

**Programme Specification**

**Programme Title: BEng (Hons) in Mechanical Engineering**

<b>Awarding Institution:</b>	The University of Bolton		
<b>Teaching Institution:</b>	University of Bolton		
<b>Division and/or Faculty/Institute:</b>	Faculty of Advanced Engineering & Sciences		
<b>Professional accreditation</b>	Professional body	Professional body URL	Status of graduates
<b>Final award(s):</b>	BEng(Honours)		
<b>Interim award(s)</b>			
<b>Exit or Fallback award(s)</b>	Diploma of Higher Education in Mechanical Engineering Certificate of Higher Education in Mechanical Engineering		
<b>Programme title(s)</b>	Mechanical Engineering		
<b>UCAS Code</b>	H300		
<b>JACS Code</b>	H300		
<b>University Course Code(s)</b>	Full time - ENG0004 Part-time – ENG5005		
<b>QAA Benchmark Statement(s)</b>	Engineering (2010)  UK Standards for Professional Engineering Competences (UK-SPEC): The Accreditation of Higher Education Programmes (2010).		
<b>Other internal and external reference points</b>	QAA Academic Infrastructure, including the Framework for Higher Education Qualifications and the Code of Practice.  UK Quality Code for Higher Education  University of Bolton awards framework		

<b>Language of study</b>	English
<b>Mode of study and normal period of study</b>	Full Time – 3 years Part Time – 4.5 years (with possible exemptions for prior learning at HE4)
<p><b>Admissions criteria</b></p> <p>You should have a minimum of two GCE A2-level passes (or equivalent), including Maths and a Science; and five GCSEs at grade C or above (or equivalent), including English Language.</p> <p>If English is not your first language you will need to complete a Secure English Language Test at IELTS 6.0 or equivalent.</p>	
<p><b>Additional admissions matters</b></p> <p>Non-standard and mature student entry to Part-Time or Full-Time:</p> <ul style="list-style-type: none"> <li>- Certificate (HND/C) will be considered for direct entry to HE5 Level given good results in Level 4 Mathematics and Science.</li> <li>- Engineering related work experience and interview (essential for those applying with non-standard entry routes qualifications).</li> <li>- Foundation Degree may be considered for entry to HE5</li> </ul> <p>Interviews or informal discussions may be used for Part Time entry students to assess suitability or entry point onto the programme.</p> <p>The first two years of the programme are common to both the BEng (Hons) and MEng routes; hence, given exceptional academic performance at HE4 and into HE5, students may have the opportunity to be counselled for transfer from the BEng (Hons) to the MEng route.</p>	
<p><b>Fitness to practise declaration</b></p> <p>Not applicable</p>	
<p><b>Aims of the programme</b></p> <p>This BEng (Hons) in Mechanical Engineering (PT/FT) route is one of four engineering routes within an integrated Masters/BEng (Hons) programme of study. The broad aims of this programme are to:</p> <ul style="list-style-type: none"> <li>• Educate and develop prospective mechanical engineers to the academic requirements (UK Standards for Professional Engineering Competences (UK-SPEC)) leading towards Chartered Engineer status with the Institute of Mechanical Engineers (IMechE).</li> </ul>	

- Prepare prospective engineers for meaningful professional employment in the Mechanical Engineering sector of industry.
- Prepare prospective engineers for a fruitful and responsible life in society and their community.
- Complete a programme of professional development and training (PDP).
- Provide an integrated programme to achieve delivery efficiency and integration of subject matter. Hence, this Mechanical route integrates with the Automobile routes and BEng(Hons).

