

Programme Specification

Programme Title: BEng (Hons) in Automotive Performance Engineering - Motorsport

Awarding Institution:	The University of Bolton		
Teaching Institution:	University of Bolton		
Division and/or Faculty/Institute:	Engineering, Sports and Sciences Academic Group		
Professional accreditation	Professional body	Professional body URL	Status of graduates
	IMechE	www.imeche.org/Home	
Final award(s):	BEng (Honours)		
Interim award(s)	N/A		
Exit or Fallback award(s)	Diploma of Higher Education in Automotive Performance Engineering – Motorsport Certificate of Higher Education in Automotive Performance Engineering - Motorsport		
Programme title(s)	Automotive Performance Engineering – Motorsport		
UCAS Code	H330		
JACS Code	H330		
University Course Code(s)	ENG000		
QAA Benchmark Statement(s)	<i>UK Standards for Professional Engineering Competences (UK-SPEC): The Accreditation of Higher Education Programmes (2010).</i>		
Other internal and external reference points	The QAA subject benchmark statements are those define by the Engineering Council as the academic standards expected of graduates with an engineering' BSc degree. 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	BEng (Hons) Full Time – 3 years Part Time – 4.5 years
Admissions criteria Subject to satisfactory UCAS points including Mathematics and Science.	
Additional admissions matters Non-standard and mature student entry to Part-Time or Full-Time: <ul style="list-style-type: none"> - Certificate (HND/C) will be considered for direct entry to HE5 Level given good results in Level 4 Mathematics and Science. - Engineering related work experience and interview (essential for those applying with non-standard entry routes qualifications). - Foundation Degree may be considered for entry to HE5 Interviews or informal discussions may be used for Part Time entry students to assess suitability or entry point onto the programme. Include English Language requirements for overseas students specified as a minimum IELTS score of 6.0 (or equivalent).	
Fitness to practise declaration Not applicable	

Aims of the programme

This BEng (Hons) in Automotive Performance Engineering - Motorsport (PT/FT) route is one of two automotive engineering routes. The broad aims of these programmes are to:

- Educate and develop prospective 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).
- Prepare prospective engineers for meaningful professional employment in the Automotive/Motorsport sector of industry.
- Provide a programme to achieve delivery efficiency and integration of subject matter. Hence, this Automotive BEng route integrated with the Motorsport BSc(Hons) route.
- Deliver an inclusive learning environment, this provides for the diverse needs of international/home students and develops social skills and consideration of ethical responsibility within the classroom.
- Be aware of the financial, moral, legal, economic, environmental and cultural constraints in which they operate
- Complete a programme of professional development Planning and training (PDP) and committed to and prepared for lifelong learning

In doing so, the programme aims to:

- Provide a real world working environment through our motorsport partners so that work-related learning can be achieved.
- Use integrated engineering elements in the degree which focus on an analytical approach.
- Incorporate health and safety, environmental issues and sustainability.
- Ensure content matches the needs of modern industry and society.
- Develop modelling and analytical skills and the application of those skills as well as providing an environment so that knowledge and understanding can take place.

Distinctive features of the programme

The Centre for Advanced Performance Engineering, is offering an exciting chance to learn from real motorsport professionals and enhance the learning environment by placing emphasis on real World practices and problems within motorsport. The BEng Automotive Performance Engineering – Motorsport course produces professional automotive engineers and importantly strives to offer the analytical skills necessary for industry, along with engineering management and practical skills expected of an Automotive professional, offering a comprehensive program of study.

Students will have the unique prospect of working alongside some of the best motorsport engineers in the country and those who excel; an opportunity to work with and get involved with RLR race team who regularly race at places such as Le Mans.

Distinctive features are:

- Students will participate in a real motorsport environment and have the opportunity to work with our motorsport partners.
- Open access and skills development using industry standard software, such as, Adams and Ansys to test and analyse real data from our industry partners.
- Individual and group Industrial projects involving our new performance testing and manufacturing laboratories
- A number of integrating analytical engineering themes, such as structural analysis of advanced materials and high level electronic analysis.
- 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 Associate members.
- Project-based learning (PBL), either in groups or as individuals, linked to Personal development plan (ePDP).

