Course Specification

Course Summary Information				
1	**Course Title**		BEng (Hons) Manufacturing Engineering with Foundation Year	
2	**Course Code**	**UCAS Code**	US0724F	1012
3	**Awarding Institution**		Birmingham City University	
4	**Teaching Institution(s)** (if different from point 3)			
5	**Professional Statutory or Regulatory Body (PSRB) accreditation** (if applicable)			

6	**Course Description**
	Manufacturing engineering is an essential feature in the vast arena that is manufacturing – an area that makes large contributions to the wealth of many countries throughout Europe and the rest of the world. It is a fast-changing scene where the competition between industrial organisations is keen and lean: only those companies prepared to apply modern philosophies and technologies will survive. BEng (Hons) / MEng Manufacturing Engineering has been developed to provide you with a good knowledge of a range of manufacturing principles. This course offers an exciting course of study that will prepare you for the rapidly developing field of manufacturing engineering and its supporting operational systems. Upon your graduation you will have the intellectual, creative and personal qualities necessary for undertaking a leadership role and a depth of knowledge that will enable the application of new and emerging technologies to the solution of manufacturing problems. **About the Foundation Year** The Foundation Year course option enables you to study for our BEng (Hons) degree over an extended full-time duration of four years by including a Foundation Certificate (year one of four). The Foundation Certificate provides a broad study course that underpins the follow-on degree. In order to progress to the next year of your degree, it is necessary to achieve a pass in all of the modules of the Foundation Certificate. This degree aims to develop engineers who can apply the principles of systems management, engineering and information technology to the solution of operational problems in industry and commerce. Manufacturing engineers are employed in a wide range of engineering, educational and commercial organisations. Graduates from the course are equipped to progress into positions of responsibility in relevant industry, or further programmes of specialised study or research. There are many challenges facing manufacturing industry. Companies now strive for competitive advantage and have to evaluate their performance more effectively in order to make best possible use of all resources: Talented, innovative, ambitious engineers are needed to give manufacturing organisations a competitive edge.

7	Course Awards		
7a	**Name of Final Award**	**Level**	**Credits Awarded**
	Bachelor of Engineering with Honours Manufacturing Engineering Bachelor of Engineering with Honours Manufacturing Engineering with Professional Placement Year	6 6	480 600
7b	**Exit Awards and Credits Awarded**		
	Foundation Certificate Engineering Certificate of Higher Education Manufacturing Engineering Diploma of Higher Education Manufacturing Engineering Bachelor of Engineering Manufacturing Engineering	3 4 5 6	120 240 360 420

8	Derogation from the University Regulations

9	Delivery Patterns		
Mode(s) of Study	**Location(s) of Study**	**Duration of Study**	**Code(s)**
Full Time	City Centre	4 years	US0724F
With Professional Placement Year	City Centre	5 years	US1148

10	Entry Requirements
	The admission requirements for this course are stated on the course page of the BCU website at https://www.bcu.ac.uk/ or may be found by searching for the course entry profile located on the UCAS website.

11	Course Learning Outcomes
	Science and Mathematics (SM)
SM1i	Knowledge and understanding of the scientific principles underpinning relevant technologies, and their evolution
SM2i	Knowledge and understanding of mathematics and an awareness of statistical methods necessary to support application of key engineering principles
SM1b	Knowledge and understanding of scientific principles and methodology necessary to underpin their education in Manufacturing engineering, to enable appreciation of its scientific and engineering context, and to support their understanding of relevant historical, current and future developments and technologies
SM2b	Knowledge and understanding of mathematical and statistical methods necessary to underpin their education in Manufacturing engineering and to enable them to apply mathematical and statistical methods, tools and notations proficiently in the analysis and solution of engineering problems
SM3b	Ability to apply and integrate knowledge and understanding of other engineering disciplines to support study of their Manufacturing engineering discipline
	Engineering Analysis (EA)
EA1i	Ability to monitor, interpret and apply the results of analysis and modelling in order to bring about continuous improvement
EA2i	Ability to apply quantitative methods in order to understand the performance of systems and components
EA3i	Ability to use the results of engineering analysis to solve engineering problems and to recommend appropriate action
EA4i	Ability to apply an integrated or systems approach to engineering problems through know-how of the relevant technologies and their application
EA1b	Understanding of engineering principles and the ability to apply them to analyse key engineering processes
EA2	Ability to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques
EA3b	Ability to apply quantitative and computational methods in order to solve engineering problems and to implement appropriate action
EA4b	Understanding of, and the ability to apply, an integrated or systems approach to solving engineering problems
	Design (D)
D1i	Be aware of business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics
D2i	Define the problem identifying any constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues; intellectual property; codes of practice and standards
D3	Work with information that may be incomplete or uncertain and be aware that this may affect the design
D4i	Apply problem-solving skills, technical knowledge and understanding to create or adapt designs solutions that are fit for purpose including operation, maintenance, reliability etc.
D5i	Manage the design process, including cost drivers, and evaluate outcomes
D6	Communicate their work to technical and non-technical audiences
D1	Understand and evaluate business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics
D2	Investigate and define the problem, identifying any constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues; intellectual property; codes of practice and standards.
D3b	Work with information that may be incomplete or uncertain and quantify the effect of this on the design

