

School of Engineering and Technology

Title of Programme: BEng Honours in Aerospace, Aerospace Systems, Computer Aided, Mechanical, Manufacturing and Automotive Engineering

Programme Code: EIBENGA

Programme Specification

This programme specification is relevant to students entering:
17 September 2018

Associate Dean of School (Academic Quality Assurance):
George Haritos

Signature pp 

A programme specification is a collection of key information about a programme of study (or course). It identifies the aims and learning outcomes of the programme, lists the modules that make up each stage (or year) of the programme, and the teaching, learning and assessment methods used by teaching staff. It also describes the structure of the programme, its progression requirements and any programme-specific regulations. This information is therefore useful to potential students to help them choose the right programme of study, to current students on the programme, and to staff teaching and administering the programme.

Summary of amendments to the programme:

Section	Amendment
D	Professional and Statutory Regulatory Bodies: Details of accreditation awarded to the programmes updated.
D	Programme Structure: Clarification of terms of FYP compensation updated.
D	Programme Specific Assessment Regulations: Requirements for students repeating projects updated.
D	4ENT1067 updated assessment weighting
D	Career modules assessment regs updated.
F	Other Sources of Information: Individual sources of information replaced by reference to Herts Handbook.
G	Entry Requirements: General update of requirements in line with changes to UCAS points system.
Table 2	Individual Project name and number updated

If you have any queries regarding the changes please email AQO@herts.ac.uk

Programme Specification

BEng Honours in Mechanical Engineering

BEng Honours in Mechanical Engineering and Mechatronics

BEng Honours in Aerospace Engineering

BEng Honours in Aerospace Engineering with Space Technology

BEng Honours in Aerospace Systems Engineering

BEng Honours in Aerospace Systems Engineering with Pilot Studies

BEng Honours in Automotive Engineering

BEng Honours in Automotive Engineering with Motorsport

This programme specification (PS) is designed for prospective students, enrolled students, academic staff and potential employers. It provides a concise summary of the main features of the programme and the intended learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the teaching, learning and assessment methods, learning outcomes and content for each module can be found in Definitive Module Documents (DMDs) and Module Guides.

Section 1

Awarding Institution/Body	University of Hertfordshire
Teaching Institution	University of Hertfordshire
University/partner campuses	College Lane
Programme accredited by	Institution of Mechanical Engineers and/or Royal Aeronautical Society, as appropriate to the disciplines (see section D)
Final Qualification	BEng Honours
All Final Award titles	Mechanical Engineering
(Qualification and Subject)	Mechanical Engineering and Mechatronics
	Aerospace Engineering
	Aerospace Engineering with Space Technology
	Aerospace Systems Engineering
	Aerospace Systems Engineering with Pilot Studies
	Automotive Engineering
	Automotive Engineering with Motorsport
	Mechanical Engineering (Sandwich)
	Mechanical Engineering and Mechatronics (Sandwich)
	Aerospace Engineering (Sandwich)
	Aerospace Engineering with Space Technology (Sandwich)
	Aerospace Systems Engineering (Sandwich)
	Aerospace Systems Engineering with Pilot Studies (Sandwich)
	Automotive Engineering (Sandwich)
	Automotive Engineering with Motorsport (Sandwich)
	Mechanical Engineering with Year Abroad
	Mechanical Engineering and Mechatronics with Year Abroad
	Aerospace Engineering with Year Abroad
	Aerospace Engineering with Space Technology with Year Abroad
	Aerospace Systems Engineering with Year Abroad
	Aerospace Systems Engineering with Pilot Studies with Year Abroad
	Automotive Engineering with Year Abroad
	Automotive Engineering with Motorsport with Year Abroad
	Mechanical Engineering with Study Abroad
	Mechanical Engineering and Mechatronics with Study Abroad
	Aerospace Engineering with Study Abroad

Aerospace Engineering with Space Technology with Study Abroad
Aerospace Systems Engineering with Study Abroad
Aerospace Systems Engineering with Pilot Studies with Study Abroad
Automotive Engineering with Study Abroad
Automotive Engineering with Motorsport with Study Abroad

FHEQ level of award	6
UCAS code(s)	H300, H304, H410, H400, H430, H492, H330, H335
Language of Delivery	English

A. Programme Rationale

The School of Engineering and Technology offers a variety of MEng/BEng degrees. This programme specification covers those under the general category of Mechanical Engineering which includes Aerospace and Automotive disciplines. The programme has been developed to (i) satisfy the QAA Engineering Benchmark requirements (ii) to fulfil the initial partial academic requirements of UK-SPEC for CEng status and (iii) meet the professional employment needs of industry.

Initially students study a relatively common portfolio of modules covering a broad range of topics necessary for professional Engineering allowing flexibility for students to change their award/pathway as they become more familiar with the opportunities available. The differentiating features of the various awards are progressively introduced as the students progress.

Students with a sufficient level of achievement during levels 4 and 5 are encouraged to consider transfer to the MEng programme.

The School has close contacts with a wide range of engineering companies and students are encouraged to take the sandwich option spending at least 48 weeks on industrial placement between levels 5 and 6. Alternatively, they may consider Study Abroad options.

Graduates can expect to gain employment either within the industries directly associated with their named award or in industries associated with Mechanical Engineering in general. These industries include small and large scale manufacturing, defence, civil and military aircraft, space, automotive and motorsport. Alternatively graduates may continue their education to a post-graduate level and the University of Hertfordshire has a range of taught MSc awards or research awards that graduates may consider.

B. Educational Aims of the Programme

The programme has been devised in accordance with the University's graduate attributes of programmes of study as set out in [UPR TL03](#).

Additionally this programme aims to:

- provide a high quality education in engineering;
- provide an education for the individual which enhances his/her prospects of professional employment in engineering and business both in national and international industries;
- provide studies which are accredited by one or more of the Professional Engineering institutions;
- provide studies which develop an awareness of, and underpinning knowledge and understanding of a broad range of Mechanical Engineering areas of expertise;
- provide studies which enable the student to attain a high level of expertise in a range of topics specific to their named award.
 - Mechanical Engineering and Mechatronics students will particularly study how to control mechanical systems using analogue and digital electronics.
 - Aerospace Engineering students will particularly study aerodynamics and aircraft structural design.
 - Aerospace Engineering with Space Technology students will particularly study rocket and satellite technology and space vehicle design.
 - Aerospace Systems Engineering students will study a broad range of aircraft systems and how to integrate them into aircraft design.
 - Aerospace Systems Engineering with Pilot Studies students will particularly study the influence of pilot performance on aircraft design.

- Automotive Engineering students will particularly focus on vehicle design and manufacturing methods/strategies.
- Automotive Engineering with Motorsport students will particularly study how to enhance high performance vehicles particularly through aerodynamics and engine design.

C. Intended Learning Outcomes

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, skills and other attributes in the following areas. The programme outcomes are referenced to the QAA benchmark statements for Engineering and the Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies (2014) and relate to the typical student. Additionally, the SEEC Credit Level Descriptors for Further and Higher Education (2016) have been used as a guiding framework for curriculum design.

Knowledge and Understanding	Teaching and learning methods	Assessment strategy
<p>A1-The analytical methods employed by Engineers.</p> <p>A2-The fundamental engineering sciences.</p> <p>A4-The basic principles and economic, social, legal, ethical and sustainability considerations of the business of engineering.</p> <p>A5-Professional engineering practice.</p> <p>Additionally for:</p> <p>Mechanical Engineering (M)</p> <p>A3m -The design principles and design-to-build processes appropriate to mechanical systems.</p> <p>Mechanical Engineering and Mechatronics (MEM)</p> <p>A3mem - The design principles and design-to-build processes appropriate to mechatronic systems.</p> <p>Aerospace Engineering (A)</p> <p>A3a - The design principles and design-to-build processes appropriate to aircraft.</p> <p>Aerospace Engineering with Space Technology (AST)</p> <p>A3ast - The design principles and design-to-build processes appropriate to aerospace and space systems.</p> <p>Aerospace Systems Engineering (ASE)</p> <p>A3ase -The design principles and design-to-build</p>	<p>Acquisition of knowledge and understanding is through the following approaches:</p> <p>Acquisition of A1 and A2 is through a combination of lectures, small group tutorials, coursework and laboratory work at levels 4 and 5 of the programme. Additional support is provided through the Mathematics Drop-in Centre. Specialist aspects of A2 are further developed at level 6.</p> <p>Acquisition of A3, A4, A5 and A6 is through a combination of lectures, projects and coursework throughout the programme.</p> <p>Staff deploy a range of teaching and learning strategies in the most appropriate way for each individual module. This will vary depending on the subject nature of a particular module and the level of study. A more didactic approach will tend to be adopted at lower levels, in particular for A1 and A2. An increasingly self-directed and interactive approach will be adopted at higher levels, particularly for A3, A4 and A5.</p> <p>Throughout, the learner is encouraged to undertake independent study both to supplement and consolidate what is being taught/learnt and to broaden their individual knowledge and understanding of the subject.</p>	<p>Knowledge and understanding are assessed through combination of unseen examinations (A1, A2, A3 and A5) and in-course assessments (A1-A6) in the form of laboratory reports, essays and phase tests. Some aspects of A3 and A4 are assessed by design exercises and project reports and presentations. At level 6 some aspects of A5 are assessed by case study reports.</p>

<p>processes appropriate to aerospace systems.</p> <p>Aerospace Systems Engineering with Pilot Studies (APS)</p> <p>A3ase -The design principles and design-to-build processes appropriate to aerospace systems.</p> <p>A6 –The regulatory requirements and operational procedures applicable to pilots.</p> <p>Automotive Engineering (V)</p> <p>A3v -The design principles and design-to-build processes appropriate to automotive vehicles.</p> <p>Automotive Engineering with Motorsport (VMS)</p> <p>A3vms -The design principles and design-to-build processes appropriate to automotive and motorsport vehicles.</p>		
<u>Intellectual skills</u>	<u>Teaching and learning methods</u>	<u>Assessment strategy</u>
<p>B1- Analyse and solve engineering problems using appropriate techniques.</p> <p>B3-Select appropriate computer based methods for engineering and communication.</p> <p>B4-Evaluate external influences on the design process.</p> <p>Additionally for:</p> <p>Mechanical Engineering</p> <p>B2m - Model and analyse mechanical systems.</p> <p>B5m - Design Mechanical systems, components or processes.</p> <p>Mechanical Engineering and Mechatronics</p> <p>B2mem - Model and analyse electro-mechanical systems.</p> <p>B5mem - Design electro-mechanical systems, components or processes.</p> <p>Aerospace Engineering</p> <p>B2a - Model and analyse aircraft.</p>	<p>Intellectual skills are developed throughout the programme by the methods and strategies outlined for section A of the intended learning outcomes above, again moving from a more didactic approach to an increasingly self-directed and interactive approach at higher levels, particularly for B3, B4 and B5.</p> <p>Analysis, problem solving and modelling skills (B1 and B2) are further developed through tutorial work, laboratory work, in-course exercises and project work.</p> <p>Design and IT skills (B3-B5) are further developed through project work, design exercises and some case study work at level 6.</p> <p>Feedback is given to all students on all coursework produced.</p> <p>Throughout, the learner is encouraged to develop intellectual skills further by independent study.</p>	<p>Intellectual skills B1, B2 and B5 are assessed through unseen examination papers, laboratory reports and coursework related to in-course exercises.</p> <p>Intellectual skills B3 and B4 are assessed through project reports and presentations.</p>

