

School of Engineering and Technology

Title of Programme: Modular Masters in Aerospace, Automotive, Manufacturing, Mechanical and Operations and Supply Chain

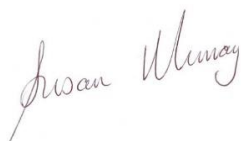
Programme Code: EIMASTAD

Programme Specification

This programme specification is relevant to students entering:
16 September 2019

Associate Dean of School (Academic Quality Assurance):
Susan Murray

Signature



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

Date	Section	Amendment
March 18	E, F, page 7,8,13,14,	Change to sections E and F including link for Herts Handbook, removal of Deputy programme Leader position, change from 30 to 45 credits on PG Cert and addition of accreditation detail. Programme assessment compensation detail added.
Jul 18	E page 14	Attendance criteria added for Programme Specific assessment regulations

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

Programme Specification

MSc Aerospace Engineering

MSc Automotive Engineering

MSc Mechanical Engineering

MSc Manufacturing Management

MSc Operations and Supply Management

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	See Section D
Final Award (Qualification)	MSc
All Final Award titles (Qualification and Subject)	Aerospace Engineering Automotive Engineering Mechanical Engineering Manufacturing Management Operations and Supply Chain Management
FHEQ level of award	7
Language of Delivery	English

A. Programme Rationale

This programme consist of a number of specialist Masters awards with an expectation that students will have studied a related engineering discipline to a Bachelor's level or equivalent, as opposed to a conversion masters philosophy aimed at students from a non-engineering background. The MSc awards are normally studied over three semesters with the final semester being a 60 credit point individual project. The MSc has two starting points.

This has been adopted to meet the demand from international students whose previous studies were conducted with a different academic year to the normal September to September year operated in the UK. The consequence of this is that the modules that make up the MSc curriculum need to be independent of each other as the two intake groups of students will not necessarily take modules in the same order. Students entering in semester B will therefore complete their studies over an 18 month period rather than 12 months. It is also possible for a student to study these awards on a part-time basis over a three year period.

The successful postgraduates of the programme will acquire the knowledge and understanding, intellectual, practical and transferable skills necessary for the analysis and synthesis of problems in engineering and manufacturing through a combination of experimental, simulation, research methods and case studies. They can expect to gain work in a range of disciplines within a variety of industries from specialist technical roles to positions of management responsibility.

On the MSc Aerospace Engineering, the development of skills and advancement of knowledge focus on:

- dynamic structural and aeroelastic analysis of aerospace vehicles, flight dynamics, stability and control and the implications for the design and construction of aerospace vehicles;
- the construction of CFD models and to assess implications of results, the limitations of present techniques and the potential future direction of developments in the CFD and aerodynamics field;
- appreciation of the need for process, product development and quality and reliability issues relevant to the introduction of products in a cost effective and timely manner;
- critical review of the present knowledge base, its applicability, usage and relevance to enhance product and enterprise performance
- Students may gain employment with companies such as: Airbus, Rolls Royce, GE Aviation, Airbus, Bombardier Transportation, BAe Systems, MBDA, SAFRAN, GKN Aerospace, Spirit, Finmeccanica, EDF, BP and Schlumberger.

On the MSc Automotive Engineering, the development of skills and advancement of knowledge focus on:

- the selection of materials, process and techniques for the structural analysis and the design and construction of automotive components such as body and chassis, in relation to vibration and vehicle dynamics;
- understanding of alternative power train and fuel technologies, their impact on vehicle performance and environment;
- the construction of CAE models and to assess implications of the results, the limitations of present techniques and the potential future direction of developments in the CAE field;
- appreciation of the need for process and product development relevant to the introduction of products in a cost effective and timely manner;
- critical review of the present knowledge base, its applicability, usage and relevance to enhance product and enterprise performance

On the MSc Mechanical Engineering, the development of skills and advancement of knowledge focus on:

- the selection of materials, process and techniques for the structural analysis, design and construction of engineered components;
- the understanding of the control and dynamics theories used in the design of systems and more specifically their application in a wide variety of engineered systems and subsystems;
- the construction of CAE models and evaluation of results, the limitations of present techniques and the potential future direction of developments in the CAE field;
- appreciation of the need for process, product development and quality and reliability issues relevant to the introduction of products in a cost effective and timely manner;
- critical review of the present knowledge base, its applicability, usage and relevance to enhance product and enterprise performance

On the MSc Manufacturing Management, the development of skills and advancement of knowledge focus on:

- the broad areas of business, operations management, information systems, product development and quality systems;
- design orientated tasks, including analysis and synthesis, to develop relevant and applicable procedures and processes to resolve technical and ultimately business problems;
- critical review of the present knowledge base, its applicability, usage and relevance to enhance product and enterprise performance
- Students may gain employment in the Aerospace and Automotive industry sectors or other FMCG areas.

On the MSc Operations and Supply Chain Management, the development of skills and advancement of knowledge focus on:

- the broad areas of business, operations management, operations research, procurement and supply chain management, financial control, manufacturing information systems, manufacturing strategy; legal aspects of supply chain; and human resources management;
- case studies, including analysis and synthesis, contribution to profitability, understanding of purchasing, procurement and logistics;
- critical review of strategic value, procurement and supply chain management
- Students may gain employment in any sector including aerospace, automotive, pharmaceutical, distribution and logistics sector and other FMCG industries.