D4	Apply advanced problem-solving skills, technical knowledge and understanding, to establish rigorous and creative solutions that are fit for purpose for all aspects of the problem including production, operation, maintenance and disposal
D5	Plan and manage the design process, including cost drivers, and evaluate outcomes
	Economic, Legal, Social, Ethical and Environmental Context (EL)
EL1	Understanding of the need for a high level of professional and ethical conduct in engineering and a knowledge of professional codes of conduct
EL2	Knowledge and understanding of the commercial, economic and social context of engineering processes
EL3i	Knowledge of management techniques that may be used to achieve engineering objectives
EL4i	Understanding of the requirement for engineering activities to promote sustainable development
EL5	Awareness of the relevant legal requirements governing engineering activities, including personnel, health & safety, contracts, intellectual property rights, product safety and liability issues
EL6i	Awareness of risk issues, including health & safety, environmental and commercial risk
EL3	Knowledge and understanding of management techniques, including project management, that may be used to achieve engineering objectives
EL4	Understanding of the requirement for engineering activities to promote sustainable development and ability to apply quantitative techniques where appropriate
EL6	Knowledge and understanding of risk issues, including health and safety, environmental and commercial risk, and of risk assessment and risk management techniques
	Engineering Practice (P)
P1i	Knowledge of contexts in which engineering knowledge can be applied (e.g. operations and management, application and development of technology, etc.)
P2i	Understanding of and ability to use relevant materials, equipment, tools, processes, or products
P3i	Knowledge and understanding of workshop and laboratory practice
P4i	Ability to use and apply information from technical literature
P6i	Ability to use appropriate codes of practice and industry standards
P7	Awareness of quality issues and their application to continuous improvement
P11i	Awareness of team roles and the ability to work as a member of an engineering team
P1	Understanding of contexts in which engineering knowledge can be applied (e.g. operations and management, application and development of technology, etc.)
P2	Knowledge of characteristics of particular materials, equipment, processes or products
P3	Ability to apply relevant practical and laboratory skills
P4	Understanding of the use of technical literature and other information sources
P5	Knowledge of relevant legal and contractual issues
P6	Understanding of appropriate codes of practice and industry standards
P8	Ability to work with technical uncertainty
P11	Understanding of, and the ability to work in, different roles within an engineering team
	Additional General Skills (G)
G1	Apply their skills in problem solving, communication, information retrieval, working with others and the effective use of general IT facilities
G2	Plan self-learning and improve performance, as the foundation for lifelong learning/CPD
G3i	Plan and carry out a personal programme of work
G4i	Exercise personal responsibility, which may be as a team member

12	Course Requirements

12a

Level 3:

In order to complete this course a student must successfully complete all the following CORE modules (totalling 120 credits):

Module Code	Module Name	Credit Value
ENG3009	Mathematics for Engineers 1	20
ENG3010	Engineering Science 1	20
ENG3011	Practical Skills 1	20
ENG3012	Mathematics for Engineers 2	20
ENG3013	Engineering Science 2	20
ENG3014	Practical Skills 2	20

Level 4:

In order to complete this course a student must successfully complete all the following CORE modules (totalling 120 credits):

Module Code	Module Name	Credit Value
ENG4091	Engineering Principles 1	20
ENG4124	Mathematical Modelling 1	20
ENG4093	Engineering Practice	20
ENG4094	Engineering Principles 2	20
ENG4125	Mathematical Modelling 2	20
ENG4096	Integrated Engineering Project	20