INCORPORATION OF BOLTON LEARNING OUTCOMES

UK-SPEC **General** Learning Outcomes:
On completion of this programme you will:

UK-SPEC
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Knowledge and Understanding

be able to demonstrate their knowledge and understanding of essential facts, concepts, theories and principles of their engineering discipline, and its underpinning science and mathematics	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 Abilities

be able to apply appropriate quantitative science and engineering tools to the analysis of 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	PS1
Have evidence of group working and participation in a major project is expected	PS2

Transferrable Skills

have developed transferable skills that will be of value in a wide range of situations	T1
demonstrate 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
include planning self-learning and improving performance, as the foundation for lifelong learning/CPD	T3

UK-SPEC Specific Learning Outcomes:
On completion of this programme you will:

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Underpinning Science and Mathematics and associated engineering disciplines

Have knowledge and understanding of scientific principles and methodology necessary to underpin their education in mechanical and related engineering disciplines, to enable appreciation of its scientific and engineering context and to support their understanding of future developments and technologies.	US1
Have knowledge and understanding of mathematical principles necessary to underpin their education in mechanical and related engineering disciplines and to enable them to apply mathematical methods, tools and notations proficiently in the analysis and solution of engineering problems	US2
Be able to apply and integrate knowledge and understanding of other engineering disciplines to support the study of mechanical and related engineering disciplines	US3

Engineering Analysis

Understand engineering principles and the ability to apply them to analyse key engineering processes.	E1
Be able to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques	E2
Be able to apply quantitative methods and computer software relevant to mechanical and related engineering disciplines, to solve engineering problems	E3
Understand and be able to apply a systems approach to engineering problems	E4

Design

Investigate and define a problem and identify constraints including environmental and sustainability limitations, health and safety and risk assessment issues	D1
Understand customer and user needs and the importance of considerations such as aesthetics	D2
Identify and manage cost drivers	D3
Use creativity to establish innovative solutions	D4
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 knowledge and understanding of commercial and economic context of engineering processes	S1
Have knowledge of management techniques which may be used to achieve engineering objectives within that context	S2
Understand 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
Understand the need for a high level of professional and ethical conduct in engineering	S5

Engineering Practice

Have knowledge of characteristics of particular equipment, processes or products	P1
Have engineering workshop and laboratory skills	P2
Understand the 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
Understand the appropriate codes of practice and industry standards	P6
Have an awareness of quality issues	P7
Be able to work with technical uncertainty	P8

Programme structure

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

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

All modules are Core modules and are 20 credit values.

Code	Credit	Module Title	Module Leader	Core/ Option/ Elective (C/O/E)	Length (1, 2 or 3 periods)
MSP4000	20	Engine Systems & Aerodynamics	Keith Holmes	C	2
MSP4002	20	Vehicle Systems	Garry Owen	C	2
MSP4003	20	CAD/CAM	Tim Ward	C	2
MSP4004	20	High Performance Materials	Paul Clavell	C	2
MSP4006	20	Performance Engineering Sciences	Safa Alhakeem	C	2
MSP4007	20	Engineering Mathematics	Garry Owen	C	2
MSP5000	20	Powertrains & Aerodynamics	Keith Holmes	C	2
MSP5001	20	Chassis Development & Telemetry	Keith Holmes	C	2
MSP5002	20	Team Project	Paul Clavell	C	2
MSP5003	20	Auto & Component Design	Garry Owen	C	2
MSP5005	20	Mechanics of Materials	Paul Clavell	C	2
MSP5007	20	Engineering Modelling & Analysis	Peter Myler	C	2
MSP6000	20	Performance Modelling & CFD	Keith Holmes	C	2
MSP6001	20	Vehicle Dynamics & Adv. Electronics	Keith Holmes	C	2
MSP6002	20	Individual Automotive Project	Tim Ward	C	2
MSP6003	20	Race-Car Design Project	Tim Ward	C	2
MSP6005	20	Advanced Materials & Structures	Peter Myler	C	2
MSP6007	20	Management in Engineering	Garry Owen	C	2