<p>B5a - Design aircraft systems, components or processes.</p> <p>Aerospace Engineering with Space Technology</p> <p>B2ast - Model and analyse aerospace vehicles and space systems.</p> <p>B5ast - Design aerospace vehicles and space systems, components or processes.</p> <p>Aerospace Systems Engineering</p> <p>B2ase - Model and analyse aerospace systems.</p> <p>B5ase - Design aerospace systems, components or processes.</p> <p>Aerospace Systems Engineering with Pilot Studies</p> <p>B2ase - Model and analyse aerospace systems.</p> <p>B5ase - Design aerospace systems, components or processes.</p> <p>Automotive Engineering</p> <p>B2v - Model and analyse automotive vehicles.</p> <p>B5v - Design vehicle systems, components or processes.</p> <p>Automotive Engineering with Motorsport</p> <p>B2vms - Model and analyse high performance vehicles.</p> <p>B5vms - Design high performance vehicle systems, components or processes.</p>		
<p>Practical skills</p> <p>C2-Perform experimental work and draw conclusions.</p> <p>C3-Use computer-based engineering tools.</p> <p>C4-Prepare technical documentation.</p> <p>C6-Plan and manage a project, taking into account economic, social, legal, ethical and sustainability constraints.</p> <p>Additionally for: Mechanical Engineering</p>	<p>Teaching and learning methods</p> <p>Practical skills are developed throughout the programme by the methods and strategies outlined in sections A and B of the intended learning outcomes above, again moving from a more didactic approach to an increasingly self-directed and interactive approach at higher levels, particularly for C4, C5 and C6.</p> <p>C1 is developed through laboratory work, coursework assignments and tutorial work.</p>	<p>Assessment strategy</p> <p>Practical skills are assessed through laboratory reports, coursework assignments, design exercise submissions, case study reports, presentations, project reports and logbooks.</p>

C1m - Apply analytical and modelling techniques to solve mechanical engineering problems.
C5m - Evaluate the design of mechanical systems, components or processes.

Mechanical Engineering and Mechatronics

C1mem - Apply analytical and modelling techniques to solve electro-mechanical engineering problems.

C5mem - Evaluate the design of electro-mechanical systems, components or processes.

Aerospace Engineering

C1a - Apply analytical and modelling techniques to solve aerospace engineering problems.

C5a - Evaluate the design of aircraft, components or processes.

Aerospace Engineering with Space Technology

C1a - Apply analytical and modelling techniques to solve aerospace engineering problems.

C5ast - Evaluate the design of aerospace and space vehicle, components or processes.

Aerospace Systems Engineering

C1a - Apply analytical and modelling techniques to solve aerospace engineering problems.

C5ase - Evaluate the design of aerospace systems, components or processes.

Aerospace Systems Engineering with Pilot Studies

C1a - Apply analytical and modelling techniques to solve aerospace engineering problems.

C5ase - Evaluate the design of aerospace systems, components or processes.

C7 – Fly an aircraft.

C2 is developed through laboratory work.

C3 is developed through the use of software simulation tools at all levels.

C4 is developed through project work, lab exercises and software documentation, particularly at level 4.

C5 is developed through laboratory work at levels 5 and 6.
C6 is developed through lectures and project work.

C7 is developed through one to one flying tuition at an approved flying school.

Feedback is given to all students on all coursework produced.

<p>Automotive Engineering C1v - Apply analytical and modelling techniques to solve automotive engineering problems. C5v -Evaluate the design of vehicles, components or processes.</p> <p>Automotive Engineering with Motorsport C1v - Apply analytical and modelling techniques to solve automotive engineering problems. C5vms -Evaluate the design of performance vehicles, components or processes.</p>		
Transferable skills	Teaching and learning methods	Assessment strategy
<p>D1-Communicate effectively, both orally and in writing. D2-Use commonly available IT tools. D3-Manage time and resources effectively. D4-Work effectively within a team as a member. D5-Manipulate, sort and present data. D6-Solve problems in a logical manner. D7-Learn effectively and independently, in all aspects of life.</p>	<p>Transferable skills are developed throughout the programme by the methods and strategies outlined in sections A, B and C of the intended learning outcomes above.</p> <p>D1 is developed through feedback on coursework reports, oral presentations and project reports. D2 is developed through their use in preparing project reports, laboratory reports, case studies, design work, etc. D3 is developed through project work planning and throughout the programme. D4 is developed through group project and assignment work. D5 and D6 are developed through lectures and tutorial work throughout the programme. D7 is developed and promoted throughout the programme.</p> <p>Throughout, the learner is encouraged to develop transferable skills by maintaining a record of evidence and completing a personal development plan.</p>	<p>Transferable skills are assessed through the following approaches:</p> <p>D1, D2, D5 and D6 are assessed through coursework, individual major project and technical reports and oral presentations. D4 is assessed by review of group project work.</p> <p>D3 and D7 are specifically assessed by review of an individual's progress during individual major project work.</p>

D. Programme Structures, Features, Levels, Modules, and Credits

The programme is normally offered in full-time (3 years), sandwich (4 years) or part-time (6 years) modes, and leads to the award of a BEng Degree with Honours in the student's chosen engineering discipline.

Entry is normally at level 4 (with A-Level, or equivalent qualifications) but is possible at level 5 with suitable qualifications (e.g. an Edexcel HND in Engineering with appropriate subjects studied). Direct entry into level 6 is also possible, for example following successful completion of two years of a similar BEng or MEng degree programme at another HE institution. In this case, the final award will not be accredited. Intake is normally Semester A (September).

Professional and Statutory Regulatory Bodies

The following Bachelor's degrees be accredited by IMechE and RAes as meeting the academic requirement, in part, for Chartered Engineer registration for the cohort intakes from 2016 up to, and including, 2020:

BEng (Hons) Aerospace Engineering (Full Time - 3 years duration; Sandwich - 4 years duration; Part Time 6 years duration)

BEng (Hons) Aerospace Engineering with Space Technology (Full Time - 3 years duration; Sandwich - 4 years duration; Part Time 6 years duration)

BEng (Hons) Aerospace Systems Engineering (Full Time - 3 years duration; Sandwich - 4 years duration; Part Time 6 years duration)

BEng (Hons) Aerospace Systems Engineering with Pilot Studies (Full Time - 3 years duration; Sandwich - 4 years duration; Part Time 6 years duration)

BEng (Hons) Automotive Engineering (Full Time - 3 years duration; Sandwich - 4 years duration; Part Time 6 years duration)

BEng (Hons) Mechanical Engineering (Full Time - 3 years duration; Sandwich – 4 years duration; Part Time 6 years duration)

BEng (Hons) Mechanical Engineering and Mechatronics (Full Time - 3 years duration; Sandwich - 4 years duration; Part Time 6 years duration)

The following Bachelor's degrees be accredited by IMechE as meeting the academic requirement, in part, for Chartered Engineer registration for the cohort intakes from 2016 up to, and including, 2020:

BEng (Hons) Automotive Engineering with Motorsport (Full Time - 3 years duration; Sandwich - 4 years duration; Part Time 6 years duration)

Work-Based Learning, including Sandwich Programmes

A designated sandwich programme leads to a University award in the sandwich mode and the word "sandwich" appears on the award certificate. In order for the BEng to lead to an award in the sandwich mode, the student must undertake a period of approved work experience (industrial placement) of not less than 48 weeks, excluding holidays, during year 3. To achieve this, students must start their work experience before 1st October. The work experience will normally be completed within the United Kingdom but with approval may be completed within other countries. Progress of the student's training is monitored by visits from University academic staff. Students will be required to document this period of work in accordance with the guidelines produced by the School. Students on industrial placement will be registered on the Placement Year Module (6AAD0015)

Students who have not achieved the minimum progression requirements at the end of level 5 may be prevented from undertaking a sandwich placement. The policy relating to progression onto the placement year from level 5 is given in the School Guidelines on Industrial Placements. Additionally, students on industrial placement but who have level 4 or 5 modules to repeat will not normally be allowed to re-enrol on these modules until they return from industrial placement. This is to avoid a conflict between UH attendance requirements and the student's commitment to their employer.

Students who do not take the sandwich option, progressing directly to level 6, are automatically transferred to the full-time mode and are required to complete a Careers Portfolio to demonstrate their employability skills (6ENT1021). This portfolio will include evidence of any employment experiences the student has, evidence of any voluntary work experience, an audit of their employability skills and a careers action plan to further their employability skills post-graduation. It is expected that much of this evidence will have been gathered during the Career Skills Development module (4ENT1096) and Career Planning module (5ENT1082).

Erasmus programme

Students may opt to study all, or a single semester, of level 5 abroad as part of a reciprocal agreement with a partner university. To be eligible for an exchange option, students must have passed 120 credits at level 4 with an average of at least 60%. The remaining requirements and details are as set out in Study Abroad Options below.

Study Abroad Options

Students may also opt to take additional studies through the Year Abroad or Semester Abroad options at a partner institution in place of all or part of the sandwich placement year, i.e. between Levels 5 and 6. To be eligible for these options students will be expected to have passed 120 credits at level 4 and 120 credits at level 5 with an average of at least 60%. In order to maintain registration with UH, students studying abroad for a full year will be registered on 6ENT0001 whilst students studying abroad for a single semester will be enrolled on 6ENT1051. In recognition of the extra study, provided a full transcript of their achievement in the host academic institution is submitted to the Board of Examiners, this will lead to an award of a BEng Degree with Honours in one of the named awards as listed in Section 1 (page 2) “with Year Abroad” or “with Study Abroad” on the award. Since the student will have completed all the modules on the full-time award at UH the degree accreditation is unaffected and the degree classification is based only on modules studied at UH. It is not permissible for students to undertake an exchange year, where studies at a partner institution replace part of their studies at UH.

Further Features

In order to recognise the significant programme-related extra-curricular commitment and experience that can be gained by students who participate in Formula Student, the BMFA Heavy/Electric Lift Challenge, IMechE UAS Challenge, Imagine Cup or other similar competitions, there are three zero-credit-rated elective modules that students may take. These are:

Formula Student (6ENT1043)
UAV Projects (6ENT1042)
Smart Systems Integration (6ENT1044)

They are assessed on a Pass/Fail basis. If taken, they do not contribute to degree classification, but will appear on a student’s results transcript.

Programme Structure

The programme structure and progression information below (Table 1a and 1b) is provided for the Honours award. Any interim awards are identified in Table 1b. The Programme Learning Outcomes detailed above are developed and assessed through the constituent modules. Table 2 identifies where each learning outcome is assessed.

Major projects (group and individual) i.e. Final Year Project cannot be compensated.

Table 1a Outline Programme Structure

Mode of study Full Time: 3 years; Sandwich: 4 years and Part-time: 6 years

Entry point Semester A

The following notations should be read in conjunction with table below:

A = Aerospace Engineering,
AEST= Aerospace Engineering with Space Technology,
ASE = Aerospace Systems Engineering,
APS = Aerospace Systems Engineering with Pilot Studies,

M = Mechanical Engineering,
MEM= Mechanical Engineering and Mechatronics,
V = Automotive Engineering,
VMS = Automotive Engineering with Motorsport

Level 4

c = compulsory module

o = optional module.

