onto the two-year course. International students who are interested in a work placement will be supported in completing an application for extending their Tier 4 visa by international student support services. Upon completion of their placement, students will return to complete the course and the final project for the full award.

* source: The Guardian University Guide 2015 - 2018

** source: UN National Accounts Main Aggregates Database, (http://unstats.un.org/UNSD/snaama/dnlList.asp)

2 Available Award(s) and Modes of Study

Title of Award	Mode of attendance	UCAS Code	FHEQ Level
MSc in ***Production Engineering & Operations Management*** Fall-back award PG Diploma in Production Engineering and Operations Management PG Certificate in Production Engineering and Operations Management	FT 1 year (or 2 years with Work Placement)	N/A	7

3 Awarding Institution/Body	Coventry University
4 Collaboration	None
5 Teaching Institution and Location of delivery	Coventry University
6 Internal Approval/Review Dates	Date of approval/latest review: 07/2019 Date for next review: 2024/2025
7 Course Accredited by	Accredited by the Institute of Engineering and Technology (IET) on behalf of the Engineering Council as partially meeting the requirements for Further Learning for registration as a Chartered Engineer.
8 Accreditation Date and Duration	2015-2023
9 QAA Subject Benchmark Statement(s) and/or other external factors	Developed in line with **The Framework for Higher Education** Qualifications http://www.qaa.ac.uk/docs/qaa/quality-code/qualifications-frameworks.pdf according to the **Subject Benchmark for Engineering** statements http://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/sbs-engineering-15-masters.pdf the **Engineering Council UK-SPEC Third edition** http://www.engc.org.uk/engcdocuments/internet/Website/UK-SPEC%20third%20edition%20(1).pdf and Professional Bodies: The Institution of Engineering and Technology (IET) Institution of Mechanical Engineering (IMechE).
10 Date of Course Specification	February 2021
11 Course Director	Dr Ivan Arokiam

12 Outline and Educational Aims of the Course

The MSc in Production Engineering & Operations Management is a course for mechanical, manufacturing and other engineering related students interested in developing their manufacturing and production skills and applying them within the manufacturing sector. The course will endeavour to equip students with a comprehensive understanding of the modern manufacturing arena through the development of knowledge, skills and expertise in manufacturing related areas like automation, robotics, production line simulation, lean manufacturing, and new product development and introduction. The educational experience also aims to develop student's intellectual and personal skills and their capability to undertake a practical research study and publish the results. Students will have the opportunity to work within the Institute of Advanced Manufacturing and Engineering offers which will provide students with real-world problems and to support the development of the students' academic acumen as well as capability to find solutions to current and emerging industrial challenges.

The educational aims of the course are:

1. To provide an up to date curriculum which meets the needs of industry and the academic requirements of the Engineering Professional Bodies such as the Institution of Engineering and Technology (IET), allowing professional recognition
2. To create an educational environment that gives access to both academic and industrial experience with the application of modern manufacturing technologies, methods and processes for engineering students.
3. To mentor students to be professional in their outlook, be capable of team working, be effective communicators, and be able to exercise responsibility and sound management approaches.
4. To encourage students to demonstrate self-direction and originality in tackling and solving problems, and act autonomously in planning and implementing tasks at a professional or equivalent level
5. To provide an education consistent with the guidance from the Engineering Council on Accreditation of Higher Education Programmes (2016 revision) that would support the further learning to the level required to ultimately achieve Chartered Engineer status.

13 Course Learning Outcomes

A student who successfully completes the course will be able to;

1. Critically apply the key and emerging concepts of manufacturing and production technology in an industrial and global environment.
2. Solve complex problems both systematically and creatively through the application of methods, tools, techniques and software relevant to the manufacturing and business environment.
3. Critically and analytically link theory with practice and apply their knowledge and technical expertise to the analysis of engineering and manufacturing issues using modern and state-of-the-art manufacturing solutions
4. Evaluate and apply appropriate philosophies, tools, techniques and systems within the requisite legal and ethical frameworks associated with achieving operational excellence within a manufacturing and business environment.
5. Apply the necessary study and research skills to support the analytical, critical and reflective requirements of the written, oral and group working aspects of the assessments, group research project and individual research project.
6. Contribute to a team (multi-cultural) with the necessary planning, reviewing, empathy, adaptability, drive and leadership to achieve the required objectives, whilst observing work schedules and demonstrating a professional approach to written and/or oral presentations.
7. Critically evaluate the principles of developing and proposing strategy for leading strategic change

14 Course Structure and Requirements, Levels, Modules, Credits and Awards

The *MSc Production Engineering & Operations Management* is a 1-year full-time course, which will have both a September and January intake. The following table is a typical delivery pattern for this course based on the Teach-Teach-Project Cycle being used during the entry year. Personalised timetables will be issued to students prior to their course start date.