The principal aims of the programme are that it will produce graduates that are:

- motivated to practise engineering
- enthusiastic, articulate, questioning and open-minded
- recognised nationally and internationally as highly competent engineering graduates
- aware of the financial, moral, legal, economic, environmental and cultural constraints in which they operate
- aware of current management practice
- committed to and prepared for lifelong learning

In doing so, the programme aims to:

- establish the relevance of engineering to real world problems
- use design as an integrative element in the whole of the degree
- incorporate health and safety, environmental issues and sustainability
- ensure content matches the needs and developments in modern industry and society
- encourage reflection on learning experiences
- develop modelling and analytical skills and the application of those skills
- involve breadth and depth of coverage to meet the needs of industry and society in technical, management and business topics
- encourage and develop a process of Personal Development Planning (PDP)

#### **Distinctive features of the programme**

- A purpose-designed route ready for accreditation with IMechE for routes towards satisfying CEng registration that is internationally recognised.
- The entire first year cohort joins the IMechE as Affiliate members.
- The Project is recognised and supported through grants by Royal Academy of Engineering as following the Engineering Gateway programme endorsed by the Engineering Council.
- Project-based learning (PBL) at every stage, either in groups or as individuals, linked to ePDP.
- 'Hands-on' Project type modules at all levels of the programme for assimilation and integration of topics and material.
- Industrial visits.
- Open access and skills development in quality CAD, Analysis, Optimisation, CAM and CAE software.

- The IMechE Design Challenge for Undergraduate Engineers
- The British Model Flying Association's University Challenge
- Opportunity to participate in the IMechE/SAE "Formula Student" challenge
- Individual and group Industrial 'live' projects.

## **Programme learning outcomes**

### UK-SPEC General Learning Outcomes:

On completion of this programme you will:

#### **Understanding & Knowledge**

- demonstrate knowledge and understanding of facts, concepts and theories and underpinning mathematics and science. (K1)
- have an appreciation of the wider multidisciplinary engineering context and its underlying principles (K2)
- appreciate the social, environmental, ethical, economic and commercial considerations affecting the exercise of their engineering judgement (K3)

#### **Intellectual Ability**

- apply quantitative science and engineering tools to analyse problems (C1)
- be able to demonstrate creative and innovative ability in the synthesis of solutions and in formulating design (C2)
- be able to comprehend the broad picture and thus work with an appropriate level of detail (C3)

#### **Practical Skills**

- possess practical engineering skills acquired through, for example, work carried out in laboratories and workshops, in industry through supervised work experience, in individual and group project work, in design work and in the development and use of computer software in design, analysis and control (P1)
- demonstrate group working and participation skills in a major project (P2)

#### **General Transferable Skills**

- have developed transferable skills including problem solving, communication and working with others, as well as the effective use of general IT facilities and information retrieval skills that will be of value in a wide range of situations (T1)
- apply the QCA Higher Level Key Skills and include problem solving, communication, and working with others, as well as the effective use of general IT facilities and information retrieval skills (T2)
- develop PDP and self learning skills. (T3)

(See General Outcomes mapping matrix below)

### UK-SPEC Specific Learning Outcomes:

(UKSpec coding in brackets)

### **Underpinning Science & Mathematics and Associate Disciplines**

- have a comprehensive understanding of the scientific principles of mechanical and related engineering disciplines. (US1m)
- have a comprehensive knowledge and understanding of mathematical and computer models relevant to the mechanical and related engineering disciplines, and an appreciation of their limitations. (US2m)
- have an understanding of concepts from a range of areas including some outside engineering, and the ability to apply them effectively in engineering projects. (US3m)
- have an awareness of developing technologies related to mechanical engineering. (US4m)

### **Engineering Analysis**

- have the ability to use fundamental knowledge to investigate new and emerging technologies. (E1m)
- have the ability to extract data pertinent to an unfamiliar problem, and apply its solution using computer based engineering tools when appropriate. (E2m)
- have the ability to apply mathematical and computer-based models for solving problems in engineering, and the ability to assess the limitations of particular cases. (E3m)
- have an understanding of and ability to apply a systems approach to engineering problems. (E40)

### **Design**

- have a wide knowledge and comprehensive understanding of design processes and methodologies and the ability to apply and adapt them in unfamiliar situations. (D1m)
- understand customer and user needs and the importance of considerations such as aesthetics. (D2)
- identify and manage cost drivers. (D3)
- have the ability to generate innovative designs for products, systems, components or processes to fulfil new needs. (D4m)
- ensure fitness for purpose for all aspects of the problem including production, operation, maintenance and disposal. (D5)
- manage the design process and evaluate outcomes. (D6)

