Programme Specification
BSc(Hons) Mechatronics Top-Up

Awarding Institution:	The University of Bolton
Teaching Institution:	The University of Bolton
Division and/or Faculty/Institute:	Faculty of Advanced Engineering & Sciences
Professional, statutory or regulatory body recognition:	
Final award:	BSc (Hons)
Interim awards	None
Exit or Fallback awards	Not applicable
Programme title	Mechatronics (Top-Up)
UCAS Code	HH36
JACS Code	H650
University Course Codes	Full time – ENG0001 Part time – ENG5001
QAA Benchmark Statement	Engineering 2010 The Engineering Council in the UK Standard for Professional Engineering Competence (UK-SPEC)
Other internal and external reference points	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
Language of study	English
Mode of study and normal period of study	Full Time – 1 year Part Time – 1 ½ years

Admissions criteria

Applicants will normally hold one of:
- Higher Education Diploma
- HND

- DipHE
- Foundation Degree
- or equivalent

in Mechatronics, Mechanical, Electrical and Electronics, Control Systems, and/or relevant engineering subject areas.

If English is not the first language then the minimum IELTS score for overseas students is 6.0 (or equivalent).

Additional admissions matters

None

Fitness to practise declaration

Not applicable

Aims of the programme

The principal aims of the programme are:

1. To provide opportunities for students who already hold an HND, or Higher Diploma, or Dip HE or Foundation Degree in a Mechatronics-related area to achieve their intellectual potential.

2. To offer a programme which equips students with the knowledge and skills needed to successfully pursue careers in the field of mechatronics.

3. To respond to the regional, national and international needs for skilled graduates to work in the relevant industrial/commercial sectors.

4. To offer a flexible programme, available through a range of study modes, including full-time and part-time.

5. To create ladders of opportunity for students by the provision of clear progression routes through a series linked postgraduate courses and pathways.

Distinctive features of the programme

- The course integrates mechanical and electronic engineering and is a one-year course for students who already have a HND, diploma of higher education or foundation degree in a related subject.

- The course equips you with dedicated mechatronic facilities, engineering laboratories, the unique Innovation Factory and a state-of-the-art Design Studio with design, analysis and simulation software.

- The course uses an approach that combines engineering theory with case studies,

practical/laboratory work and problem solving-based projects.

- The course is internationally recognised. Course graduates can use multidisciplinary knowledge and skills in mechanical, electronic, control, computing, IT, engineering and system design and development. There are opportunities for mechatronics in many different industries and sectors.

Programme learning outcomes

K. Knowledge and Understanding

On completion of the programme successful students will be able to demonstrate systematic knowledge and understanding of

K1.   essential facts, concepts, theories and principles of mechatronics engineering discipline, and its underpinning science and mathematics.

K2.   the wider multidisciplinary engineering context and its underlying principles

K3.   the social, environmental, ethical, economic and commercial considerations affecting the exercise of their engineering judgement.

C. Intellectual Abilities
On completion of the programme successful students will be able to demonstrate the ability to:

C1.   apply appropriate quantitative science and engineering tools to analyse problems

C2.   to demonstrate creative and innovative ability in the synthesis of solutions and in formulating designs

C3.   to comprehend the broad picture and thus work with an appropriate level of detail.

P. Practical skills

On completion of the programme successful students will be able to demonstrate the ability to

P1   demonstrate 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.

P2   demonstrate an understanding of different roles within a team, and to exercise leadership.

T. General transferable skills

On completion of the programme successful students will be able to demonstrate the ability to:

T1   demonstrate transferable skills that will be of value in a wide range of situations

T2   exemplify 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.

T3   to monitor and adjust a personal programme of work on an ongoing basis, and to learn independently.

Programme structure

This one year full time BSc (Hons) top-up programme requires120 credits at HE6 to be achieved for the award.

All modules are core modules and are 20 credit values.

Module Code	Module title	Core/ Option/ Elective (C/O/E)	Credits	Length (1, 2 or 3 periods)
MEC6001	Project	C	20	2
MEC6002	Advanced Mechatronic Systems	C	20	1
MEC6003	Computer Aided Analysis and Simulation	C	20	1
MEC6004	Computer Aided Manufacturing	C	20	1
MEC6005	Electronic Engineering for Mechatronics	C	20	1
AME6003	Management & Enterprise in Engineering	C	20	1

Learning and teaching strategies

The diverse nature of this 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. These methods include Lectures, Tutorials and Tutorial Exercises, Case Studies, Practical Workshop sessions (computer and machine shop), Laboratories and Investigations, Individual Project & Group working. Many of these methods will be experienced during formal timetabled classes usually has two hours of classes twice per week for a semester (September to January or January to June). Other methods will be experienced through opportunities to develop creativity and innovative skills. This is predominantly achieved through open-ended project, make and test activity, where application, assimilation and integration of course material are realised. The project module runs over two semesters, since it is important and time dependent.

Learning activities (KIS entry)

	Year/Stage 1
Scheduled learning and teaching activities	30%
Guided independent study	70%

Assessment strategy

Modules Advanced Mechatronic Systems (MEC6002) and Electronic Engineering for Mechatronics (MEC6005) are assessed by practical exercises first. These assessments will be marked and returned to students during the semester. There are also unseen written exams in the final week for these two modules. The feedback for the written exam will take the form of releasing the worked solution to the paper on Moodle after the exam finished.