September intake	Module code and name		Credit level	Credit Value (Assessment credit)	Course Learning Outcomes
Semester 1 Modules	7061MAA	Management of quality	7	15 (15)	1,2,3,4,5
	7098MAA	Global Lean & Agile Operations	7	15 (15)	1,2,3,4,5
	7040MAA	Computer Aided Design	7	15 (15)	1,2,3,4,5
	7090MAA	Automation & robotics	7	15 (15)	1,2,34,5,6
Semester 2 Modules	7099MAA	Optimisation & Simulation	7	15 (15)	1,2,3,4,5
	7123MAA	Industry 4.0 and the Engineering Digital Environment	7	15 (15)	1,2,3,4
	7028MAA	Research Methods & Project Introduction	7	15 (15)	1,2,3,4,5
	7101MAA	Future and Advanced Manufacturing Materials and Technologies	7	15 (15)	1,2,3,4,5
Semester 3 Module	7030MAA	Masters Dissertation	7	50 (50)	1,2,3,4,5,6
	7051CRB	Leading Strategic Change through Creativity and Innovation	7	10 (10)	1,2,3,4,7

January intake	Module code and name		Credit level	Credit Value (Assessment credit)	Course Learning Outcomes
Semester 2 Modules	7061MAA	Management of quality	7	15 (15)	1,2,3,4,5
	7098MAA	Global Lean & Agile Operations	7	15 (15)	1,2,3,4,5
	7099MAA	Optimisation & Simulation	7	15 (15)	1,2,3,4,5
	7090MAA	Automation & robotics	7	15 (15)	1,2,34,5,6
Semester 3 Modules	7040MAA	Computer Aided Design	7	15 (15)	1,2,3,4,5
	7123MAA	Industry 4.0 and the Engineering Digital Environment	7	15 (15)	1,2,3,4,5,6
	7028MAA	Research Methods & Project Introduction	7	15 (15)	1,2,3,4,5
	7101MAA	Future and Advanced Manufacturing Materials and Technologies	7	15 (15)	1,2,3,4,5
Semester 1 Module	7030MAA	Masters Dissertation	7	50 (50)	1,2,3,4,5,6
	7051CRB	Leading Strategic Change through Creativity and Innovation	7	10 (10)	1,2,3,4,7

Work Placement

During semester 1, students who have expressed an interest in undertaking a work placement should begin the application process for placement opportunities. Students have the responsibility for securing a placement, but they will be supported throughout the application process by a specialist employer engagement members of the CU Talent Team. The university will work with employers to identify opportunities. Subject to securing a placement, the International Student Support team will work with international students to obtain UK study visa extensions. Visas required to work in other countries will be the responsibility of the student.

The course is structured so that students complete two semesters of taught modules and then spend three semesters on placement. During this time students would be enrolled onto modules 7102CEM Extended Masters Work Placement A, 7103CEM Extended Masters Work Placement B and 7104CEM Extended Masters Work Placement C. The modules are zero credit and do not contribute to the classification or name of the award but must be passed to complete the placement. Upon completion of the work placement, students are expected to return to Coventry to complete the final semester during which time they undertake their project module. Successful completion of the Work Placement is reflected in the final student transcript.

Credit level	Module Code	Title	Credit Value	Mandatory/ Optional	Course Learning Outcomes
Subject to securing an appropriate placement opportunity and fulfilling the selection requirements, students will be transferred to the two-year course and the Work Placement modules listed below are to be taken.					
7	7102CEM	Extended Masters Work Placement A	0	Optional	1,2,3,4,5,6
7	7103CEM	Extended Masters Work Placement B	0	Optional	1,2,3,4,5,6
7	7104CEM	Extended Masters Work Placement C	0	Optional	1.2.3.4.5.6

The work placement is to be taken over three semesters and prior to the final semester of the course.