### **Economic, social and environmental context**

- have the ability to make general evaluations of commercial risks through some understanding of the basis of such risks. (S1m)
- have extensive knowledge and understanding of management and business practices, and their limitations, and how these may be applied appropriately to strategic and tactical issues. (S2m)
- have an Understanding of the requirement for engineering activities to promote sustainable development. (S3)

- have an awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues. (S4)
- have an understanding of the need for a high level of professional and ethical conduct in engineering. (S5)

### Engineering Practice

- have a thorough understanding of current practice and its limitations and some appreciation of likely new developments. (P1m)
- have an extensive knowledge and understanding of a wide range of engineering materials and components. (P2m)
- have an understanding of contexts in which engineering knowledge can be applied (e.g. operations and management, technology, development, etc). (P3)
- understand the use of technical literature and other information sources. (P4)
- have an awareness of nature of intellectual property and contractual issues. (P5)
- have an understanding of appropriate codes of practice and industry standards. (P6)
- have an awareness of quality issues. (P7)
- have the ability to apply engineering techniques taking account of a range of commercial and industrial constraints. (P8m)

(See Specific Learning Outcomes mapping matrix below)

### Programme structure

This 3 year full time/4.5 year part time route requires 360 credits to be achieved for the award BEng (Hons) in Mechanical Engineering; 120 credits at HE4, 120 credits at HE5 and 120 credits at HE6.

Part time students study up to 80 credits-worth of modules/year, thus, taking a minimum of four and a half years to complete the route.

All modules are Core modules and are 20 credit value apart from the 40 credit Project-type modules (one at each level) required for assimilation and integration of topics and material.

Module Code	Module title	Core/ Option/ Elective (C/O/E)	Credits	Length (1, 2 or 3 periods)
AME4051	Engineering Environment	C	20	1
AME4052	Engineering Principles 1	C	20	1
AME4053	Engineering Principles 2	C	20	1
AME4054	Projects & Systems	C	40	2
AME4055	Graphical Communication & Computer Modelling	C	20	1

AME5001	Engineering Applications	C	40	2
AME5002	Mechanics of Materials & Machines	C	20	1
AME5003	Thermofluids & Control Systems	C	20	1
AME5004	Engineering Modelling & Analysis	C	20	1
AME5005	Automobile/Mechanical Design	C	20	1
AME6001	BEng(Hons) Design & Individual Project	C	40	2
AME6002	Advanced Materials & Structures	C	20	1
AME6003	Management & Enterprise in Engineering	C	20	1
AME6005	Advanced Thermofluids & Control Systems	C	20	1
AME6006	Finite Element & Difference Solutions	C	20	1

### Learning and teaching strategies

The diverse nature of this engineering programme necessitates the use of a variety of teaching and learning methods in order to ensure the acquisition and development of appropriate concepts, knowledge and skills. Many of these methods will be experienced during formal timetabled classes. Other methods, which are also demanded by professional body accreditation requirements, will be experienced through opportunities to develop creativity and innovative skills. This is predominantly achieved through open-ended project and design, make and test activity, where application, assimilation and integration of course material are realised. As projects, design activity and assimilation is extremely important and time dependent, all project modules are 40 credit value and run over two semesters. Also, as you progress through the programme, your studies will become less structured and more open-ended in nature.

### Learning activities (KIS entry)

	Course Year						
	1	2	3	4	5	6	7
Scheduled learning and teaching activities	34	31	24				
Guided independent study	66	69	76				
Placement/study abroad							

### Assessment strategy

The assessment strategy for the programme is designed to ensure that the overall aims and

learning outcomes of the programme are assessed and achieved. To accomplish this, a range of assessment methods are used and applied, depending upon the learning outcome in question and the type of module content being assessed. Assessment and feedback may be Formative or Summative.