Computer Aided Analysis and Simulation (MEC6003) and Computer Aided Manufacturing (MEC6004) are assessed by case study reports and practical exercise reports. These assessments will be marked and returned to students during the semester.

Module Management & Enterprise in Engineering (AME6003) are assessed by the report and the presentation. The assessment of the report will be marked and returned to students during the semester. A marking scheme for Presentation will be used and the formal marked feedback will be returned to students.

Project (MEC6001) module will run in two semesters. The major part of the assessment is the project report, and the second assessment is a presentation. Students will receive formal marked feedback for both assessments.

For assessment strategies for individual modules please refer to the Module Descriptors.

Assessment methods (KIS entry)

	Year/Stage 1
Written exams	17%
Coursework	71%
Practical exams	12%

Assessment regulations

- Assessment Regulations for Undergraduate Modular Programmes

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

A student will normally be awarded the honours classification resulting from application of the following algorithm:

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 their average.

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
- Class room C1-7 is designated as a Mechatronic Resource Room. Students can

use this room as a work place for their individual project module and/or computer related modules when it is not being used for teaching.

- Laboratory rooms C1-7b, C1-9, A1-8, A1-18, F1-01 are equipped with various mechanical, electrical, electronics, control and mechatronics facilities, machines, instruments, and an industrial robot.
- Rooms B1-3, C1-7, and Design studio are equipped with various specialised software required by the 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
- Student Liaison Officers attached to each Faculty
- 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

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: http://www.bolton.ac.uk/Students/Home

Students Union:
http://www.bolton.ac.uk/Students/AdviceAndSupport/StudentsUnion/Home

Faculty 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: http://elearning.bolton.ac.uk

External examiners reports:
http://www.bolton.ac.uk/Quality/QAEContents/ExternalExaminersReports/Home.aspx

Document control

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Approved by:	Sarah Riches Chair, University Validation Panel
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Effective from:	2012/13

Document History:

Learning outcomes map

Module title	Mod Code	Status C/O/E	K1	K2	K3	C1	C2	C3	P1	P2	T1	T2	T3
Project	MEC6001	C	DA	DA	DA	DT	DA	DTA	D	D	DA	D	DA
Advanced Mechatronic Systems	MEC6002	C	DTA	DT	D	DA	DA	D	DTA	D	DA	DT	D
Computer Aided Analysis and Simulation	MEC6003	C	DTA	DA	D	DTA	DT	DA	DTA	D	D	DA	D
Computer Aided Manufacturing	MEC6004	C	DA	DT	DTA	DT	DA	DA	DTA	D	D	DT	DA
Electronic Engineering for Mechatronics	MEC6005	C	DTA	D	D	DTA	DT	DTA	D	D	DA	D	D
Management & Enterprise in Engineering	AME6003	C	DTA	D	DTA			D		DTA	DT	DTA	DA

K. Knowledge and understanding   C. Intellectual Abilities P. Practical Skills   T. General Transferable Skills

Complete the grid using the following (Developed = D, Taught = T, Assessed = A)

Module listing for BSc(Hons) Mechatronics Top-Up

Module title	Mod Code	New ? ✔	Level	Credits	Type	Core/Option /Elective C/O/E	Pre-requisite module	Assessment 1			Assessment 2		
								Assessment type	Assessment %	Add Y if final item	Assessment type	Assessment %	Add Y if final item
Project	MEC6001		HE6	20	S	C		Report	70		Presentation	30	Y
Advanced Mechatronic Systems	MEC6002		HE6	20	S	C		Report	50		Exam	50	Y
Computer Aided Analysis and Simulation	MEC6003		HE6	20	S	C		Report	25		Report	75	Y
Computer Aided Manufacturing	MEC6004		HE6	20	S	C		Report	40		Report	60	Y
Electronic Engineering for Mechatronics	MEC6005		HE6	20	S	C		Report	50		Exam	50	Y
Management & Enterprise in Engineering	AME6003		HE6	20	S	C		Report	50		Presentation	50	Y

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Bolton Key Core Curriculum requirements

Module Title	Module Code	C/O/E	Employability											Bolton Values		
			PDP	Communication	Team work	Organisation & Planning	Numeracy	Problem solving	Flexibility & adaptability	Action planning	Self awareness	Initiative	Personal impact & confidence	Inter-nationalisation	Environmental sustainability	Social, public and ethical responsibility
Project	MEC6001	C	DTA	DTA		DTA	DA	DTA	DTA	DTA	DTA	DTA	DA	DA	DA	DA
Advanced Mechatronic Systems	MEC6002	C	D	DA	D	D	DTA	DTA	DA	D	DA	D	D	D	D	D
Computer Aided Analysis and Simulation	MEC6003	C	D	DA	D	D	DTA	DTA	DTA	D	DTA	D	DA	D	D	D
Computer Aided Manufacturing	MEC6004	C	D	DA	D	D	DA	DTA	DTA	D	DA	DTA	DA	D	DTA	DTA
Electronic Engineering for Mechatronics	MEC6005	C	D	DA	D	D	DTA	DTA	DA	D	DTA	D	D	D	D	D
Management & Enterprise in Engineering	AME6003	C	DA	DTA	DTA	DTA		DTA	DTA	DA	DTA	DTA	DA	DTA	DTA	DTA

Complete the grid using the following (Developed = D, Taught = T, Assessed = A)