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**Theme
(all 20 credits)**

Level 4

Level 5

Level 6

Powertrain & performance

Engine systems & Aerodynamics
MSP4000

Powertrains & Aerodynamics
MSP5000

Performance modelling & CFD
MSP6000

Dynamics & Electronics

Performance Engineering
Sciences
MSP4006

Chassis development & Telemetry
MSP5001

Vehicle Dynamics & Adv.
Electronics
MSP6001

Practical

Vehicle Systems
MSP4002

Team Project
MSP5002

Individual Automotive Project
MSP6002

Design

CAD/CAM
MSP4003

Auto & Component Design
MSP5003

Race-Car Design Project
MSP6003

Materials & Structures

High Performance Materials
MSP4004

Mechanics of Materials
MSP5005

Advanced Materials & Structures
MSP6005

Other topics

Engineering Mathematics
MSP4007

Engineering Modelling & Analysis
MSP5007

Management in Engineering
MSP6007

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.

Learning activities (KIS entry)

	Course Year						
	1	2	3	4	5	6	7
Scheduled learning and teaching activities	34	28	32				
Guided independent study	66	72	68				
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 will be Formative and 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 will 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	27%	27%	29%				
Coursework	65%	60%	58%				
Practical exams	8%	13%	13%				

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:
<http://www.bolton.ac.uk/Quality/QAECContents/APPR/Home.aspx>

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

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

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 a student at those Levels.

(ii) Where a student has marks available for 120 credits or less at Level HE6, the 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 to students for whom there are marks available for fewer than 120 credits at Level HE6**, unless 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 Academic Group
- 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

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Student portal: www.bolton.ac.uk/Students/Home.aspx
 Students Union www.ubsu.org.uk/
 Faculty or similar Handbook: www.bolton.ac.uk/Students
 Programme Handbook (add link)
 Student Entitlement Statement:
<http://www.bolton.ac.uk/Students/AdviceAndSupport/Home.aspx>
 Module database <https://modules.bolton.ac.uk/>
 Moodle (for the programme?) <http://elearning.bolton.ac.uk/>
 External examiners reports:
<http://www.bolton.ac.uk/Quality/QAECContents/ExternalExaminers/Taught.aspx>

Document control

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Approved by:	
Date approved:	
Effective from:	2013/14
Document History:	

UKSpec General Learning Outcomes Map – BEng(Hons) in Automotive Performance Engineering – Motorsport

Module Names	Module Code	K1	K2	K3	C1	C2	C3	PS1	PS2	T1	T2	T3
Level 4												
Engine Systems & Aerodynamics	MSP4000		✓		✓							
Vehicle Systems (Team Project)	MSP4002			✓			✓	✓	✓	✓	✓	✓
CAD/CAM	MSP4003					✓		✓	✓			
High Performance Materials	MSP4004	✓					✓					
Performance Engineering Science	MSP4006	✓			✓							
Engineering Mathematics	MSP4007	✓			✓							
Level 5												
Powertrains and Aerodynamics	MSP5000	✓	✓		✓		✓					
Chassis Development & Telemetry	MSP5001		✓		✓			✓				
Team (Vehicle) Project	MSP5002		✓	✓		✓	✓	✓	✓	✓	✓	✓
Auto & Component Design	MSP5003	✓		✓		✓		✓				
Mechanics of Materials & Machines	MSP5005	✓			✓							
Engineering Modelling & Analysis	MSP5007							✓				
Level 6												
Performance modelling & CFD	MSP6000	✓		✓	✓	✓	✓					
Vehicle Dynamics & Adv. Electronics	MSP6001	✓			✓	✓			✓			
Individual Automotive Project	MSP6002		✓	✓	✓	✓	✓		✓	✓	✓	✓
Group Race-Car Design Project	MSP6003	✓	✓		✓	✓	✓		✓	✓	✓	✓
Advanced Materials & Structures	MSP6005	✓		✓								
Management in Engineering	MSP6007			✓								✓

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UKSpec Specific Learning Outcomes Map – BEng(Hons) in Automotive Performance Engineering – Motorsport