In line with the University of Bolton Curriculum Framework, Summative Assessment (that leading to assignment/project mark, module grade and hence to overall performance classification) constitutes a maximum of two pieces of assessed work per 20 credit module. The aggregate pass module mark is 40%. You must achieve a pass in all elements of assessment for each module. Summative Assessment may consist of:

- Project, Assignment and/or Design reports
- Written Examinations
- Module Portfolios
- Presentations
- Viva Examination

#### Assessment methods (KIS entry)

	Course Year						
	1	2	3	4	5	6	7
Written exams	33%	36%	35%				
Coursework	63%	60%	51%				
Practical exams	4%	4%	14%				

#### Assessment regulations

- Assessment Regulations for Undergraduate Modular Programmes

The mark awarded will be made up, where specified, of the weighted average of the examination and coursework assessment marks. You must achieve a mark of 40% or above in all assessments to show that you have achieved the Learning Outcomes for each module and achieved an overall average of 40 percent to pass a module.

For the full and current version of the Assessment Regulations, refer to the document "*Assessment Regulations for Undergraduate Modular Programmes (Main Document)*" at the following university intranet site:



## Grade bands and classifications

Grade Description	Mark %	Honours Degree Classification
Work of exceptional quality	70+	i
Work of very good quality	60-69	ii.i
Work of good quality	50-59	ii.ii
Work of satisfactory quality	40-49	iii
Borderline fail	35-39	
Fail	Below 35	

### Honours classification

You will normally be awarded the honours classification resulting from the application of either Rule ACM20 or Rule ACM6.

#### Rule ACM20

A weighted average of the marks from modules worth a total of 200 credits at Levels HE5 and HE6 combined, including the marks from modules worth no more than 80 credits at least at Level HE5 (weighted 30 percent) and marks from modules worth at least 120 credits at Level HE6 (weighted 70 percent), which represent the best marks achieved by you at those Levels.

Where the average falls unequivocally into one of the following bands: 48.00 - 49.99, 58.00 - 59.99, 68.00 - 69.99; and you have achieved marks clearly in an honours classification category higher than their average for modules worth at least 110 credits, then you will be awarded an honours degree in the classification category one higher than that indicated by your average.

#### Rule ACM6 (an alternative if you do not have sufficient marks at Levels HE5 and 6 to apply ACM20)

A simple average of the equally weighted marks from modules worth 120 credits at Level HE6 which represent the best marks achieved by you at that Level.

Where the average falls unequivocally into one of the following bands: 48.00 – 49.99, 58.00 – 59.99, 68.00 – 69.99; and you have achieved marks clearly in an honours classification category higher than their average for modules worth at least 70 credits, then you will be awarded an honours degree in the classification category one higher than that indicated by

your average.

Where you have marks available for fewer than 120 credits at Level HE6, honours classification shall normally be based **solely** on a simple average of the available marks for modules at Level HE6, subject to there being marks for a **minimum of 60 credits awarded by the University. Upgrading of the honours classification will not normally be available where there are marks available for fewer than 120 credits at Level HE6**, unless this is explicitly approved.

### **Role of external examiners**

External examiners are appointed for all programmes of study. They oversee the assessment process and their duties include: approving assessment tasks, reviewing assessment marks, attending assessment boards and reporting to the University on the assessment process.

### **Support for student learning**

- The programme is managed by a programme leader
- Induction programme introduces the student to the University and their programme
- Each student has a personal tutor, responsible for support and guidance
- Personal Development Planning (PDP) integrated into all programmes
- Feedback on formative and summative assessments
- A Student Centre providing a one-stop shop for information and advice
- University support services include housing, counselling, financial advice, careers and a disability
- A Chaplaincy
- Library and IT services
- Student Liaison Officers attached to each Faculty
- The Students' Union advice services
- Faculty and Programme Handbooks which provide information about the programme and University regulations
- The opportunity to develop skills for employment
- English language support for International students
- Specialist teaching facilities/resources
- Support from professional bodies by student membership of IMechE

### **Methods for evaluating and enhancing the quality of learning opportunities**

- Programme committees with student representation
- Module evaluations by students
- Students surveys, e.g. National Student Survey (NSS)
- Annual quality monitoring and action planning through Programme Quality

Enhancement Plans (PQEPs), Data Analysis Report (DARs) Subject Annual Self Evaluation Report (SASERs), Faculty Quality Enhancement Plans (FQEPs), University Quality Enhancement Plan (UQEP)

- Peer review/observation of teaching
- Professional development programme for staff
- External examiner reports

