

Birmingham City University
Faculty of Technology, Engineering and the
Environment

Undergraduate Programme

Programme Specification

BEng (Hons) Mechanical Engineering

Date of Course Approval/Review	Version Number	Version Date
10 May 2011	1.01	June 2011

Definitive Documents and Version Control

This document has a version number and reference date in the footer.

The process leading to the introduction of new courses, major changes to courses, and minor changes to courses and modules follows the appropriate formal procedure as described in the Faculty's Academic Procedures and Quality Manual.

On the front sheet of this document, the date of course approval/review refers to the most recent full approval/review event. If later, the version date will be that of the most recent subsequent event at which formal consideration was given to course changes.

Further details about the course and document development may be obtained from minutes of the approval or minor changes board. A history of the document since the last full approval/review event is summarised in the table below and further information relating to past versions can be obtained from the Faculty Office.

Version	Event	Date of event	Authorised by
1.0	Approval meeting	30 March 2011	Associate Dean
1.01	Re-approval – meeting conditions	June 2011	Panel Chair

Programme Specification
BEng(Hons) Mechanical Engineering

September 2011

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 advantage of the learning opportunities that are provided. More detail on the specific learning outcomes, indicative content and the teaching, learning and assessment methods of each module can be found in the Module Specifications and the Student Handbook.

The accuracy of the information contained in this document is reviewed by the University and may be checked within independent review processes undertaken by the Quality Assurance Agency.

Awarding Institution / Body:	Birmingham City University
Teaching Institution:	Birmingham City University
Interim Awards and Final Award:	BEng (Hons) BEng Dip HE Cert HE
Programme Title:	Mechanical Engineering
Main fields of Study:	Engineering Design, Mathematics, Engineering Analysis, Engineering Science, Management, Environmental Studies, Materials & Manufacture Engineering Practice;
Modes of Study:	FT, Part-Time, Sandwich
Language of Study:	English
UCAS Code:	H300
JACS Code:	

Professional Status of the programme (if applicable):

The BEng (Hons) in Mechanical Engineering course is accredited separately by the Institution of Mechanical Engineers (IMechE) and the Institution of Engineering and Technology (IET) as satisfying academic requirements towards Chartered Engineer status (CEng).

Relevant subject benchmark statements and other external reference points used to inform programme outcomes:

QAA Benchmarks, UK SPEC General and Specific Outcomes as specified by the IMechE and the IET

Programme philosophy and aims

The BEng (Hons) Mechanical Engineering course aims to provide a stimulating environment in which the students' interest in mechanical engineering is fostered by a modern and flexible teaching and learning strategy. The curriculum satisfies the requirements of the UK SPEC and its delivery is characterised by the application of industrial-standard modelling and simulation systems for analysis and design. This course is structured so that its themes have a direct relevance to industry's current and expected future needs. Successful graduates will be highly employable with the intellectual, technical and personal qualities necessary to implement new technologies creatively as professional engineers.

- A stimulating and rewarding learning experience which develops knowledge and application skills in stress analysis, energy, dynamics and control, design and management relevant to mechanical engineering industries;
- A focus on the application of industry-standard modelling and simulation techniques for the analysis, specification and design of mechanical engineering systems;
- An understanding of commercial, legal, ethical and environmental factors associated with mechanical engineering;
- Encouragement to develop transferable and marketable skills and knowledge applicable to a variety of employment opportunities within the mechanical engineering and associated industries;
- An opportunity to acquire skills for continuing professional development.
- A qualification that satisfies accreditation requirements of relevant professional bodies.

Intended learning outcomes and the means by which they are achieved and demonstrated:

Learning Outcomes

1. Knowledge and Understanding

On completion of the course the students should possess Knowledge and Understanding of:

- KU1. scientific principles and theories that underpin mechanical engineering disciplines;
- KU2. engineering materials and components;
- KU3. design processes and methods;
- KU4. analytical and mathematical modelling techniques used to create solutions to mechanical engineering problems;
- KU5. computer aided techniques for modelling, simulation and design of mechanical systems;
- KU6. organisational, teamwork and management practices in industries based on mechanical engineering;
- KU7. commercial, ethical, regulatory and environmental factors that influence the choice of solutions to engineering problems.

2. Intellectual Skills

On completion of the course the students should be able to

- IS1. argue rationally and draw independent conclusions based on a rigorous, analytical and critical approach;
- IS2. critically appraise the usefulness of new technologies and changes in engineering practice;
- IS3. design a system, component or process to meet a specification;
- IS4. develop innovative designs and solutions taking into account commercial risks and constraints, intellectual property rights and contractual issues, and environmental impact;
- IS5. apply mathematical and/or computer based modelling to analyse new designs and generate solutions to mechanical engineering problems;
- IS6. critically appraise the results of mathematical and computer based analyses.

3. Practical Skills

On completion of the course the students should be able to

- PS1. demonstrate practical engineering skills to use appropriate laboratory and workshop equipment;
- PS2. use computer based systems for modelling and design of mechanical systems;
- PS3. apply primary and secondary research methods using a wide range of sources of information and appropriate methodologies in the management of engineering projects;
- PS4. apply industry codes of practice and standards.

4. Transferable/Key Skills

On completion of the course the students should be able to

- TS1. participate effectively in group working activities;
- TS2. manage time and prioritise workloads;
- TS3. make effective oral and written presentations;
- TS4. access and make appropriate use of numerical and statistical information;
- TS5. make effective use of information and communications technologies, including word and data processing packages, the internet and electronic information retrieval systems;
- TS6. reflect on progress and plan for personal and career development.