Module Title	Module Code	Award								Credit Points	Language of Delivery	% Examination	% Coursework	% Practical	Semester	Year of Study	
		A	AEST	ASE	APS	M	MEM	V	VMS							Full Time Mode	Part Time Mode
Career Skills Development	4ENT1096	c	c	c	c	c	c	c	C	0	English	-	100	-	AB	1	1
Engineering Mathematics	4PAM1007	c	c	c	c	c	c	c	C	15	English	80	20	-	A	1	1
Aerospace Technology & Industry	4AAD0016	c	c	c	c	-	-	-	-	15	English	-	100	-	A	1	1
Engineering Fundamentals	4ENT1098	-	-	-	-	c	-	-	-	15	English	-	100	-	A	1	1
Automotive and Motorsport Technology	4ENT1115	-	-	-	-	-	-	c	C	15	English	-	100	-	A	1	1
Intro to Manufacturing Technology	4ENT1117	c	c	c	c	c	c	c	C	15	English	-	100	-	AB	1	2
Materials and Electrical Science	4ENT1119	c	c	c	c	c	c	c	C	15	English	-	100	-	A	1	2
Introduction to Electronic Systems	4ENT1028	-	-	-	-	-	c	-	-	15	English	-	100	-	A	1	2
Computer Programming for Electronics Engineers	4ELE0049	-	-	-	-	-	c	-	-	15	English	-	100	-	B	1	2
Engineering Applications of Mathematics	4PAM1033	c	c	c	c	c	c	c	C	15	English	-	100	-	B	1	1
Introduction to Design	4ENT1121	c	c	c	c	c	c	c	C	15	English	-	100	-	AB	1	1
Fluid Mechanics and Thermodynamics	4ENT1068	c	c	c	c	c	-	c	C	15	English	60	40	-	B	1	2
Mechanical Science	4ENT1067	c	c	c	c	c	c	c	C	15	English	60	40	-	B	1	2

Progression to level 5 requires:

A minimum of 90 credits to remain on honours award.

Progression to non-honours level5 with 75 credits may be permissible. The maximum study rate in such an instance would normally be 120 credits but students would be expected to remedy any failed modules from level4 in the first instance.

Level 5

c = compulsory module

o = optional module (See page 8 for further details about the Exchange Year and Exchange Semester).

Module Title	Module Code	Award								Credit Points	Language of Delivery	% Examination	% Coursework	% Practical	Semester	Year of Study	
		A	AEST	ASE	APS	M	MEM	V	VMS							Full Time Mode	Part Time Mode
Exchange Year	5ENT1063	o	o	o	o	o	o	o	o	120	English	-	-	-	AB	2	-
Exchange Semester	5ENT1064	o	o	o	o	o	o	o	o	60	English	-	-	-	A or B	2	3 or 4
Further Engineering Mathematics	5PAM1005	c	c	c	c	c	c	c	c	15	English	70	30	-	A	2	3
Computer Aided Engineering	5ENT1078	c	c	-	-	c	c	c	c	15	English	-	100	-	A	2	3
Aircraft Systems	5ENT1039	-	-	c	c	-	-	-	-	15	English	-	100	-	A	2	3
Dynamics	5ENT1013	c	c	c	c	c	c	c	c	15	English	70	30	-	A	2	4
Aerospace Design	5ENT1032	c	c	c	c	-	-	-	-	15	English	-	100	-	A	2	4
Thermofluid Mechanics	5ENT1079	-	-	-	-	c	-	c	c	15	English	70	30	-	A	2	4
Electrical Engineering & Power Control	5ELE0058	-	-	-	-	-	c	-	-	15	English	70	30	-	A	2	4
Mechatronic Systems Modelling & Control	5ENT1056	-	-	-	-	c	c	-	-	15	English	-	100	-	B	2	3
Aerospace Systems Modelling & Control	5ENT1062	c	c	c	c	-	-	-	-	15	English	-	100	-	B	2	3
Auto Electronics & Control Systems	5ENT1011	-	-	-	-	-	-	c	c	15	English	-	100	-	B	2	3
Proj Management & Product Developm't	5ENT1080	c	c	c	-	c	c	c	c	15	English	70	30	-	B	2	3
Air Law, Navigation and Meteorology	5ENT1091	-	-	-	c	-	-	-	-	15	English	-	100	-	B	2	3
Structural Mechanics	5ENT1012	c	-	-	-	c	c	c	c	15	English	70	30	-	B	2	4
Avionics Systems	5ENT1067	-	c	c	c	-	-	-	-	15	English	-	100	-	B	2	4
Aerothermodynamics	5ENT1014	c	c	c	c	-	-	-	-	15	English	70	30	-	B	2	4
Integrated Engineering Systems Design	5ENT1033	-	-	-	-	c	c	c	-	15	English	-	100	-	B	2	4
Motorsport Design	5ENT1041	-	-	-	-	-	-	-	c	15	English	-	100	-	B	2	4
Career Planning	5ENT1082	c	c	c	c	c	c	c	c	0	English	-	100	-	AB	2	4

Progression to level 6 requires:

210 credit points and above to Honours award.

Progression to non-honours level 6 with 180 credits may be permissible. The maximum study rate in such an instance would normally be 120 credits but students would be expected to remedy any failed modules from level 5 in the first instance.

Level 6

c = compulsory module, o = optional module. All students who do not take the Placement Year module must take the Careers Portfolio module in year 4 (year 5 if Part Time and not employed by an appropriate engineering company). See Page 9 for details of the Study Abroad options. M4 students must choose either Manufacturing Strategy or Micro-Engineering & Micro-Technology.

Module Title	Module Code	Award								Credit Points	Language of Delivery	% Examination	% Coursework	% Practical	Semester	Year of Study	
		A	AEST	ASE	APS	M	MEM	V	VMS							Full Time Mode	Part Time Mode
Placement Year	6AAD0015	o	o	o	o	o	o	o	o	0	English	-	100	-	ABC	3	-
Year Abroad	6ENT0001	o	o	o	o	o	o	o	o	0	English	-	-	-	AB	3	-
Semester Abroad	6ENT1051	o	o	o	o	o	o	o	o	0	English	-	-	-	A/B	3	-
Careers Portfolio	6ENT1021	o	o	o	o	o	o	o	o	0	English	-	100	-	AB	4	5
Stability & Control of Aircraft	6AAD0018	c	-	c	c	-	-	-	-	15	English	60	40	-	A	4	5
Mechanics & Properties of Materials	6ACM0003	c	-	-	-	c	c	c	c	15	English	60	40	-	A	4	5
Control Systems	6AAD0007	-	c	c	-	c	c	-	-	15	English	60	40	-	A	4	5
Rocket Performance & Propulsion	6AAD0026	-	c	-	-	-	-	-	-	15	English	60	40	-	A	4	5
Vehicle Engineering Design	6AAD0022	-	-	-	-	-	-	c	c	15	English	-	100	-	A	4	5
Pilot Studies and Flight Analysis	6ENT1041	-	-	-	c	-	-	-	-	30	English	-	100	-	AB	4	5
Aero Structural Design & Analysis	6ENT1035	c	-	-	-	-	-	-	-	15	English	60	40	-	B	4	5
Aerodynamics	6ENT1064	c	-	-	-	-	-	-	-	15	English	60	40	-	B	4	5
Satellite & Terrestrial Com Systems	6ENT1014	-	c	c	-	-	-	-	-	15	English	-	100	-	B	4	5
Space Dynamics	6PAM0027	-	c	-	-	-	-	-	-	15	English	-	100	-	B	4	5
Aircraft Systems Integration	6ENT1063	-	-	c	c	-	-	-	-	15	English	60	40	-	B	4	5
Mechatronics Design	6ENT1039	-	-	-	-	-	c	-	-	15	English	-	100	-	B	4	5
Mechanical Engineering Design	6ENT1071	-	-	-	-	c	-	-	-	15	English	-	100	-	B	4	5
Vibration, Noise & Vehicle Dynamics	6ENT1066	-	-	-	-	-	-	c	c	15	English	60	40	-	B	4	5
Noise and Vibration Analysis	6ENT1038	-	-	-	-	c	c	-	-	15	English	60	40	-	B	4	5
Vehicle Structural Analysis & Manu	6AAD0023	-	-	-	-	-	-	c	c	15	English	60	40	-	B	4	5
Thermofluid Mechanics & Heat Transfer	6AAD0005	-	-	-	-	c	-	c	-	15	English	60	40	-	A	4	6
Motorsport Engineering	6ENT1053	-	-	-	-	-	-	-	c	15	English	-	100	-	A	4	6
Micro-Engineering & Micro-Technology	6ENT1022	-	-	-	-	o	c	-	-	15	English	-	100	-	B	4	6
Manufacturing Strategy	6AAD0019	-	-	-	-	o	-	c	-	15	English	60	40	-	B	4	6
High Performance Engine Design	6ENT1054	-	-	-	-	-	-	-	c	15	English	60	40	-	B	4	6
Power Systems	6ELE0071	-	-	-	-	-	c	-	-	15	English	60	40	-	A	4	6
Aero Performance, Propulsion & Design	6ENT1065	c	c	c	c	-	-	-	-	30	English	40	60	-	AB	4	6

Individual Major Project (Aerospace)	6ENT1079	c	c	c	c	-	-	-	-	30	English	0	100		AB	4	6
Individual Major Project (Mechanical)	6ENT1092	-	-	-	-	c	c	-	-	30	English	0	100		AB	4	6
Individual Major Project (Automotive)	6ENT1094	-	-	-	-	-	-	c	c	30	English	0	100		AB	4	6

If any of the progression requirements stated above are not met then the Board of Examiners is empowered to require the student to transfer to the BEng (non-Honours). The study pattern for students transferring onto the BEng (non-Honours) route shall be agreed on a case-by-case basis with the BEng Programme Tutor or Associate Dean of School.

Honours Classification

The University has approved structure and assessment regulations common to all programmes. Full details are provided in [UPR AS14](#), Section D. However, this programme has specific regulations relating to the determination of Honours classification given under the Programme-Specific Regulations in Section 2.