### Other sources of information

Student portal: [www.bolton.ac.uk/Students/Home.aspx](http://www.bolton.ac.uk/Students/Home.aspx)

Students Union [www.ubsu.org.uk/](http://www.ubsu.org.uk/)

Faculty or similar Handbook: <http://www.bolton.ac.uk/Students>

Programme Handbook (add link)

Student Entitlement Statement

<http://www.bolton.ac.uk/Students/AdviceAndSupport/HomeOLD.aspx>

Module database: <http://modules.bolton.ac.uk>

Moodle (for the programme?) <http://elearning.bolton.ac.uk/>

External examiners reports:

[www.bolton.ac.uk/Quality/QAECContents/ExternalExaminersReports/Home.aspx](http://www.bolton.ac.uk/Quality/QAECContents/ExternalExaminersReports/Home.aspx)

### Document control

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<b>Approved by:</b>	Sarah Riches Chair University Validation Panel
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<b>Document History:</b>	

## UKSpec General Learning Outcomes Map – BEng(Hons) in Mechanical Engineering

Module title	Mod Code	Status C/O/E	K1	K2	K3	C1	C2	C3	P1	P2	T1	T2	T3
<b>Level 4</b>													
Engineering Environment	AME4051	C		tda	tda			d		d	tda	d	tda
Engineering Principles 1	AME4052	C	tda			tda					d	d	
Engineering Principles 2	AME4053	C	tda			tda					d	d	
Projects & Systems	AME4054	C	d	td		d	da	d	tda	td	td	td	td
Graphical Comms & Computer Modelling	AME4055	C		d					td		td	d	
<b>Level 5</b>													
Engineering Applications	AME5001	C	d	td		d	da	da	tda	tda	td	tda	tda
Mechanics of Materials & Machines	AME5002	C	tda			tda							
Thermofluids & Control Systems	AME5003	C	tda			tda							
Engineering Modelling & Analysis	AME5004	C	tda			tda							
Auto/Mech Design	AME5005	C	d	td	d	da	tda	da	da	d	d	da	td
<b>Level 6</b>													
BEng Design & Individual Project	AME6001	C	d	tda	da	da	tda	da	td	tda	td	da	tda
Advanced Materials & Structures	AME6002	C	tda			tda						d	
Management & Enterprise in Engineering	AME6003	C		td				da			d		
Advanced Thermofluids & Control Systems	AME6005	C	tda			tda						d	
Finite Element & Difference Solutions	AME6006	C	tda			tda			tda			d	

# UKSpec Learning Outcomes Map – BEng (Hons) in Mechanical Engineering

d – developed; a – assessed; t - taught

BEng in Mechanical Engineering Modules		Engineering Environment	Engineering Principles 1	Engineering Principles 2	Projects & Systems	Graph'l Comms & Computer Modelling	Engineering Applications	Mechanics of Material & Machines	Thermofluids & Control Systems	Engineering Modelling & Analysis	Auto/Mechanical Design	BEng Design & Individual Project	Advanced Materials & Structures	Management & Enterprise in Engineering	Advanced Thermofluids & Control	Finite Element & Difference Solutions
Learning Outcome	UKSpec Code	AME4051	AME4052	AME4053	AME4054	AME4055	AME5001	AME5002	AME5003	AME5004	AME5005	AME6001	AME6002	AME6003	AME6005	AME6006
<b>Underpinning Science &amp; Mathematics and Associate Disciplines</b>																
A comprehensive understanding of the scientific principles of mechanical and related engineering disciplines	US1m		dta	dta				dta		dta		d	dta			d
A comprehensive knowledge and understanding of mathematical and computer models relevant to the mechanical and related engineering disciplines, and an appreciation of their limitations.	US2m		d	dta			d	dta		dta		d				dta
An understanding of concepts from a range of areas including some outside engineering, and the ability to apply them effectively in engineering projects.	US3m	d			dta		da				d	da		d		
An awareness of developing technologies related to mechanical engineering.	US4m	d			dt		d		d		d	d	da	d	d	dta
<b>Engineering Analysis</b>																
Ability to use fundamental knowledge to investigate new and emerging technologies.	E1m	d	dta	dta	dt				dat			da		d	dat	
Ability to extract data pertinent to an unfamiliar problem, and apply its solution using computer based engineering tools when appropriate	E2m	d	dta	dta	d		dt	dta	dt	dta	dt	td		d	dat	
Ability to apply mathematical and computer-based models for solving problems in engineering, and the ability to assess the limitations of particular cases.	E3m			d	d		dt	dta	dt	dta	dt	td	dta		dat	dta
Understanding of and ability to apply a systems approach to engineering problems	E4	d			dta		dta		d		d	tda		d	dt	
<b>Design</b>																
Wide knowledge and comprehensive understanding of design processes and methodologies and the ability to apply and adapt them in unfamiliar situations	D1m				dta	d	da				dta	tda				d
Understand customer and user needs and the importance of considerations such as aesthetics	D2				da	d	da				d	tda				

