Course Specification

Course Summary Information				
1	**Course Title**		BEng (Hons) Mechanical Engineering with Foundation Year	
2	**BCU Course Code**	**UCAS Code**	US0665F	H308
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**
	Our Mechanical Engineering BEng (Hons) degree will equip you with a range of advanced analytical and design skills. You'll work on industry-standard analytical tools as well as explore other facilities such as our test cell and exhaust analysis equipment. **What's covered in the course?** Our BEng Mechanical Engineering will develop you as a skilled engineer capable of undertaking mechanical engineering tasks within and across organisations. The course focuses on the importance of sustainable futures and the Government's STEM agenda, in order to give you the knowledge and attributes you will need to thrive in this ever-changing industry. Our engineering courses focus on project-based activities, giving you lots of opportunity to work in teams on projects from design to implementation. This will give you practical experience of applying engineering science to real world problems, working in multidisciplinary teams to develop your interpersonal skills, and prepare you for a key aspect of modern engineering practice. Problem solving and project management are key skills for an engineer, and our focus on application of skills will help to improve your skills in these highly sought after areas. During your studies, you will use the latest tools and technologies, developing new skills at an advanced level. The course will encourage your creative thinking and develop your engineering leadership skills. Building on a foundation of the generic skills required by tomorrow's engineers, you will also explore the wider context of engineering, as well as the application of advanced engineering principles to solve problems through research and development. You'll engage in independent study and systematic enquiry at an advanced level and take responsibility for the conclusions drawn from it. You will have lots of opportunity to apply industry-standard modelling and simulation techniques to the analysis, specification and design of mechanical engineering systems so that you are able to apply your knowledge and theory to a practical situation. In this way, we make sure you are ready to step straight into employment.

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

8	Derogation from the University Regulations
	1. For modules with more than one item of assessment, students must achieve a minimum of 30% (undergraduate) or 40% (postgraduate) in each item of assessment in order to pass the module. 2. Compensation of marginal failure in up to 20 credits is permitted at each level. 3. Condonement of failed modules is not permitted.

9	Delivery Patterns		
Mode(s) of Study	**Location(s) of Study**	**Duration of Study**	**Code(s)**
Full Time	City Centre	4 years	US0665F
With Professional Placement Year	City Centre	5 years	US1134

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

11	**Course Learning Outcomes**
	Science and Mathematics
1	Knowledge and understanding of the scientific principles underpinning relevant technologies, and their evolution.
2	Knowledge and understanding of mathematics and an awareness of statistical methods necessary to support application of key engineering principles.
3	Knowledge and understanding of scientific principles and methodology necessary to underpin their education in Mechanical engineering, to enable appreciation of its scientific and engineering context, and to support their understanding of relevant historical, current and future developments and technologies.
4	Knowledge and understanding of mathematical and statistical methods necessary to underpin their education in Mechanical engineering and to enable them to apply mathematical and statistical methods, tools and notations proficiently in the analysis and solution of engineering problems.
5	Ability to apply and integrate knowledge and understanding of other engineering disciplines to support study of their Mechanical engineering discipline.
	Engineering Analysis
6	Ability to monitor, interpret and apply the results of analysis and modelling in order to bring about continuous improvement.
7	Ability to apply quantitative methods in order to understand the performance of systems and components.
8	Ability to use the results of engineering analysis to solve engineering problems and to recommend appropriate action.
9	Ability to apply an integrated or systems approach to engineering problems through know-how of the relevant technologies and their application.
10	Understanding of engineering principles and the ability to apply them to analyse key engineering processes.
11	Ability to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques.
12	Ability to apply quantitative and computational methods in order to solve engineering problems and to implement appropriate action.
13	Understanding of, and the ability to apply, an integrated or systems approach to solving engineering problems.
	Design
14	Be aware of business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics.
15	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.
16	Work with information that may be incomplete or uncertain and be aware that this may affect the design.
17	Apply problem-solving skills, technical knowledge and understanding to create or adapt designs solutions that are fit for purpose including operation, maintenance, reliability etc.
18	Manage the design process, including cost drivers, and evaluate outcomes.
19	Communicate their work to technical and non-technical audiences.
20	Understand and evaluate business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics.