Table 1b Final and interim awards available

The programme provides the following final and interim awards:

Final Award	Award Title	Minimum requirements	Available at end of Level	Programme Learning Outcomes developed (see above)
BEng (Hons) in the named award	Mechanical Engineering	360 credit points including 240 at level 6/5 of which 120 must be at level 6	6	All programme learning outcomes for the specified named award (see Table 2)
BEng (Hons) in the named award (Sandwich)	Mechanical Engineering and Mechatronics Aerospace Engineering Aerospace Engineering with Space Technology	360 credit points including 240 at level 6/5 of which 120 must be at level 6. Additionally, students must satisfactorily complete the Placement Year module.	6	All programme learning outcomes for the specified named award (see Table 2)
BEng (Hons) in the named award with Study Abroad	Aerospace Systems Engineering Aerospace Systems Engineering with Pilot Studies	360 credit points including 240 at level 6/5 of which 120 must be at level 6. Additionally, students must satisfactorily complete the Semester Abroad modules.	6	All programme learning outcomes for the specified named award (see Table 2)
BEng (Hons) in the named award with Year Abroad	Automotive Engineering Automotive Engineering with Motorsport	360 credit points including 240 at level 6/5 of which 120 must be at level 6. Additionally, students must satisfactorily complete the Year Abroad modules.	6	All programme learning outcomes for the specified named award (see Table 2)

Interim Award	Award Title	Minimum requirements	Available at end of Level	Programme Learning Outcomes developed (see above)
University Certificate		45 credit points at level 4	4	See UPR AS11, section 13: http://sitem.herts.ac.uk/secreg/upr/AS11.htm
Certificate of Higher Education		120 credit points at level 4	4, 5	See UPR AS11, section 13: http://sitem.herts.ac.uk/secreg/upr/AS11.htm
Diploma of Higher Education		240 credit points including at least 120 at level 5	5, 6	<i>For named awards, list all relevant learning outcomes,</i> A1, A2, A3, B1, B2, C2, C3, D5, D6 (from 2016 PS) OR <i>For untitled awards: See UPR AS11, section 13:</i> http://sitem.herts.ac.uk/secreg/upr/AS11.htm
BEng in the named award	Mechanical Engineering Mechanical Engineering and Mechatronics Aerospace Engineering Aerospace Engineering with Space Technology	300 credit points including 180 at level 6/5 of which 60 must be at level 6 excluding the individual major project. For students entering directly at level 6 only, 75 UH specified credits must be at level 6 excluding the individual major project (*).	6	A1, A2, A3, A4, A5, B1, B2, B3, B5, C1, C2, C3, D5, D6
BEng in the named award (Sandwich)	Aerospace Systems Engineering Aerospace Systems Engineering with Pilot Studies	300 credit points including 180 at level 6/5 of which 60 must be at level 6 excluding the individual major project. Additionally, students must satisfactorily complete the Placement Year.	6	A1, A2, A3, A4, A5, B1, B2, B3, B5, C1, C2, C3, C4, C5, C6 D1, D2, D5, D6
BEng in the named award with Study Abroad	Automotive Engineering Automotive Engineering with Motorsport Aerospace Systems Technology***	300 credit points including 180 at level 6/5 of which 60 must be at level 6 excluding the individual major project. Additionally, students must satisfactorily complete the Semester Abroad modules.	6	A1, A2, A3, A4, A5, B1, B2, B3, B5, C1, C2, C3, D5, D6
BEng in the named award with Year Abroad		300 credit points including 180 at level 6/5 of which 60 must be at level 6 excluding the individual major project. Additionally, students must satisfactorily	6	A1, A2, A3, A4, A5, B1, B2, B3, B5, C1, C2, C3, D5, D6

		complete the Year Abroad modules.		
BEng (Hons) in the named award	Aerospace Systems Technology***	360 credit points including 240 at level 6/5 of which 120 must be at level 6	6	All programme learning outcomes for the specified named award (see Table 2) except C6
BEng (Hons) in the named award (Sandwich)		360 credit points including 240 at level 6/5 of which 120 must be at level 6. Additionally, students must satisfactorily complete the Placement Year module.	6	All programme learning outcomes for the specified named award (see Table 2) except C6

Notes:

(*) in accordance with UPR AS11, the maximum APL permitted towards this interim award is 225 points at levels 4/5.

(***) see Programme-specific assessment regulations, first bullet point below

Programme Specific Assessment Regulations

The programme complies with the University's academic regulations (in particular, [UPR AS11](#), [UPR AS12/UPR AS13](#) (*delete as applicable*) and [UPR AS14](#)) with the exception of those listed below, which have been approved by the University:

- Students who fail the Pilot Studies & Flight Analysis module cannot be considered for a degree in Aerospace Systems Engineering with Pilot Studies. However, where this module has been failed only due to the requirements on minimum flying hours not being met, with all academic requirements for the module having been met, the Programme Board of Examiners may compensate this module without penalty and award an Honours degree in Aerospace Systems Technology (which is not currently accredited) as an Interim Award. Where this module has been failed due to the academic requirements for the module not having been met, the Programme Board of Examiners may compensate this module with the standard penalty applied as specified in UPR AS14 and award an Honours degree in Aerospace Systems Technology (which is not currently accredited) as an Interim Award.
- As specified by the accrediting bodies, a compensated pass cannot be awarded for the Individual Major Project, which must be included in the calculation of degree classification.
- Students who do not succeed in the Individual Major Project may be eligible to repeat, and will be allocated an entirely different project.

Course Code	Course Instance	Award Title	Modules (child instance codes & title)	Must be included in classification algorithm?
EIBENGAME	M3F, M4S, M6P	BEng (Hons) Mechanical Engineering	6ENT1092-0906 Individual Major Project	Yes
EIBENGAMEMC	MEM3F, MEM4S, MEM6P	BEng (Hons) Mechanical Engineering and Mechatronics	6ENT1092-0906 Individual Major Project	Yes
EIBENGAAE	A3F, A4S, A6P	BEng (Hons) Aerospace Engineering	6ENT1079-0906 Individual Major Project	Yes
EIBENGAAE	AEST3F, AEST4S, AEST6P	BEng (Hons) Aerospace Engineering with Space Technology	6ENT1079-0906 Individual Major Project	Yes

EIBENGAAE	ASE3F, ASE4S, ASE6P	BEng (Hons) Aerospace Systems Engineering	6ENT1079-0906 Individual Major Project	Yes
EIBENGAAE	APS3F, APS4S, APS6P	BEng (Hons) Aerospace Systems Engineering with Pilot Studies	6ENT1079-0906 Individual Major Project	Yes
			6ENT1041-0906 Pilot Studies & Flight Analysis	No
EIBENGAAU	V3F, V4S, V6P	BEng (Hons) Automotive Engineering	6ENT1094-0906 Individual Major Project	Yes
EIBENGAAU	VMS3F, VMS4S, VMS6P	BEng (Hons) Automotive Engineering with Motorsport	6ENT1094-0906 Individual Major Project	Yes

Further programme-specific regulations (requiring School-level approval) are given below:

- Students wishing to take the CAA or FAA PPL, or BMAA NPPL, Ground School Examinations are responsible for paying the examination fees;
- In order to fly solo, students must meet the medical requirements specified by the relevant regulatory body (EASA, CAA, FAA or BMAA). Where a specific medical examination is required it can be carried out by any UK CAA approved Authorised Medical Examiner (AME) and can be arranged through the flying school. However, there are several AMEs in each county and others overseas. Further details of the medical requirements for flying and the necessary medical examination can be found on the UK Civil Aviation Authority website <http://www.caa.co.uk> which must be consulted; the costs of any medical certificate shall be borne by the student. (Note that the medical requirements for flying are currently under review, so may change during the currency of this document.)
- The costs of Headsets, Charts, Navigation Equipment and other items necessary for the Aerospace Systems Engineering with Pilot Studies pathway shall be borne by the student.
- The minimum 20 hours flying requirement associated with the Pilot Studies & Flight Analysis module 6ENT1041 shall be completed by students by the end of Semester B in their final year of study (level 6). Students should note that they may commence flying at a University-approved Flying School in the UK at any point after the commencement of their study on the programme. Students may also optionally pay for additional flying by direct arrangement with the Flying School. This might be done, for example, to top up to a PPL.
- The following zero credit modules are taken by students at Level 4 and 5 respectively. They are compulsory modules although they have no academic impact on the student's degree outcome:
 - Career Skills Development - 4ENT1096
 - Career Planning - 5ENT1082

Students who do not pass at their first attempt may be offered a referral (second assessment) opportunity for these modules. However, students who do not pass their referral assessment will not be given an opportunity to repeat the module in a subsequent year (FREN). If students do not pass the assessment at the second attempt their final transcript will show "FNFA" (Fail No Further Attempts).

E. Management of Programme & Support for Student Learning

Management

The programme is managed and administered through:

- Dean of School;
- Associate Dean of School (AQA) who has overall responsibility for Quality Assurance;
- Associate Dean of School (L&T) who has overall responsibility for Learning & Teaching;
- the Programme Leader who is responsible for chairing the programme committee and advising students on the programme as a whole;
- the Student Administrator responsible for the administration associated with the programme;
- Programme Leaders who are responsible for the day to day management;
- an Admissions Tutor, with specific responsibility for selection;
- a programme committee that includes the above plus student representation;
- module leaders who are responsible for individual modules.

Support

Students are supported by:

- an induction week at the beginning of each new academic session;
- an extensive Learning Resources Centre, incorporating a library and computer centre;
- guided student-centred learning through the use of StudyNet;
- a student handbook that is specific to the programme;
- a Programme Leader who can advise on programme issues;
- a Student Administrator and admin assistants in the school office;
- Module teaching teams who provide academic support;
- Computer and technical laboratories facilities and technical support staff;
- a project supervisor;
- student representatives on the programme committee;
- the Mathematics Drop-in Centre;
- the Careers, Employment and Enterprise Service that support students looking for either graduate employment or an industrial placement.
- a substantial Student Centre that provides advice on issues such as finance, University regulations, legal matters etc;
- the Medical Centre;
- the Accommodation Office;
- the International Students Centre who organise an Overseas Student Orientation induction programme;
- printing, photocopying, laminating and document binding facilities;
- Nightline – a confidential student listening and information service in the evening when other services are not available;
- a confidential counselling service;
- University Disability Advisors;
- an Equal Opportunities Officer;
- the Students' Union.

F. Other Sources of Information

In addition to this Programme Specification, the University publishes guidance to registered students on the programme and its constituent modules:

- A Programme (or Student) Handbook;
- A Definitive Module Document (DMD) for each constituent module;
- A Module Guide for each constituent module.

The [Herts Handbook](#) is an introduction to the academic, social, cultural and sporting services and opportunities available at the University of Hertfordshire, and includes the Student Charter and Student Code of Conduct.

As a condition of registration, all students of the University of Hertfordshire are required to comply with the University's rules, regulations and procedures. These are published in a series of documents called 'University Policies and Regulations' (UPRs). The University requires that all students consult these documents which are available on-line, on the UPR web site, at: <http://www.herts.ac.uk/secreg/upr/>. In particular, [UPR SA07](#) 'Regulations and Advice for Students' Particular Attention - Index' provides information on the UPRs that contain the academic regulations of particular relevance for undergraduate and taught postgraduate students.

The UK Quality Assurance Agency for Higher Education (QAA) has confirmed the quality and standards of provision at the University of Hertfordshire. A key part of QAA's role is to review and report on how universities maintain their academic standards and quality, to inform students and the wider public. The team of QAA reviewers visited the University of Hertfordshire in 2015/16 and judged that its academic standards, the quality and enhancement of its students' learning experience, and the quality of information about this learning experience all meet UK expectations. In other words, the University meets national requirements for standards and quality. The QAA's report can be accessed at: <http://www.qaa.ac.uk/reviews-and-reports/provider?UKPRN=10007147#.V-KHajXy0nE>

G. Entry Requirements

The normal entry requirements for the programme are:

- 104 UCAS points.
- Minimum of 2 A levels.
- A levels to include Maths and either Physics or Technology or engineering based subjects excluding General Studies and Critical Thinking.
- BTEC Extended Diploma in Engineering DMM to include Distinction in Further Maths.
- Access to Engineering Diploma with 45 Level 3 credits at Distinction to include Maths and Science or Principles units. Any additional L3 credits must be at Merit.
- GCSE Maths at grade 4, English Language at grade 4 and Science at grade 4 or above.

Applications are also welcomed from those holding other qualifications including equivalent Scottish Higher or Irish Higher Certificates, International Baccalaureate, and appropriate equivalent international qualifications. All International students are required to demonstrate an English language capability of IELTS 6.0 with no less than 5.5 in each band.

In addition to the academic fees, students studying the module 6ENT1041 Pilot Studies & Flight Analysis as part of the BEng in Aerospace Systems Engineering with Pilot Studies will be responsible for the cost of at least 20 hours flying tuition at a UH approved flying school. Students who are unable to pay these fees may transfer to the BEng (Hons) Aerospace Systems Engineering programme (but note the different module structure and its implications), or may continue on the original programme but be awarded an Interim Award as stated in the Programme-Specific Regulations.