Programme specification: [BEng\(Hons\) in Mechanical Engineering](#)

Date: Feb 2012

		AME4051	AME4052	AME4053	AME4054	AME4055	AME5001	AME5002	AME5003	AME5004	AME5005	AME6001	AME6002	AME6003	AME6005	AME6006
Identify and manage cost drivers	D3				d	dta	d				t	d				
Ability to generate an innovative design for products, systems, components or processes to fulfil new needs.	D4m				da		da				d	dta				
Ensure fitness for purpose for all aspects of the problem including production, operation, maintenance and disposal	D5					d			d		dta	d			d	dta
Manage the design process and evaluate outcomes	D6				dt		dta				dta	dta				
<b>Economic, social and environmental context</b>																
The ability to make general evaluations of commercial risks through some understanding of the basis of such risks	S1m	dta													dt	
Extensive knowledge and understanding of management and business practices, and their limitations, and how these may be applied appropriately to strategic and tactical issues.	S2m	dt													dta	
Understanding of the requirement for engineering activities to promote sustainable development	S3	dta					dt		dt		d	d		dt	dta	
Awareness of the framework of relevant legal requirements governing engineering activities, including personnel, health, safety, and risk (including environmental risk) issues.	S4	dta							dt		d	d		dt		dta
Understanding of the need for a high level of professional and ethical conduct in engineering	S5	dt										d		dta		
<b>Engineering Practice</b>																
A thorough understanding of current practice and its limitations and some appreciation of likely new developments	P1m	dt		d			d								dta	
Extensive knowledge and understanding of a wide range of engineering materials and components	P2m	dt		dt	dta	d	dta	dt			dta	dta	dta	dt		tda
Understanding of contexts in which engineering knowledge can be applied (e.g. operations and management, technology, development, etc)	P3	dt	d	d		dta	dta		d			d		dt	dt	d
Understanding use of technical literature and other information sources	P4	dt				dt					dt	dta		dt		dt
Awareness of nature of intellectual property and contractual issues	P5	dt										d		dta		
Understanding of appropriate codes of practice and industry standards	P6	dt				dta		dt			tda	d		dta		d
Awareness of quality issues	P7	dt				dta		d				d		dt		
Ability to apply engineering techniques taking account of a range of commercial and industrial constraints	P8m	dt												dt		