Level 5:

In order to complete this course a student must successfully complete all the following CORE modules (totalling 120 credits):

Module Code	Module Name	Credit Value
ENG5103	Operations Systems	20
ENG5104	Quality Systems	20
ENG5100	Design and Materials	20
ENG5097	Leading Engineering Endeavour	20
ENG5101	Design and Manufacture	20
ENG5105	Manufacturing Automation and Control	20

Professional Placement Year (optional)

In order to qualify for the award of Bachelor of Engineering with Manufacturing Engineering with Professional Placement Year, a student must successfully complete all of the modules listed as well as the following Level 5 module:

Module Code	Module Name	Credit Value
PPY5004	Professional Placement	120

Level 6:

In order to complete this course a student must successfully complete all the following CORE modules (totalling 120 credits):

Module Code	Module Name	Credit Value
ENG6073	Advanced Manufacturing	20
ENG6072	Advanced Materials	20
ENG6071	Operations Management	20
ENG6070	Product Lifecycle Management	20
ENG6200	Individual Honours Project	40

12b Structure Diagram

Level 3

Practical Skills 1 (ENG3011)	Engineering Science 1 (ENG3010)	Mathematics for Engineers 1 (ENG3009)	Sem 1
Practical Skills 2 (ENG3014)	Engineering Science 2 (ENG3013)	Mathematics for Engineers 2 (ENG3012)	Sem 2

Level 4

Engineering Practice (ENG4093)	Engineering Principles 1 (ENG4091)	Mathematical Modelling 1 (ENG4124)	Sem 1
Integrated Engineering Project (ENG4096)	Engineering Principles 2 (ENG4094)	Mathematical Modelling 2 (ENG4125)	Sem 2

Level 5

Operations Systems (ENG5103)	Quality Systems (ENG5104)	Design and Materials (ENG5100)	Sem 1
Leading Engineering Endeavour (ENG5097)	Manufacturing Automation and Control (ENG5105)	Design and Manufacture (ENG5101)	Sem 2

Optional

Professional Placement Year / Industrial Placement

Level 6

Individual Honours Project (ENG6200)	Operations Management (ENG606071)	Advanced Materials (ENG6072)	Sem 1
	Product Lifecycle Management (ENG6070)	Advanced Manufacturing (ENG6073)	Sem 2

13 Overall Student Workload and Balance of Assessment

Overall student *workload* consists of class contact hours, independent learning and assessment activity, with each credit taken equating to a total study time of around 10 hours. While actual contact hours may depend on the optional modules selected, the following information gives an indication of how much time students will need to allocate to different activities at each level of the course.

- *Scheduled Learning* includes lectures, practical classes and workshops, contact time specified in timetable
- *Directed Learning* includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning
- *Private Study* includes preparation for exams

The *balance of assessment* by mode of assessment (e.g. coursework, exam and in-person) depends to some extent on the optional modules chosen by students. The approximate percentage of the course assessed by coursework, exam and in-person is shown below.

Level 3

Workload

40% time spent in timetabled teaching and learning activity

Activity	Number of Hours
Scheduled Learning	480
Directed Learning	336
Private Study	384
Total Hours	1200

Balance of Assessment

Assessment Mode	Percentage
Coursework	30%
Exam	47%
In-Person	23%

Level 4

Workload

44% time spent in timetabled teaching and learning activity

Activity	Number of Hours
Scheduled Learning	258
Directed Learning	336
Private Study	336
Total Hours	1200

Balance of Assessment

Assessment Mode	Percentage
Coursework	33%
Exam	55%
In-Person	12%

Level 5

Workload

28% time spent in timetabled teaching and learning activity

Activity	Number of Hours
Scheduled Learning	336
Directed Learning	32
Private Study	832
Total Hours	1200

Balance of Assessment

Assessment Mode	Percentage
Coursework	50%
Exam	28%
In-Person	22%

Level 6

Workload

18% time spent in timetabled teaching and learning activity

Activity	Number of Hours
Scheduled Learning	232
Directed Learning	224
Private Study	744
Total Hours	1200

Balance of Assessment

Assessment Mode	Percentage
Coursework	71%
Exam	0
In-Person	29%