English Language Requirements

In addition to the requirements stated above, students entering the programme and whose first language is not English will be required to demonstrate a proficiency in English to TOEFL 550/IELTS 6.0 or an equivalent recognised qualification. For IELTS, this should include a minimum score of 5.5 in each band.

Direct Entry at Second and Final Year

In accordance with University Admissions Policy to allow flexible entry at different levels, it may be possible for applicants to enter the programme at second and final year level. In all instances, candidates will be required to discuss their individual circumstances with the appropriate Admissions Tutor.

Students applying for direct entry into level 5 are required to have an Edexcel HND in an appropriate discipline with merits and distinctions in appropriate subjects which must include Mathematics plus technical or physical sciences. Equivalent European and overseas qualifications are also accepted subject to University approval.

Direct entry into level 6 is also possible, for example following successful completion of two years of a similar BEng or MEng degree programme at another HE institution.

Level 4 of this programme includes provision to Hertfordshire International College (HIC), through parallel HIC modules. HIC students, having completed Level 4, may articulate onto this programme at Level 5. In order to do so, they must have successfully completed 120 credits of study at Level 4.

The programme is subject to the University's Principles, Policies and Regulations for the Admission of Students to Undergraduate and Taught Postgraduate Programmes (in [UPR SA03](#)), along with associated procedures. These will take account of University policy and guidelines for assessing accredited prior certificated learning (APCL) and accredited prior experiential learning (APEL).

If you would like this information in an alternative format please contact: the School Administration Manager

If you wish to receive a copy of the latest Programme Annual Monitoring and Evaluation Report (AMER) and/or the External Examiner's Report for the programme, please email a request to aqo@herts.ac.uk

BEng with Honours in Mechanical Engineering

Table 2: Development of Intended Programme Learning Outcomes in the Constituent Modules

This map identifies where the programme learning outcomes are assessed in the constituent modules. It provides (i) an aid to academic staff in understanding how individual modules contribute to the programme aims (ii) a checklist for quality control purposes and (iii) a means to help students monitor their own learning, personal and professional development as the programme progresses.

		Programme Learning Outcomes (as identified in section 1 and the last page)																								
		Knowledge & Understanding					Intellectual Skills					Practical Skills						Transferable Skills								
Module Title		Module Code	A1	A2	A3m	A4	A5	B1	B2m	B3	B4	B5m	C1m	C2	C3	C4	C5m	C6	D1	D2	D3	D4	D5	D6	D7	
Level 4	Engineering Mathematics	4PAM1007	X												X								X	X		
	Engineering Applications of Mathematics	4PAM1033	X												X								X	X		
	Materials and Electrical Science	4ENT1119		X				X						X												
	Mechanical Science	4ENT1067		X				X						X												
	Introduction to Manufacturing Technology	4ENT1117			X							X		X												
	Introduction to Design	4ENT1121			X							X			X	X						X				
	Fluid Mechanics and Thermodynamics	4ENT1068		X										X												
	Engineering Fundamentals	4ENT1098			X	X	X				X									X	X	X				X
	Career Skills Development	4ENT1096					X													X	X	X		X	X	X
Level 5	Further Engineering Mathematics	5PAM1005	X							X					X									X		
	Computer Aided Engineering	5ENT1078			X				X	X		X	X	X			X						X			
	Mechatronic Systems Modelling & Control	5ENT1056	X					X	X	X			X	X	X		X							X		
	Dynamics	5ENT1013		X					X				X	X												
	Thermofluid Mechanics	5ENT1079		X				X	X				X	X												
	Integrated Engineering Systems Design	5ENT1033			X	X	X				X	X			X	X	X			X		X		X	X	
	Proj. Management & Product Development	5ENT1080				X	X					X						X			X	X	X			
	Structural Mechanics	5ENT1012		X					X				X	X									X			
	Career Planning	5ENT1082					X													X			X			
Level 6	Year Abroad	6ENT0001																								
	Semester Abroad	6ENT1051																								
	Placement Year	6AAD0015				X	X								X	X	X		X	X				X		
	Individual Major Project (Mechanical)	6ENT1092				X		X	X	X					X		X		X	X	X		X	X	X	
	Mechanics and Properties of Materials	6ACM0003						X	X				X	X	X											
	Control Systems	6AAD0007						X	X				X		X		X									
	Mechanical Engineering Design	6ENT1071			X	X	X			X	X	X			X	X	X	X	X	X	X		X	X	X	
	Noise and Vibration Analysis	6ENT1038						X	X				X													
	Thermofluid Mechanics and Heat Transfer	6AAD0005		X				X	X				X													
	Manufacturing Strategy	6AAD0019				X	X					X					X	X								
	Micro-Engineering & Micro-Technology	6ENT1022			X			X		X	X	X	X	X	X		X			X		X		X		
	Careers Portfolio	6ENT1021					X													X		X	X		X	

KEY TO PROGRAMME LEARNING OUTCOMES

Mechanical Engineering

Knowledge and Understanding e.g.

- A1 The analytical methods employed by engineers.
- A2 The fundamental engineering sciences.
- A3m The design principles and design-to-build processes appropriate to mechanical systems.
- A4 The basic principles and economic, social, legal, ethical and sustainability considerations of the business of engineering.
- A5 Professional engineering practice.

Intellectual Skills e.g.

- B1 Analyse and solve engineering problems using appropriate techniques.
- B2m Model and analyse mechanical systems.
- B3 Select appropriate computer based methods for engineering and communication.
- B4 Evaluate external influences on the design process.
- B5m Design appropriate mechanical systems, components or processes.

Practical Skills

- C1m Apply analytical and modelling techniques to solve mechanical engineering problems.
- C2 Perform experimental work, and draw conclusions.
- C3 Use computer-based engineering tools.
- C4 Prepare technical documentation.
- C5m Evaluate the design of mechanical systems, components or processes.
- C6 Plan and manage a project, taking into account economic, social, legal, ethical and sustainability constraints.

Transferable Skills

- D1 Communicate effectively, both orally and in writing.
- D2 Use commonly available IT tools.
- D3 Manage time and resources effectively.
- D4 Work effectively within a team as a member.
- D5 Manipulate, sort and present data.
- D6 Solve problems in a logical manner.
- D7 Learn effectively and independently, in all aspects of life.

BEng with Honours in Mechanical Engineering and Mechatronics

		Programme Learning Outcomes (as identified in section 1 and the last page)																								
		Knowledge & Understanding					Intellectual Skills					Practical Skills						Transferable Skills								
Module Title	Module Code	A1	A2	A3mem	A4	A5	B1	B2mem	B3	B4	B5mem	C1mem	C2	C3	C4	C5mem	C6	D1	D2	D3	D4	D5	D6	D7		
Level 4	Engineering Mathematics	4PAM1007	X																					X	X	
	Engineering Applications of Mathematics	4PAM1033	X											X										X	X	
	Introduction to Electronic Systems	4ENT1028	X	X			X	X					X													
	Materials and Electrical Science	4ENT1119		X			X						X													
	Mechanical Science	4ENT1067		X			X						X													
	Introduction to Manufacturing Technology	4ENT1117			X						X		X													
	Introduction to Design	4ENT1121			X						X			X	X							X				
	Comp. Prog. for Electronics Eng	4ELE0049		X				X			X	X														
	Career Skills Development	4ENT1096					X											X	X	X			X	X	X	
Level 5	Further Engineering Mathematics	5PAM1005	X						X					X										X		
	Computer Aided Engineering	5ENT1078			X			X	X		X	X	X													
	Mechatronic Systems Modelling & Control	5ENT1056	X				X	X	X			X	X	X		X							X			
	Dynamics	5ENT1013		X				X				X	X													
	Electrical Engineering & Power Control	5ELE0058		X			X					X	X			X										
	Integrated Engineering Systems Design	5ENT1033			X	X	X			X	X			X	X	X			X			X		X	X	
	Proj. Management & Product Development	5ENT1080				X	X				X						X				X	X	X			
	Structural Mechanics	5ENT1012		X				X				X	X										X			
	Career Planning	5ENT1082					X											X					X			
Level 6	Year Abroad	6ENT0001																								
	Semester Abroad	6ENT1051																								
	Placement Year	6AAD0015				X	X							X	X	X	X	X	X					X		
	Individual Major Project (Mechanical)	6ENT1092				X		X	X	X				X		X		X	X	X	X		X	X	X	
	Mechanics and Properties of Materials	6ACM0003					X		X			X	X	X												
	Control Systems	6AAD0007					X		X			X		X		X										
	Mechatronics Design	6ENT1039			X	X	X		X	X	X		X	X	X	X	X	X	X	X		X	X	X	X	
	Noise and Vibration Analysis	6ENT1038					X	X				X														
	Power Systems	6ELE0071				X	X	X			X	X	X	X		X										
Micro-Engineering & Micro-Technology	6ENT1022			X		X		X	X	X	X	X	X	X	X		X				X		X			
Careers Portfolio	6ENT1021					X											X		X		X		X			

KEY TO PROGRAMME LEARNING OUTCOMES

Mechanical Engineering and Mechatronics

Knowledge and Understanding e.g.

- A1 The analytical methods employed by engineers.
- A2 The fundamental engineering sciences.
- A3mem The design principles and design-to-build processes appropriate to mechatronic systems.
- A4 The basic principles and economic, social, legal, ethical and sustainability considerations of the business of engineering.
- A5 Professional engineering practice.

Intellectual Skills e.g.

- B1 Analyse and solve engineering problems using appropriate techniques.
- B2mem Model and analyse electro-mechanical systems.
- B3 Select appropriate computer based methods for engineering and communication.
- B4 Evaluate external influences on the design process.
- B5mem Design electro-mechanical systems, components or processes.

Practical Skills

- C1mem Apply analytical and modelling techniques to solve electro-mechanical engineering problems.
- C2 Perform experimental work, and draw conclusions.
- C3 Use computer-based engineering tools.
- C4 Prepare technical documentation.
- C5mem Evaluate the design of electro-mechanical systems, components or processes.
- C6 Plan and manage a project, taking into account economic, social, legal, ethical and sustainability constraints.

Transferable Skills

- D1 Communicate effectively, both orally and in writing.
- D2 Use commonly available IT tools.
- D3 Manage time and resources effectively.
- D4 Work effectively within a team as a member.
- D5 Manipulate, sort and present data.
- D6 Solve problems in a logical manner.
- D7 Learn effectively and independently, in all aspects of life.