	Engine Systems & Aerodynamics	Vehicle Systems (Team Project)	CAD/CAM	High Performance Materials	Performance Engineering Science	Engineering Mathematics	Powertrains and Aerodynamics	Chassis Development & Telemetry	Team (Vehicle) Project	Auto & Component Design	Mechanics of Materials & Machines	Engineering Modelling & Analysis	Performance modelling & CFD	Vehicle Dynamics & Adv. Electronics	Individual Automotive Project	Race-Car Design Project	Advanced Materials & Structures	Management in Engineering
	MSP4000	MSP4002	MSP4003	MSP4004	MSP4006	MSP4007	MSP5000	MSP5001	MSP5002	MSP5003	MSP5005	MSP5007	MSP6000	MSP6001	MSP6002	MSP6003	MSP6005	MSP6007

Underpinning Science and Mathematics and associated engineering disciplines

US1					✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
US2	✓					✓	✓				✓			✓	✓			
US3	✓	✓		✓			✓	✓	✓	✓				✓	✓	✓		

Engineering Analysis

E1		✓		✓	✓	✓	✓							✓	✓			
E2		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
E3		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
E4	✓	✓		✓		✓	✓	✓	✓	✓				✓	✓	✓		✓

Design

D1		✓	✓			✓		✓		✓				✓		✓		✓
D2		✓	✓					✓	✓	✓			✓		✓	✓		
D3		✓	✓						✓	✓				✓	✓	✓		
D4		✓							✓	✓					✓	✓		
D5			✓				✓		✓	✓					✓	✓		
D6		✓	✓						✓	✓					✓	✓		

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Engine Systems & Aerodynamics	Vehicle Systems (Team Project)	CAD/CAM	High Performance Materials	Performance Engineering Science	Engineering Mathematics	Powertrains and Aerodynamics	Chassis Development & Telemetry	Team (Vehicle) Project	Auto & Component Design	Mechanics of Materials & Machines	Engineering Modelling & Analysis	Performance modelling & CFD	Vehicle Dynamics & Adv. Electronics	Individual Automotive Project	Race-Car Design Project	Advanced Materials & Structures	Management in Engineering
MSP4000	MSP4002	MSP4003	MSP4004	MSP4006	MSP4007	MSP5000	MSP5001	MSP5002	MSP5003	MSP5005	MSP5007	MSP6000	MSP6001	MSP6002	MSP6003	MSP6005	MSP6007

Economic, social and environmental context

S1				✓														✓
S2														✓				✓
S3				✓		✓		✓	✓			✓		✓	✓			✓
S4				✓		✓			✓			✓		✓				✓
S5													✓	✓				✓

Engineering Practice

P1		✓		✓	✓		✓	✓	✓			✓	✓					✓
P2		✓	✓	✓	✓			✓	✓	✓	✓		✓	✓	✓	✓		
P3	✓		✓	✓	✓	✓	✓	✓	✓				✓	✓				✓
P4			✓	✓				✓	✓			✓	✓	✓	✓			✓
P5				✓														✓
P6			✓	✓		✓	✓		✓	✓			✓	✓	✓			✓
P7			✓	✓						✓		✓	✓					✓
P8				✓									✓					✓

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Module listing BEng(Hons) in Automotive Performance Engineering – Motorsport