d – developed; a – assessed; t - taught

## Module listing BEng(Hons) in Mechanical Engineering

Module title	Mod Code	New? ✓	Level	Credits	Type	Core/Option/E lective C/O/E	Pre-requisite module	Assessment 1			Assessment 2			Assessment 3			Assessment 4		
								Assessment type	Assessment %	Add Y if final item	Assessment type	Assessment %	Add Y if final item	Assessment type	Assessment %	Add Y if final item	Assessment type	Assessment %	Add Y if final item
Engineering Environment	AME4051		HE4	20	S	C		CW	50		CW	50	Y						
Engineering Principles 1	AME4052	✓	HE4	20	S	C		CW	40		EX	60	Y						
Engineering Principles 2	AME4053	✓	HE4	20	S	C		CW	40		EX	60	Y						
Projects & Systems	AME4054		HE4	40	P	C		CW	30		PRA	20		CW	50	Y			
Graphical Communication & Computer Modelling	AME4055		HE4	20	S	C		EX	45		CW	55	Y						
Engineering Applications	AME5001		HE5	40	P	C		CW	30		PRA	20		CW	50	Y			
Mechanics of Materials & Machines	AME5002		HE5	20	S	C	AME4052 AME4053	CW	40		EX	60	Y						
Thermofluids & Control Systems	AME5003		HE5	20	S	C		CW	40		EX	60	Y						
Engineering Modelling & Analysis	AME5004		HE5	20	S	C	AME4052 AME4053	CW	40		EX	60	Y						
Automobile/Mechanical Design	AME5005		HE5	20	S	C	AME4052 AME4053 AME4055	CW	50		CW	50	Y						
BEng(Hons) Design & Individual Project	AME6001		HE6	40	P	C	AME5002 AME5005	CW	35		CW	45	Y	PRA	10		PRA	10	
Advanced Materials & Structures	AME6002		HE6	20	S	C		cw	25		EX	75	Y						
Management & Enterprise in Engineering	AME6003		HE6	20	S	C		cw	50		PRA	50	Y						
Advanced Thermofluids & Control Systems	AME6005		HE6	20	S	C	AME5003	cw	40		EX	60	Y						
Finite Element & Difference Solutions	AME6006		HE6	20	S	C	AME5002 AME5004	cw	60		EX	40	Y						

Programme specification: [BEng\(Hons\) in Mechanical Engineering](#)

Date: Feb 2012

## Bolton Values Map – BEng(Hons) in Mechanical Engineering

BEng in Mechanical Engineering Modules	Engineering Environment	Engineering Principles 1	Engineering Principles 2	Projects & Systems	Graph'l Comms & Computer Modelling	Engineering Applications	Mechanics of Material & Machines	Thermofluids & Control Systems	Engineering Modelling & Analysis	Auto/Mechanical Design	MEng Design & Individual Project	BEng Design & Individual Project	Advanced Materials & Structures	Management & Enterprise in Engineering	Life-Cycle Management	Advanced Thermofluids & Control	Finite Element & Difference Solutions
Value	AME4051	AME4052	AME4053	AME4054	AME4055	AME5001	AME5002	AME5003	AME5004	AME5005	AME6000	AME6001	AME6002	AME6003	AME6004	AME6005	AME6006
<b>Employability</b>																	
Communication	dta	d	d	da	tda	da	d	td	d	td	tda	tda	tda	dt	td		
Team Work	d			da		da				td				dt			
Organisation & Planning	d			dt		d					tda	tda		dta			
Numerical Interpretation		dta	dta	da	d	da	dta	tda	dta	tda	tda	tda	tda		tda	tda	tda
Problem Solving		dta	dta	da		da	dta	tda	dta	tda	tda	tda	tda		tda	tda	tda
Flexibility & Adaptability	d										d	d		dt			
Action Planning	d			dt		d					tda	tda		dt			
Self Awareness	dta										d	d		dt			
Initiative	d			d		d					d	d		dt			
Personal Impact & Confidence	d										d	d		dt			
<b>Internationalisation</b>																	
International content or international comparative approach	d													dt			
Preparation for international profession	d	d	d					d		d	d	d	td	dt	d	d	d
Foreign language or cross-cultural communication																	
Preparation for internationally recognised qualification	d	d	d	dt		dt		d		t	d	d	d	dt	d	d	d
<b>Environmental Sustainability &amp; Awareness</b>																	
Globalisation & the global context	d							d						dta	d		
Consumer culture and the free market	d										d			dt			
Carbon reduction		d	d					d			d		d		dt	tda	d
Systems, control mechanisms and environments	d			da		da		dt						dt	dta	tda	d
Energy, consumption, waste and technology	d	dt	dt	d				dt		d	d	d	d	dt	dta	tda	d
Business impact and business practices on the environment	d									td				dt			
Instrumentation and stewardship																	
<b>Social, Public &amp; Ethical Responsibility</b>																	
Professional standards and practice	d	dt	dt	d	td		dt		dt	d	d			dt			
Ethics	d										d			dt			
Political or social judgement	d										d			dt			
Cultural or moral issues	d										d			dt			

Programme specification: [BEng\(Hons\) in Mechanical Engineering](#)

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