BEng with Honours in Aerospace Engineering

		Programme Learning Outcomes (as identified in section 1 and the last page)																							
		Knowledge & Understanding					Intellectual Skills					Practical Skills						Transferable Skills							
Module Title		Module Code	A1	A2	A3a	A4	A5	B1	B2a	B3	B4	B5a	C1a	C2	C3	C4	C5a	C6	D1	D2	D3	D4	D5	D6	D7
Level 4	Engineering Mathematics	4PAM1007	X												X								X	X	
	Engineering Applications of Mathematics	4PAM1033	X												X								X	X	
	Materials and Electrical Science	4ENT1119		X				X						X											
	Mechanical Science	4ENT1067		X				X						X											
	Introduction to Manufacturing Technology	4ENT1117			X							X		X											
	Introduction to Design	4ENT1121			X							X			X	X						X			
	Fluid Mechanics and Thermodynamics	4ENT1068		X										X											
	Aerospace Technology and Industry	4AAD0016			X	X	X					X								X	X	X			
Career Skills Development	4ENT1096					X													X	X	X		X	X	X
Level 5	Further Engineering Mathematics	5PAM1005	X							X					X									X	
	Computer Aided Engineering	5ENT1078			X				X	X		X	X	X	X		X								
	Aerospace Systems Modelling & Control	5ENT1062	X					X	X	X			X	X	X		X						X		
	Dynamics	5ENT1013		X				X	X				X	X										X	
	Aerothermodynamics	5ENT1014	X	X				X	X				X	X									X		
	Aerospace Design	5ENT1032			X	X	X			X	X	X			X	X	X			X				X	X
	Proj. Management & Product Development	5ENT1080				X	X					X						X			X	X	X		
	Structural Mechanics	5ENT1012		X					X					X	X								X		
Career Planning	5ENT1082					X													X			X			
Level 6	Year Abroad	6ENT0001																							
	Semester Abroad	6ENT1051																							
	Placement Year	6AAD0015				X	X									X	X	X	X	X				X	
	Individual Major Project (Aerospace)	6ENT1079				X		X		X	X					X		X	X	X	X	X	X	X	X
	Mechanics and Properties of Materials	6ACM0003						X	X	X			X	X	X										
	Stability & Control of Aircraft	6AAD0018	X					X	X	X			X		X		X								
	Aerospace Performance Propulsion & Design	6ENT1065			X	X	X		X	X	X	X			X		X			X	X		X	X	X
	Aerodynamics	6ENT1064						X	X	X			X	X	X										
Aerospace Structural Design & Analysis	6ENT1035					X	X	X	X			X		X											
Careers Portfolio	6ENT1021					X													X		X		X	X	

KEY TO PROGRAMME LEARNING OUTCOMES Aerospace Engineering

Knowledge and Understanding e.g.

- A1 The analytical methods employed by engineers.
- A2 The fundamental engineering sciences.
- A3a The design principles and design-to-build processes appropriate to aircraft.
- A4 The basic principles and economic, social, legal, ethical and sustainability considerations of the business of engineering.
- A5 Professional engineering practice.

Intellectual Skills e.g.

- B1 Analyse and solve engineering problems using appropriate techniques.
- B2a Model and analyse aircraft.
- B3 Select appropriate computer based methods for engineering and communication.
- B4 Evaluate external influences on the design process.
- B5a Design aircraft systems, components or processes.

Practical Skills

- C1a Apply analytical and modelling techniques to solve aerospace engineering problems.
- C2 Perform experimental work, and draw conclusions.
- C3 Use computer-based engineering tools.
- C4 Prepare technical documentation.
- C5a Evaluate the design of aircraft, components or processes.
- C6 Plan and manage a project, taking into account economic, social, legal, ethical and sustainability constraints.

Transferable Skills

- D1 Communicate effectively, both orally and in writing.
- D2 Use commonly available IT tools.
- D3 Manage time and resources effectively.
- D4 Work effectively within a team as a member.
- D5 Manipulate, sort and present data.
- D6 Solve problems in a logical manner.
- D7 Learn effectively and independently, in all aspects of life.

BEng with Honours in Aerospace Engineering with Space Technology

		Programme Learning Outcomes (as identified in section 1 and the last page)																							
		Knowledge & Understanding					Intellectual Skills					Practical Skills						Transferable Skills							
Module Title	Module Code	A1	A2	A3ast	A4	A5	B1	B2ast	B3	B4	B5ast	C1a	C2	C3	C4	C5ast	C6	D1	D2	D3	D4	D5	D6	D7	
Level 4	Engineering Mathematics	4PAM1007	X											X								X	X		
	Engineering Applications of Mathematics	4PAM1033	X											X								X	X		
	Materials and Electrical Science	4ENT1119		X			X						X												
	Mechanical Science	4ENT1067		X			X						X												
	Introduction to Manufacturing Technology	4ENT1117			X						X		X												
	Introduction to Design	4ENT1121			X						X		X	X								X			
	Fluid Mechanics and Thermodynamics	4ENT1068		X									X												
	Aerospace Technology and Industry	4AAD0016			X	X	X			X									X	X	X				X
	Career Skills Development	4ENT1096					X											X	X	X		X	X	X	
Level 5	Further Engineering Mathematics	5PAM1005	X						X					X									X		
	Computer Aided Engineering	5ENT1078			X			X	X		X	X	X		X										
	Aerospace Systems Modelling & Control	5ENT1062	X				X	X	X			X	X	X		X							X		
	Dynamics	5ENT1013		X				X				X	X												
	Aerothermodynamics	5ENT1014	X	X			X	X				X	X										X		
	Aerospace Design	5ENT1032			X	X	X		X	X	X			X	X	X			X				X	X	
	Proj. Management & Product Development	5ENT1080				X	X				X						X			X	X	X			
	Avionics Systems	5ENT1067				X	X				X				X	X		X	X						
	Career Planning	5ENT1082					X											X					X		
Level 6	Year Abroad	6ENT0001																							
	Semester Abroad	6ENT1051																							
	Placement Year	6AAD0015				X	X							X	X	X	X	X	X					X	
	Individual Major Project (Aerospace)	6ENT1079				X		X	X					X			X	X	X	X		X	X	X	
	Control Systems	6AAD0007					X		X			X		X		X									
	Rocket Performance and Propulsion	6AAD0026					X	X			X	X				X									
	Aerospace Performance Propulsion & Design	6ENT1065			X	X	X		X		X	X			X			X	X			X	X	X	
	Satellite & Terrestrial Communication Systems	6ENT1014					X				X		X			X									
	Space Dynamics	6PAM0027					X	X	X			X		X				X	X			X	X	X	
Careers Portfolio	6ENT1021					X											X		X		X		X		

KEY TO PROGRAMME LEARNING OUTCOMES

Aerospace Engineering with Space Technology

Knowledge and Understanding e.g.

- A1 The analytical methods employed by engineers.
- A2 The fundamental engineering sciences.
- A3ast The design principles and design-to-build processes appropriate to aerospace and space systems.
- A4 The basic principles and economic, social, legal, ethical and sustainability considerations of the business of engineering.
- A5 Professional engineering practice.

Intellectual Skills e.g.

- B1 Analyse and solve engineering problems using appropriate techniques.
- B2ast Model and analyse aerospace vehicles and space systems.
- B3 Select appropriate computer based methods for engineering and communication.
- B4 Evaluate external influences on the design process.
- B5ast Design aerospace vehicles and space systems, components or processes.

Practical Skills

- C1a Apply analytical and modelling techniques to solve aerospace engineering problems.
- C2 Perform experimental work, and draw conclusions.
- C3 Use computer-based engineering tools.
- C4 Prepare technical documentation.
- C5ast Evaluate the design of aircraft and space vehicle, components or processes.
- C6 Plan and manage a project, taking into account economic, social, legal, ethical and sustainability constraints.

Transferable Skills

- D1 Communicate effectively, both orally and in writing.
- D2 Use commonly available IT tools.
- D3 Manage time and resources effectively.
- D4 Work effectively within a team as a member.
- D5 Manipulate, sort and present data.
- D6 Solve problems in a logical manner.
- D7 Learn effectively and independently, in all aspects of life.

BEng with Honours in Aerospace Systems Engineering

		Programme Learning Outcomes (as identified in section 1 and the last page)																										
		Knowledge & Understanding					Intellectual Skills					Practical Skills						Transferable Skills										
Module Title		Module Code	A1	A2	A3ase	A4	A5	B1	B2ase	B3	B4	B5ase	C1a	C2	C3	C4	C5ase	C6	D1	D2	D3	D4	D5	D6	D7			
Level 4	Engineering Mathematics	4PAM1007	X												X									X	X			
	Engineering Applications of Mathematics	4PAM1033	X												X									X	X			
	Materials and Electrical Science	4ENT1119		X				X						X														
	Mechanical Science	4ENT1067		X				X						X														
	Introduction to Manufacturing Technology	4ENT1117			X							X		X														
	Introduction to Design	4ENT1121			X							X			X	X							X					
	Fluid Mechanics and Thermodynamics	4ENT1068		X										X														
	Aerospace Technology and Industry	4AAD0016			X	X	X				X									X	X	X					X	
	Career Skills Development	4ENT1096					X													X	X	X		X	X	X		
Level 5	Further Engineering Mathematics	5PAM1005	X							X					X										X			
	Aircraft Systems	5ENT1039					X			X	X						X			X								
	Aerospace Systems Modelling & Control	5ENT1062	X					X	X	X			X	X	X		X							X				
	Dynamics	5ENT1013		X					X				X	X														
	Aerothermodynamics	5ENT1014	X	X				X	X				X	X										X				
	Aerospace Design	5ENT1032			X	X	X			X	X	X			X	X	X				X				X	X		
	Proj. Management & Product Development	5ENT1080				X	X					X						X				X	X	X				
	Avionics Systems	5ENT1067				X	X					X				X	X			X	X							
	Career Planning	5ENT1082					X													X				X				
Level 6	Year Abroad	6ENT0001																										
	Semester Abroad	6ENT1051																										
	Placement Year	6AAD0015				X	X									X	X	X	X	X					X			
	Individual Major Project (Aerospace)	6ENT1079				X		X		X	X					X		X	X	X	X			X	X	X		
	Control Systems	6AAD0007						X		X			X		X		X											
	Stability & Control of Aircraft	6AAD0018	X					X	X	X			X		X		X											
	Aerospace Performance Propulsion & Design	6ENT1065			X	X	X		X		X	X	X			X			X	X			X	X	X			
	Satellite & Terrestrial Communication Systems	6ENT1014					X					X		X			X											
	Aircraft Systems Integration	6ENT1063					X	X	X	X	X	X	X		X	X	X	X	X		X				X			
Careers Portfolio	6ENT1021					X												X		X		X		X				

KEY TO PROGRAMME LEARNING OUTCOMES

Aerospace Systems Engineering

Knowledge and Understanding e.g.

- A1 The analytical methods employed by engineers.
- A2 The fundamental engineering sciences.
- A3ase The design principles and design-to-build processes appropriate to aerospace systems.
- A4 The basic principles and economic, social, legal, ethical and sustainability considerations of the business of engineering.
- A5 Professional engineering practice.

Intellectual Skills e.g.

- B1 Analyse and solve engineering problems using appropriate techniques.
- B2ase Model and analyse aerospace systems.
- B3 Select appropriate computer based methods for engineering and communication.
- B4 Evaluate external influences on the design process.
- B5ase Design aerospace systems, components or processes.

Practical Skills

- C1a Apply analytical and modelling techniques to solve aerospace engineering problems.
- C2 Perform experimental work, and draw conclusions.
- C3 Use computer-based engineering tools.
- C4 Prepare technical documentation.
- C5ase Evaluate the design of aerospace systems, components or processes.
- C6 Plan and manage a project, taking into account economic, social, legal, ethical and sustainability constraints.

Transferable Skills

- D1 Communicate effectively, both orally and in writing.
- D2 Use commonly available IT tools.
- D3 Manage time and resources effectively.
- D4 Work effectively within a team as a member.
- D5 Manipulate, sort and present data.
- D6 Solve problems in a logical manner.
- D7 Learn effectively and independently, in all aspects of life.