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
Engine Systems & Aerodynamics	MSP4000	✓	HE4	20		C	NONE	CW	50		CW	50	Y
Vehicle Systems	MSP4002	✓	HE4	20		C	NONE	CW	50		CW	50	Y
CAD/CAM	MSP4003	✓	HE4	20		C	NONE	Exam	40		CW	60	Y
High Performance Materials	MSP4004	✓	HE4	20		C	NONE	CW	50		PRA	50	Y
Performance Engineering Sciences	MSP4006	✓	HE4	20		C	NONE	CW	50		Exam	50	Y
Engineering mathematics	MSP4007	✓	HE4	20		C	NONE	CW	30		Exam	70	Y
Powertrains & Aerodynamics	MSP5000	✓	HE5	20		C	MSP4000	CW	50		Exam	50	Y
Chassis Development & Telemetry	MSP5001	✓	HE5	20		C	MSP4001	CW	50		CW	50	Y
Team Project	MSP5002	✓	HE5	20		C	NONE	PRA	30		CW	70	Y
Auto & Component Design	MSP5003	✓	HE5	20		C	NONE	CW	50		PRA	50	Y
Mechanics of Materials	MSP5005	✓	HE5	20		C	MSP4006 MSP4007	CW	40		Exam	60	Y
Engineering Modelling & Analysis	MSP5007	✓	HE5	20		C	MSP4007	CW	50		Exam	50	Y
Performance Modelling & CFD	MSP6000	✓	HE6	20		C	MSP5000	CW	50		CW	50	Y
Vehicle Dynamics & Adv. Electronics	MSP6001	✓	HE5	20		C	MSP5001	CW	50		Exam	50	Y
Individual Automotive Project	MSP6002	✓	HE6	20		C	NONE	CW	70		PRA	30	Y
Race-Car Design Project	MSP6003	✓	HE6	20		C	NONE	CW	50		CW	50	Y
Advanced Materials & Structures	MSP6005	✓	HE6	20		C	MSP5005 MSP5007	CW	25		Exam	75	Y
Management in Engineering	MSP6007	✓	HE6	20		C	NONE	CW	50		PRA	50	Y

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Bolton Values Map – BSc (Hons) in BEng(Hons) in Automotive Performance Engineering – Motorsport

BSc (Hons) in Automotive Performance Engineering - Motorsport	Engine Systems & Aerodynamics	Vehicle Systems	CAD/CAM	High Performance Materials	Performance Engineering Sciences	Engineering Mathematics	Powertrains & Aerodynamics	Chassis Development & Telemetry	Team Project	Auto & Component Design	Mechanics of Materials	Engineering Modelling & Analysis	Performance Modelling & CFD	Vehicle Dynamics & Advanced Electronics	BEng Individual Project	Race-Car Design Project	Advanced Materials & Structures	Management in Engineering
Value	MSP4000	MSP4002	MSP4003	MSP4004	MSP4006	MSP4007	MSP5000	MSP5001	MSP5002	MSP5003	MSP5005	MSP5007	MSP6000	MSP6001	MSP6002	MSP6003	MSP6005	MSP6007
Employability																		
Communication	d	da	tda	dta	d	d	da		da	td	d	tda	da	td	tda	da	tda	dt
Team Work		da		d			d		da	td		tda		td		da		dt
Organisation & Planning		dt		d			td		d			tda	d	td	tda	da		dta
Numerical Interpretation	tda	da			dta	dta	tda	tda	da	tda	dta		tda	tda	tda	da	tda	
Problem Solving	tda	da			dta	dta	d	tda	da	tda	dta	d	ad	tda	tda	da	tda	
Flexibility & Adaptability	d			d				d				d			d	da		dt
Action Planning	d	dt		d				d	d			tda			tda	da		dt
Self Awareness		tda		dta								d	d		d	d		dt
Initiative	d	d		d					d			d	ad	d	d	d		dt
Personal Impact & Confidence				d				d				d		d	d	d		dt
Internationalisation																		
International content or international comparative approach				d			t					tda		tda				dt
Preparation for international profession		tda		d			at			d		tda	tda	d	d		td	dt
Foreign language or cross-cultural communication																		
Preparation for internationally recognised qualification		dt		d			d		dt	t		tda	da	t	d		d	dt
Environmental Sustainability & Awareness																		
Globalisation & the global context				d			td					tda	d			d		dta
Consumer culture and the free market				d								tda						dt
Carbon reduction	t						t	d				d	tda	d		d	d	
Systems, control mechanisms and environments	ta	da		d			td	d	da			d		d				dt
Energy, consumption, waste and technology	ta	d		d			t	d		d		tda	tda		d		d	dt
Business impact and business practices on the environment				d						td		tda	d					dta
Social, Public & Ethical Responsibility																		
Professional standards and practice		d	td	d				tda		d		tda		d		d		dt
Ethics				d								tda	da	td		d		dt
Political or social judgement				d								d	tda			d		dt
Cultural or moral issues				d								d	tda			d		dt

d – developed; a – assessed; t - taught

Programme specification: [BEng (Hons) in Automotive Performance Engineering – Motorsport]

Date: [MAY 2013]