Learning teaching, and assessment methods used

Topics will be introduced by means of lectures and tutorials with an emphasis on interactive learning. These will be consolidated through problem solving tutorials and where appropriate, computer applications and self directed study.

The scheme of work in all modules will be issued at the commencement of the course and will contain a detailed plan of the work covered each week

The delivery of materials for this course will be through lecture/tutorial sessions. Any lab-based work will consist of a mix of lecture and practical

work on computers.

Tutor led sessions will be supplemented by access to online learning via the *Moodle Virtual Learning Environment*.

On-line delivery will be in the form a number of different formats including video lectures, multiple-choice questions, quizzes, forums and FAQs. More traditional access to notes, summative and formative assessments will also be provided via the VLE.

The use of the VLE will provide the student with the opportunity to access and revisit material such as Video Lectures and Multiple choice questions for revision and reinforcement.

Summative Assessments will take a variety of formats including written assignments, written examinations, presentations and in-class testing.

Formative Assessments will be a key element by which students can gauge their own performance and engagement with the course. These will comprise formative practical test, multiple choice questions and in-class practical exercises.

Additional support will be organised and provided throughout the course with additional workshops and one-to-one teaching provided by the Learning Centre and/or Tutors if necessary.

Programme structure

The structure of the course is shown in the diagram below.

BEng (Hons) Mechanical Engineering (Full Time)

Level 6				
Individual Project (45)	Power & Energy Systems (30)	Advanced Engineering Analysis (30)	Dynamics & Control (15)	
Level 5				
Sustainable Design & Manufacture (30)	Mechanics & Dynamics (30)	Environmental studies Thermofluids (30)	Management of Engineering & Technology Innovation (15)	Numerical Analysis (15)
Level 4				
Engineering Design (30)	Applied Mechanics & Dynamics (30)	Applied Thermodynamics (15)	Materials & Manufacture (15)	Mathematical Analysis (30)

BEng (Hons) Mechanical Engineering (Part Time)

P/T Yr5 (F/T Yr3)	45 Credits Individual Project	30 Credits Power and Energy Systems	
Summer	15 Credits Management of Engineering & Technology Innovation (Can be taken in Year 1/4)		
P/T Yr4 (F/T Yr2)	30 Credits Environmental Studies and Thermodynamics	30 Credits Advanced Engineering Analysis	15 Credits Dynamics and Control
P/T Yr3 (F/T Yr2)	30 Credits Mechanics and Dynamics	30 Credits Sustainable Design and Manufacturing	15 Credits Numerical Analysis
Normal entry point for holders of a relevant HNC or equivalent			
P/T Yr2 (F/T Yr1)	30 Credits Engineering Design	15 Credits Materials and Manufacture	15 Credits Applied Thermodynamics
P/T Yr1 (F/T Yr1)	30 Credits Applied Mechanics and Dynamics	30 Credits Mathematical Analysis	15 Credits Management of Engineering & Technology Innovation (Can be taken as a Summer School)

Full-time students who are currently in their second year will proceed on to the final year of the existing programmes; full-time students who are currently in their first year would proceed onto the second year of the revised programmes. Existing part-time students on year 1, 2 or 3 of the 5 year programme will proceed to the revised programme. Existing part time students on their current fourth year of the five year programme will study on their existing programme. All new full-time and part-time students will be admitted to the new versions of the courses.

Support for Learning including Personal Development Planning (PDP)

Students are encouraged to identify and, with guidance, to reflect on their own learning needs and are offered the following support as appropriate to meet those needs:

- an induction programme dealing with orientation and the dissemination of essential information, including an introduction to PDP;
- a dedicated Learning Centre with open access learning materials, resources and full-time staff specialising in a variety of support areas;
- a Student Handbook, containing information relating to the University, Faculty, course and modules;
- access to administrative staff and to academic staff, including the Tutors, Course Director and Programme Manager, at reasonable times;
- support staff to advise on pastoral and academic issues, and to offer support and assistance with the keeping of Students' Progress Files;
- access to Faculty resources, including a range of IT equipment and the services of, and guidance from, IT support staff;
- access to the University's Student Services, including those offered by the careers service, financial advisers, medical centre, disability service, crèche, counselling service and chaplaincy;
- resources for Professional Development Planning (PDP) to enable reflection on learning, performance and achievement and to plan personal, educational and career development. The university offers a range of on-line courses (www.moodle.bcu.ac.uk) to support PDP topics including: Reflection, Career & Employability, Action Planning, Self Awareness and Self Employment.

Criteria for admission

Candidates must satisfy the general admission requirements of the programme.

The current admission requirements can be found under the 'Entry Requirements' tab of the web page for this course.

Methods for evaluation and enhancement of quality and standards including listening and responding to views of students

The following faculty committees are involved in evaluation and enhancement of quality, standards and student experience: Board of Studies, Faculty Board, Learning and Teaching Committee, Academic Standards and Quality Enhancement Committee.

Review and evaluation processes in which students are involved include annual course and module reviews, course review and re-approval events, professional body accreditation visits and external examiner visits. Mechanisms for student input include meetings with course tutors, feedback questionnaires, faculty and university student satisfaction surveys and representation on the faculty committees referred to above.

External examiners are members of examination boards and their remit includes meeting students and monitoring and reporting on academic standards.