BEng with Honours in Aerospace Systems Engineering with Pilot Studies

		Programme Learning Outcomes (as identified in section 1 and the last page)																								
		Knowledge & Understanding					Intellectual Skills					Practical Skills					Transferable Skills									
Module Title	Module Code	A1	A2	A3ase	A4	A5	A6	B1	B2ase	B3	B4	B5ase	C1a	C2	C3	C4	C5ase	C6	C7	D1	D2	D3	D4	D5	D6	D7
Level 4	Engineering Mathematics	4PAM1007	X												X									X	X	
	Engineering Applications of Mathematics	4PAM1033	X												X									X	X	
	Materials and Electrical Science	4ENT1119		X				X						X												
	Mechanical Science	4ENT1067		X				X						X												
	Introduction to Manufacturing Technology	4ENT1117			X							X		X												
	Introduction to Design	4ENT1121			X							X			X	X							X			
	Fluid Mechanics and Thermodynamics	4ENT1068		X										X												
	Aerospace Technology and Industry	4AAD0016			X	X	X				X										X	X	X			
Career Skills Development	4ENT1096					X														X	X	X		X	X	X
Level 5	Further Engineering Mathematics	5PAM1005	X							X					X											X
	Aircraft Systems	5ENT1039				X					X	X					X				X					
	Aerospace Systems Modelling & Control	5ENT1062	X					X	X	X			X	X	X		X							X		
	Dynamics	5ENT1013		X					X				X	X												
	Aerothermodynamics	5ENT1014	X	X				X	X				X	X										X		
	Aerospace Design	5ENT1032			X	X	X				X	X	X		X	X	X					X			X	X
	Air Law, Navigation and Meteorology	5ENT1091		X		X	X	X		X			X			X							X		X	
	Avionics Systems	5ENT1067				X	X					X				X	X				X	X				
Career Planning	5ENT1082					X														X				X		
Level 6	Year Abroad	6ENT0001																								
	Semester Abroad	6ENT1051																								
	Placement Year	6AAD0015				X	X									X	X	X		X	X				X	
	Individual Major Project (Aerospace)	6ENT1079				X		X		X	X					X		X		X	X	X		X	X	X
	Pilot Studies & Flight Analysis	6ENT1041	X			X	X	X	X	X			X	X	X	X				X	X		X		X	X
	Stability & Control of Aircraft	6AAD0018	X						X	X	X			X		X		X								
	Aerospace Performance Propulsion & Design	6ENT1065			X	X	X			X	X	X	X		X					X	X		X	X	X	
	Aircraft Systems Integration	6ENT1063					X		X	X	X	X	X		X	X	X	X			X	X			X	
Careers Portfolio	6ENT1021					X														X		X		X	X	

KEY TO PROGRAMME LEARNING OUTCOMES

Aerospace Systems Engineering with Pilot Studies

Knowledge and Understanding e.g.

- A1 The analytical methods employed by engineers.
- A2 The fundamental engineering sciences.
- A3ase The design principles and design-to-build processes appropriate to aerospace systems.
- A4 The basic principles and economic, social, legal, ethical and sustainability considerations of the business of engineering.
- A5 Professional engineering practice.
- A6 The regulatory requirements and operational procedures applicable to pilots.

Intellectual Skills e.g.

- B1 Analyse and solve engineering problems using appropriate techniques.
- B2ase Model and analyse aerospace systems.
- B3 Select appropriate computer based methods for engineering and communication.
- B4 Evaluate external influences on the design process.
- B5ase Design aerospace systems, components or processes.

Practical Skills

- C1a Apply analytical and modelling techniques to solve aerospace engineering problems.
- C2 Perform experimental work, and draw conclusions.
- C3 Use computer-based engineering tools.
- C4 Prepare technical documentation.
- C5ase Evaluate the design of aerospace systems, components or processes.
- C6 Plan and manage a project, taking into account economic, social, legal, ethical and sustainability constraints.
- C7 Fly an aircraft

Transferable Skills

- D1 Communicate effectively, both orally and in writing.
- D2 Use commonly available IT tools.
- D3 Manage time and resources effectively.
- D4 Work effectively within a team as a member.
- D5 Manipulate, sort and present data.
- D6 Solve problems in a logical manner.
- D7 Learn effectively and independently, in all aspects of life.

BEng with Honours in Automotive Engineering

		Programme Learning Outcomes (as identified in section 1 and the last page)																								
		Knowledge & Understanding					Intellectual Skills					Practical Skills						Transferable Skills								
Module Title		Module Code	A1	A2	A3v	A4	A5	B1	B2v	B3	B4	B5v	C1v	C2	C3	C4	C5v	C6	D1	D2	D3	D4	D5	D6	D7	
Level 4	Engineering Mathematics	4PAM1007	X												X								X	X		
	Engineering Applications of Mathematics	4PAM1033	X												X								X	X		
	Materials and Electrical Science	4ENT1119		X				X						X												
	Mechanical Science	4ENT1067		X				X						X												
	Introduction to Manufacturing Technology	4ENT1117			X							X		X												
	Introduction to Design	4ENT1121			X							X			X	X							X			
	Fluid Mechanics and Thermodynamics	4ENT1068		X										X												
	Automotive and Motorsport Technology	4ENT1115			X	X	X				X									X	X	X				X
	Career Skills Development	4ENT1096					X													X	X	X		X	X	X
Level 5	Further Engineering Mathematics	5PAM1005	X							X					X									X		
	Computer Aided Engineering	5ENT1078			X				X	X		X	X		X		X									
	Automotive Electronics & Control Systems	5ENT1011	X			X		X	X			X	X	X			X						X			
	Dynamics	5ENT1013		X					X				X	X												
	Thermofluid Mechanics	5ENT1079		X				X	X				X	X												
	Integrated Engineering Systems Design	5ENT1033			X	X	X				X	X			X	X	X			X		X		X	X	
	Proj. Management & Product Development	5ENT1080				X	X					X						X			X	X	X			
	Structural Mechanics	5ENT1012		X					X				X	X						X			X			
	Career Planning	5ENT1082					X													X			X			
Level 6	Year Abroad	6ENT0001																								
	Semester Abroad	6ENT1051																								
	Placement Year	6AAD0015				X	X								X	X	X		X	X				X		
	Individual Major Project (Automotive)	6ENT1094				X		X		X	X				X		X		X	X	X		X	X	X	
	Mechanics and Properties of Materials	6ACM0003						X		X			X	X	X											
	Vehicle Structural Analysis & Manufacture	6AAD0023			X			X		X			X		X											
	Vehicle Engineering Design	6AAD0022			X	X	X				X	X				X			X			X	X	X		
	Vibration, Noise and Vehicle Dynamics	6ENT1066						X	X				X													
	Thermofluid Mechanics and Heat Transfer	6AAD0005		X				X	X				X													
	Manufacturing Strategy	6AAD0019				X	X					X						X	X							
	Careers Portfolio	6ENT1021					X												X		X		X		X	

KEY TO PROGRAMME LEARNING OUTCOMES

Automotive Engineering

Knowledge and Understanding e.g.

- A1 The analytical methods employed by engineers.
- A2 The fundamental engineering sciences.
- A3v The design principles and design-to-build processes appropriate to automotive vehicles.
- A4 The basic principles and economic, social, legal, ethical and sustainability considerations of the business of engineering.
- A5 Professional engineering practice.

Intellectual Skills e.g.

- B1 Analyse and solve engineering problems using appropriate techniques.
- B2v Model and analyse automotive vehicles.
- B3 Select appropriate computer based methods for engineering and communication.
- B4 Evaluate external influences on the design process.
- B5v Design vehicle systems, components or processes.

Practical Skills

- C1v Apply analytical and modelling techniques to solve automotive engineering problems.
- C2 Perform experimental work, and draw conclusions.
- C3 Use computer-based engineering tools.
- C4 Prepare technical documentation.
- C5v Evaluate the design of vehicles, components or processes.
- C6 Plan and manage a project, taking into account economic, social, legal, ethical and sustainability constraints.

Transferable Skills

- D1 Communicate effectively, both orally and in writing.
- D2 Use commonly available IT tools.
- D3 Manage time and resources effectively.
- D4 Work effectively within a team as a member.
- D5 Manipulate, sort and present data.
- D6 Solve problems in a logical manner.
- D7 Learn effectively and independently, in all aspects of life.

BEng with Honours in Automotive Engineering with Motorsport

		Programme Learning Outcomes (as identified in section 1 and the last page)																										
		Knowledge & Understanding					Intellectual Skills					Practical Skills						Transferable Skills										
Module Title	Module Code	A1	A2	A3vms	A4	A5	B1	B2vms	B3	B4	B5vms	C1v	C2	C3	C4	C5vms	C6	D1	D2	D3	D4	D5	D6	D7				
Level 4	Engineering Mathematics	4PAM1007	X											X									X	X				
	Engineering Applications of Mathematics	4PAM1033	X											X									X	X				
	Materials and Electrical Science	4ENT1119		X			X						X															
	Mechanical Science	4ENT1067		X			X						X															
	Introduction to Manufacturing Technology	4ENT1117			X						X		X															
	Introduction to Design	4ENT1121			X						X			X	X							X						
	Fluid Mechanics and Thermodynamics	4ENT1068		X									X															
	Automotive and Motorsport Technology	4ENT1115			X	X	X			X									X	X	X				X			
	Career Skills Development	4ENT1096					X												X	X	X		X	X	X			
Level 5	Further Engineering Mathematics	5PAM1005	X						X					X										X				
	Computer Aided Engineering	5ENT1078			X			X	X		X	X	X			X												
	Automotive Electronics & Control Systems	5ENT1011	X			X	X	X			X	X	X			X							X					
	Dynamics	5ENT1013		X				X				X	X															
	Thermofluid Mechanics	5ENT1040		X			X	X				X	X															
	Motorsport Design	5ENT1041			X	X	X			X	X			X	X	X			X		X		X	X	X			
	Proj. Management & Product Development	5ENT1080				X	X				X						X				X	X	X					
	Structural Mechanics	5ENT1012		X					X			X	X										X					
	Career Planning	5ENT1082					X												X				X					
Level 6	Year Abroad	6ENT0001																										
	Semester Abroad	6ENT1051																										
	Placement Year	6AAD0015				X	X								X	X	X	X	X					X				
	Individual Major Project (Automotive)	6ENT1094				X		X		X	X				X		X	X	X	X		X	X	X	X			
	Mechanics and Properties of Materials	6ACM0003					X		X			X	X	X														
	Vehicle Structural Analysis & Manufacture	6AAD0023			X		X		X			X	X	X														
	Vehicle Engineering Design	6AAD0022			X	X	X			X	X				X				X			X	X	X				
	Vibration, Noise and Vehicle Dynamics	6ENT1066					X	X				X																
	High Performance Engine Design	6ENT1054		X	X		X	X	X			X																
	Motorsport Engineering	6ENT1053						X				X	X	X									X					
Careers Portfolio	6ENT1021					X												X		X	X		X	X				

KEY TO PROGRAMME LEARNING OUTCOMES

Automotive Engineering with Motorsport

Knowledge and Understanding e.g.

- A1 The analytical methods employed by engineers.
- A2 The fundamental engineering sciences.
- A3vms The design principles and design-to-build processes appropriate to automotive and motorsport vehicles.
- A4 The basic principles and economic, social, legal, ethical and sustainability considerations of the business of engineering.
- A5 Professional engineering practice.

Intellectual Skills e.g.