21	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.
22	Work with information that may be incomplete or uncertain and quantify the effect of this on the design.
23	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.
24	Plan and manage the design process, including cost drivers, and evaluate outcomes.
	Economic, Legal, Social, Ethical and Environmental Context
25	Understanding of the need for a high level of professional and ethical conduct in engineering and a knowledge of professional codes of conduct.
26	Knowledge and understanding of the commercial, economic and social context of engineering processes.
27	Knowledge of management techniques that may be used to achieve engineering objectives.
28	Understanding of the requirement for engineering activities to promote sustainable development.
29	Awareness of the relevant legal requirements governing engineering activities, including personnel, health & safety, contracts, intellectual property rights, product safety and liability issues.
30	Awareness of risk issues, including health & safety, environmental and commercial risk.
31	Knowledge and understanding of management techniques, including project management that may be used to achieve engineering objectives.
32	Understanding of the requirement for engineering activities to promote sustainable development and ability to apply quantitative techniques where appropriate.
33	Knowledge and understanding of risk issues, including health and safety, environmental and commercial risk, and of risk assessment and risk management techniques.
	Engineering Practice
34	Knowledge of contexts in which engineering knowledge can be applied (e.g. operations and management, application and development of technology, etc.)
35	Understanding of and ability to use relevant materials, equipment, tools, processes, or products.
36	Knowledge and understanding of workshop and laboratory practice.
37	Ability to use and apply information from technical literature.
38	Ability to use appropriate codes of practice and industry standards.
39	Awareness of quality issues and their application to continuous improvement.
40	Awareness of team roles and the ability to work as a member of an engineering team.
41	Understanding of contexts in which engineering knowledge can be applied (e.g. operations and management, application and development of technology, etc.)
42	Knowledge of characteristics of particular materials, equipment, processes or products.
43	Ability to apply relevant practical and laboratory skills.
44	Understanding of the use of technical literature and other information sources.
45	Knowledge of relevant legal and contractual issues.
46	Understanding of appropriate codes of practice and industry standards.
47	Ability to work with technical uncertainty.
48	Understanding of, and the ability to work in, different roles within an engineering team.

	Additional General Skills
49	Apply their skills in problem solving, communication, information retrieval, working with others and the effective use of general IT facilities.
50	Plan self-learning and improve performance, as the foundation for lifelong learning/CPD.
51	Plan and carry out a personal programme of work.
52	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
ENG3014	Practical Skills 2	20
ENG3013	Engineering Science 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
ENG4093	Engineering Practice	20
ENG4124	Mathematical Modelling 1	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
ENG5098	Thermodynamics and Fluid Mechanics	20
ENG5100	Design and Materials	20
ENG5099	Numerical Analysis	20
ENG5097	Leading Engineering Endeavour	20
ENG5102	Mechanical Science	20
ENG5101	Design and Manufacture	20

Professional Placement Year (optional)

In order to qualify for the award of Bachelor of Engineering, Electronic 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
TBC	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
ENG6075	Computer Aided Engineering	20
ENG6074	Dynamics and Control	20
ENG6084	Advanced Mechanics	20
ENG6079	Thermodynamics and Energy Systems	20
ENG6200	Individual Honours Project	40

12b Structure Diagram

Programme Module Grid Full-Time Mechanical Engineering

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			
Numerical Analysis (ENG5099)	Thermodynamics and Fluid Mechanics (ENG5098)	Design and Materials (ENG5100)	Sem 1
Leading Engineering Endeavour (ENG5097)	Mechanical Science (ENG5102)	Design and Manufacture (ENG5101)	Sem 2
Optional			
Professional Placement Year/ Industrial Placement			All Year
Level 6			
Individual Honours Project (ENG6200)	Dynamics and Control (ENG6074)	Computer Aided Engineering (ENG6075)	Sem 1
	Advanced Mechanics (ENG6084)	Thermodynamics and Energy Systems (ENG6079)	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

% time spent in timetabled teaching and learning activity

Activity	Number of Hours
Scheduled Learning	480
Directed Learning	0
Private Study	720
Total Hours	1200

Balance of Assessment

Assessment Mode	Percentage
Coursework	37%
Exam	47%
In-Person	17%

Level 4

Workload

% time spent in timetabled teaching and learning activity

Activity	Number of Hours
Scheduled Learning	432
Directed Learning	0
Private Study	768
Total Hours	1200

Balance of Assessment

Assessment Mode	Percentage
Coursework	30%

Exam	47%
In-Person	23%

Level 5

Workload

% time spent in timetabled teaching and learning activity

Activity	Number of Hours
Scheduled Learning	336
Directed Learning	0
Private Study	864
Total Hours	1200

Balance of Assessment

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

Level 6

Workload

% time spent in timetabled teaching and learning activity

Activity	Number of Hours
Scheduled Learning	210
Directed Learning	11
Private Study	979
Total Hours	1200

Balance of Assessment

Assessment Mode	Percentage
Coursework	43%
Exam	45%
In-Person	12%