Cascade of Awards:
The requirements for progression and awards:
Awards for Taught Masters programmes may be made with Distinction or with Merit as per the Academic Regulations.

MSc Production Engineering & Operations Management – The full curriculum (180 credits)

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PG Diploma (PG Dip) Production Engineering & Operations Management – 120 credits (to include modules (i.e. 7061MAA, 7098MAA, 7040MAA, 7090MAA, 7099MAA, 7123MAA, 7028MAA, 7101MAA, 7030MAA, 7051CRB)

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PG Certificate (PG Cert) Production Engineering & Operations Management – 60 credits (any modules, excluding 7030MAA and 7051CRB)

Students who successfully complete the module and meet the CMI learning outcomes will gain a Level 7 Certificate in Strategic Management and Leadership Practice based on the following CMI units: Developing Organisational Strategy (Unit 704); Leading Strategic Change (unit 705).

Students who successfully complete this module will be awarded Foundation Chartered Manager status and be able to use the designation 'fCMgr' after their name.

15 Criteria for Admission and Selection Procedure

To commence the full-time MSc **Production Engineering & Operations Management** course, applicants must:

- Be an honours graduate of Manufacturing, Mechanical, Mechatronic or related discipline (minimum 2:2 or higher), obtained from a recognised university/HE institution, or hold an equivalent qualification acceptable to Coventry University
- Hold IELTS 6.5 or equivalent if English is not the applicant's first language.

Students who do not fit with the above entry requirements can gain entry, but their degrees and experience will be assessed for appropriate content by the course director.

There is a Recognition of Prior Learning (RPL) process available which is in accordance with University regulations for taught postgraduate courses. The Recognition of Prior Experiential learning (RPEL) will only be awarded for achievements equivalent to master's level. RP(E)L will be assessed in line with University Regulations.

16 Academic Regulations and Regulations of Assessment

This course conforms to the standard University Regulations Mode R

17 Indicators of Quality Enhancement

The Course is managed by the School of Mechanical, Aerospace and Automotive Engineering Board of Study of the Faculty of Engineering, Environment and Computing.

The Programme Assessment Board (PAB) for the Faculty of Engineering, Environment and Computing is responsible for considering the progress of all students and making awards in accordance with both University and course-specific regulations.

The assurance of the quality of modules is the responsibility of the Boards of Study which contribute modules to the course.

External Examiners have the opportunity to moderate all assessment tasks and a sample of assessed work for each module. They will report annually on the course and/or constituent modules and their views are considered as part of the Course Quality Enhancement Monitoring (CQEM). Details of the CQEM process can be found on the Registry's web site.

Students are represented on the Student Forum, Board of Study and Faculty/School Board, all of which normally meet two or three times per year.
Student views are also sought through module and course evaluation questionnaires.

The QAA's Higher Education Review undertaken in February 2015 confirmed that Coventry University meets the UK expectations regarding the:

- Setting and maintenance of the academic standards of awards
- Quality of student learning opportunities
- Quality of the information about learning opportunities
- Enhancement of student learning opportunities

This Engineering Course has been designed in accordance with the:

- QAA Engineering Subject Benchmark statement [February 2015]
- UK Standards for Professional Engineering Competence [Third Edition]
- Engineering Council Accreditation of Higher Education Programmes

The School of Mechanical, Aerospace and Automotive Engineering

- The MSc Production Engineering & Operations Management course sits within the School of Mechanical, Aerospace and Automotive Engineering.
- The School works closely with the Institution of Mechanical Engineers and other professional bodies who inform on the curriculum.
- The School engages in a wide variety of research and attracts governmental funding
- The School engages with industry through advisory boards to inform curriculum design

The School conducts themed research within several Research Centres:

- The Institute for Future Transport and Cities
- The Centre for Fluid and Complex Systems
- The Centre for Manufacturing and Materials Engineering

18 Additional Information

Enrolled students have access to additional, key sources of information about the course and student support including:

- Student Handbook
- Course Handbook
- Module Guides
- Aula Course & Module Webs
- Module Information Directory
- EEC Student Portal https://share.coventry.ac.uk/students/EC/Pages/Home.aspx
- Coventry University Student Portal https://share.coventry.ac.uk/students/Pages/Index.aspx