- B1 Analyse and solve engineering problems using appropriate techniques.
- B2vms Model and analyse high performance vehicles.
- B3 Select appropriate computer based methods for engineering and communication.
- B4 Evaluate external influences on the design process.
- B5vms Design high performance vehicle systems, components or processes.

Practical Skills

- C1v Apply analytical and modelling techniques to solve automotive engineering problems.
- C2 Perform experimental work, and draw conclusions.
- C3 Use computer-based engineering tools.
- C4 Prepare technical documentation.
- C5vms Evaluate the design of performance vehicles, components or processes.
- C6 Plan and manage a project, taking into account economic, social, legal, ethical and sustainability constraints.

Transferable Skills

- D1 Communicate effectively, both orally and in writing.
- D2 Use commonly available IT tools.
- D3 Manage time and resources effectively.
- D4 Work effectively within a team as a member.
- D5 Manipulate, sort and present data.
- D6 Solve problems in a logical manner.
- D7 Learn effectively and independently, in all aspects of life.

Section 2

Programme management

Relevant QAA subject benchmarking statements

Type of programme

Date of validation/last periodic review

Date of production/ last revision of PS

Relevant to level/cohort

Administrative School

Engineering

Undergraduate

October 15

April 2018

Level 4 entering September 2018

School of Engineering and Technology

Table 3 Course structure

Course details					
Course code	Course description			JACS	
EIBENGAME	BEng (Hons) Mechanical Engineering			H300	
Course Instances					
Instances code	Intake	Stream	Instances Year	Location	Mode of study
M1S	A	BEng (Hons) Mechanical Engineering	1	Hatfield	Full Time/Sandwich
M2S	A	BEng (Hons) Mechanical Engineering	2	Hatfield	Full Time/Sandwich
M3F	A	BEng (Hons) Mechanical Engineering	3	Hatfield	Full Time
M3S	A	BEng (Hons)(SW/YAB) Mechanical Engineering	3	Hatfield	Sandwich Placement/ Study Abroad
M4S	A	BEng (Hons)(SW/YAB) Mechanical Engineering	4	Hatfield	Sandwich
MP3P	A	BEng (Hons) Mechanical Engineering:	3	Hatfield	Part Time
MP4P	A	BEng (Hons) Mechanical Engineering:	4	Hatfield	Part Time
MP5P	A	BEng (Hons) Mechanical Engineering:	5	Hatfield	Part Time
MP6P	A	BEng (Hons) Mechanical Engineering:	6	Hatfield	Part Time
MU2SNH	A	BEng Mechanical Engineering	2	Hatfield	Full Time/Sandwich
MU3FNH	A	BEng Mechanical Engineering	3	Hatfield	Full Time
MU3SNH	A	BEng (SW/YAB) Mechanical Engineering	3	Hatfield	Sandwich Placement/ Study Abroad
MU4SNH	A	BEng (SW/YAB) Mechanical Engineering	4	Hatfield	Sandwich

Course details					
Course code	Course description				JACS
EIBENGAMEMC	BEng (Hons) Mechanical Engineering and Mechatronics:				H300 & H730
Course Instances					
Instances code	Intake	Stream	Instances Year	Location :	Mode of study
MEM1S	A	BEng (Hons) Mechanical Engineering and Mechatronics	1	Hatfield	Full Time/Sandwich
MEM2S	A	BEng (Hons) Mechanical Engineering and Mechatronics	2	Hatfield	Full Time/Sandwich
MEM3F	A	BEng (Hons) Mechanical Engineering and Mechatronics	3	Hatfield	Full Time
MEM3S	A	BEng (Hons)(SW/YAB) Mechanical Engineering and Mechatronics	3	Hatfield	Sandwich Placement/ Study Abroad
MEM4S	A	BEng (Hons)(SW/YAB) Mechanical Engineering and Mechatronics	4	Hatfield	Sandwich
MEM1P	A	BEng (Hons) Mechanical Engineering and Mechatronics:	1	Hatfield	Part Time
MEM2P	A	BEng (Hons) Mechanical Engineering and Mechatronics:	2	Hatfield	Part Time
MEM3P	A	BEng (Hons) Mechanical Engineering and Mechatronics:	3	Hatfield	Part Time
MEM4P	A	BEng (Hons) Mechanical Engineering and Mechatronics:	4	Hatfield	Part Time

Course details					
Course code	Course description				JACS
EIBENGAAE	BEng (Hons) Aerospace Engineering:				H400
Course Instances					
Instances code	Intake	Stream	Instances Year	Location :	Mode of study
A1S	A	BEng (Hons) Aerospace Engineering	1	Hatfield	Full Time/Sandwich
A2S	A	BEng (Hons) Aerospace Engineering	2	Hatfield	Full Time/Sandwich
A3F	A	BEng (Hons) Aerospace Engineering	3	Hatfield	Full Time
A3S	A	BEng (Hons)(SW/YAB) Aerospace Engineering	3	Hatfield	Sandwich Placement/ Study Abroad
A4S	A	BEng (Hons)(SW/YAB) Aerospace Engineering	4	Hatfield	Sandwich

A1P	A	BEng (Hons) Aerospace Engineering:	1	Hatfield	Part Time
A2P	A	BEng (Hons) Aerospace Engineering:	2	Hatfield	Part Time
A3P	A	BEng (Hons) Aerospace Engineering:	3	Hatfield	Part Time
A4P	A	BEng (Hons) Aerospace Engineering:	4	Hatfield	Part Time
A5P	A	BEng (Hons) Aerospace Engineering:	5	Hatfield	Part Time
A6P	A	BEng (Hons) Aerospace Engineering:	6	Hatfield	Part Time
AU2SNH	A	BEng Aerospace Engineering	2	Hatfield	Full Time/Sandwich
AU3FNH	A	BEng Aerospace Engineering	3	Hatfield	Full Time
AU3SNH	A	BEng (SW/YAB) Aerospace Engineering	3	Hatfield	Sandwich Placement/ Study Abroad
AU4SNH	A	BEng (SW/YAB) Aerospace Engineering	4	Hatfield	Sandwich
AEST1S	A	BEng (Hons) Aerospace Engineering with Space Technology	1	Hatfield	Full Time/Sandwich
AEST2S	A	BEng (Hons) Aerospace Engineering with Space Technology	2	Hatfield	Full Time/Sandwich
AEST3F	A	BEng (Hons) Aerospace Engineering with Space Technology	3	Hatfield	Full Time
AEST3S	A	BEng (Hons)(SW/YAB) Aerospace Engineering with Space Technology	3	Hatfield	Sandwich Placement/ Study Abroad
AEST4S	A	BEng (Hons)(SW/YAB) Aerospace Engineering with Space Technology	4	Hatfield	Sandwich
AEST1P	A	BEng (Hons) Aerospace Engineering with Space Technology:	1	Hatfield	Part Time
AEST2P	A	BEng (Hons) Aerospace Engineering with Space Technology:	2	Hatfield	Part Time
AEST3P	A	BEng (Hons) Aerospace Engineering with Space Technology:	3	Hatfield	Part Time
AEST4P	A	BEng (Hons) Aerospace Engineering with Space Technology:	4	Hatfield	Part Time
AESTU3FNH	A	BEng Aerospace Engineering with Space Technology	3	Hatfield	Full Time
APS1S	A	BEng (Hons) Aerospace Systems Engineering with Pilot Studies	1	Hatfield	Full Time/Sandwich
APS2S	A	BEng (Hons) Aerospace Systems Engineering with Pilot Studies	2	Hatfield	Full Time/Sandwich
APS3F	A	BEng (Hons) Aerospace Systems Engineering with Pilot Studies	3	Hatfield	Full Time
APS3S	A	BEng (Hons)(SW/YAB) Aerospace Systems Engineering with Pilot Studies	3	Hatfield	Sandwich Placement/ Study Abroad
APS4S	A	BEng (Hons)(SW/YAB) Aerospace Systems Engineering with Pilot Studies	4	Hatfield	Sandwich
APSU3F	A	BEng Aerospace Systems Engineering with Pilot Studies	3	Hatfield	Full Time

ASE1S	A	BEng (Hons) Aerospace Systems Engineering	1	Hatfield	Full Time/Sandwich
ASE2S	A	BEng (Hons) Aerospace Systems Engineering	2	Hatfield	Full Time/Sandwich
ASE3F	A	BEng (Hons) Aerospace Systems Engineering	3	Hatfield	Full Time
ASE3S	A	BEng (Hons)(SW/YAB) Aerospace Systems Engineering	3	Hatfield	Sandwich Placement/ Study Abroad
ASE4S	A	BEng (Hons)(SW/YAB) Aerospace Systems Engineering	4	Hatfield	Sandwich
ASEU2SNH	A	BEng Aerospace Systems Engineering	2	Hatfield	Full Time/Sandwich
ASEU3FNH	A	BEng Aerospace Systems Engineering	3	Hatfield	Full Time
ASEU3SNH	A	BEng (SW/YAB) Aerospace Systems Engineering	3	Hatfield	Sandwich Placement/ Study Abroad
ASEU4SNH	A	BEng (SW/YAB) Aerospace Systems Engineering	4	Hatfield	Sandwich

Course details					
Course code		Course description		JACS	
EIBENGAU		BEng (Hons) Automotive Engineering		H330	
Course Instances					
Instances code	Intake	Stream	Instances Year	Location :	Mode of study
V1S	A	BEng (Hons) Automotive Engineering	1	Hatfield	Full Time/Sandwich
V2S	A	BEng (Hons) Automotive Engineering	2	Hatfield	Full Time/Sandwich
V3F	A	BEng (Hons) Automotive Engineering	3	Hatfield	Full Time
V3S	A	BEng (Hons)(SW/YAB) Automotive Engineering	3	Hatfield	Sandwich Placement/ Study Abroad
V4S	A	BEng (Hons)(SW/YAB) Automotive Engineering	4	Hatfield	Sandwich
VU2SNH	A	BEng Automotive Engineering	2	Hatfield	Full Time/Sandwich
VU3FNH	A	BEng Automotive Engineering	3	Hatfield	Full Time
VU3SNH	A	BEng (SW/YAB) Automotive Engineering	3	Hatfield	Sandwich Placement/ Study Abroad
VU4SNH	A	BEng (SW/YAB) Automotive Engineering	4	Hatfield	Sandwich
VMS1S	A	BEng (Hons) Automotive Engineering with Motorsport	1	Hatfield	Full Time/Sandwich
VMS2S	A	BEng (Hons) Automotive Engineering with Motorsport	2	Hatfield	Full Time/Sandwich

VMS3F	A	BEng (Hons) Automotive Engineering with Motorsport	3	Hatfield	Full Time
VMS3S	A	BEng (Hons)(SW/YAB) Automotive Engineering with Motorsport	3	Hatfield	Sandwich Placement/ Study Abroad
VMS4S	A	BEng (Hons)(SW/YAB) Automotive Engineering with Motorsport	4	Hatfield	Sandwich
VMSU2SNH	A	BEng Automotive Engineering with Motorsport	2	Hatfield	Full Time/Sandwich
VMSU3FNH	A	BEng Automotive Engineering with Motorsport	3	Hatfield	Full Time
VMSU3SNH	A	BEng (SW/YAB) Automotive Engineering with Motorsport	3	Hatfield	Sandwich Placement/ Study Abroad
VMSU4SNH	A	BEng (SW/YAB) Automotive Engineering with Motorsport	4	Hatfield	Sandwich