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 quality education at postgraduate level in the disciplines of aerospace, automotive, mechanical, manufacturing management/technology and operations and supply chain management;
- provide an educational opportunity and experience to graduates and/or those with appropriate previous experience which enhances their prospects of professional employment with industry;
- provide a variety of awards of study through which the postgraduate may demonstrate competence, knowledge, skills and understanding, in and of, selected disciplines in the field of engineering, management and technology;
- provide the students with the knowledge and understanding to equip them for a career in technical and engineering management;
- provide and equip the students with theory and the practice of process and technology management, system design and implementation

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 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/learning methods & strategies	Assessment
<p>Aerospace Engineering (AM), Automotive Engineering (AUM) and Mechanical Engineering (MECM)</p> <p>A1 AM. The advanced CAE and simulation methods employed by aerospace engineers.</p> <p>A1 AUM. The advanced CAE and simulation methods employed by automotive engineers.</p> <p>A1 MECM. The advanced CAE and simulation methods employed by mechanical engineers.</p> <p>A2 AM. The fundamental sciences appropriate to aerospace engineering.</p> <p>A2 AUM. The fundamental sciences appropriate to automotive engineering.</p> <p>A2 MECM. The fundamental sciences appropriate to mechanical engineering.</p>	<p>Acquisition of knowledge and understanding is through a combination of lectures, seminars, group discussions and assignments.</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 a series of case studies, assignments, project reports and unseen examinations</p>

<p>A3. Appropriate research methods employed in analysis of technical and commercial problems.</p> <p>A4. The product/process definition and systems design process.</p> <p>Manufacturing Management (MMGM) and Operations and Supply Chain Management (OSCM)</p> <p>A5. The techniques relevant to the analysis of business strategy and planning.</p> <p>A6. The product definition and systems design process.</p> <p>A8. Operations management techniques and processes in manufacturing and service sectors.</p> <p>A9. Resource management planning and systems implications.</p> <p>A10. The analytical techniques employed in management and process control.</p> <p>A7 OSCM. Relevant techniques for commercial and professional engineering practice in the context of Operations and Supply Chain Management.</p> <p>A7 MMGM Relevant techniques for commercial and professional engineering practice in the context of Manufacturing Management</p>		
<p>Intellectual skills:</p>	<p>Teaching/learning methods & strategies</p>	<p>Assessment</p>
<p>Aerospace Engineering, Automotive Engineering and Mechanical Engineering</p> <p>B1. Analyse and solve engineering problems using appropriate techniques.</p> <p>B2. Design/model/analyse relevant engineering systems/subsystems.</p> <p>B3. Critically review and select appropriate research methods to solve engineering and commercial problems.</p> <p>B4. Evaluate external influences on the design process.</p> <p>Manufacturing Management and Operations and Supply Chain Management</p> <p>B1 MMGM. Analyse and solve Manufacturing Management problems using appropriate techniques.</p> <p>B1 OSCM. Analyse and solve Operations and Supply Chain Management problems.</p> <p>B2. Design/model/analyse relevant engineering systems/subsystems.</p> <p>B3. Critically review and select appropriate research methods to solve engineering and commercial problems.</p> <p>B4 MMGM. Evaluate external influences on the design process in the context of Manufacturing Management.</p> <p>B4 OSCM. Evaluate external influences on the design process in the context of Operations and Supply Chain Management.</p>	<p>Intellectual skills are developed throughout the programme by the methods and strategies outlined in section A, above.</p> <p>Analysis, problem solving and modelling skills are further developed through case studies, class discussion, in-course exercises, assignments and exams.</p> <p>Throughout, the learner is encouraged to develop intellectual skills further by independent study</p>	<p>Intellectual skills B1-B6 are assessed through case studies, experiential work, tutorials, assignment and examinations. These are supported by work centred on analysis and synthesis, problem solving, in technical and managerial contexts.</p>

<p>B5. Identify the influence of resource related issues on operations and business.</p> <p>B6. Design appropriate management systems and processes.</p>		
<p>Practical skills:</p>	<p>Teaching/learning methods & strategies</p>	<p>Assessment</p>
<p>All awards</p> <p>C5. Plan and manage project, taking into account commercial, industrial and resource constraints.</p> <p>Additionally for:</p> <p>Aerospace Engineering, Automotive Engineering and Mechanical Engineering</p> <p>C1 AM. Apply appropriate experimental, analytical and modelling techniques to a range of aerospace engineering problems draw conclusions.</p> <p>C1 AUM. Apply appropriate experimental, analytical and modelling techniques to a range of automotive engineering problems and draw conclusions.</p> <p>C1 MECM. Apply appropriate experimental, analytical and modelling techniques to a range of mechanical engineering problems and draw conclusions.</p> <p>C2. Use advanced computer-aided engineering tools.</p> <p>C3. Prepare technical documentation.</p> <p>C4. Evaluate the design of appropriate systems, components or processes.</p> <p>Manufacturing Management and Operations and Supply Chain Management</p> <p>C1 MMGM. Apply appropriate experimental, analytical and modelling techniques to a range of manufacturing problems and draw conclusions.</p> <p>C1 OSCM. Apply appropriate experimental, analytical and modelling techniques to a range of business applications and draw conclusions.</p> <p>C6. Appropriate evaluation of the resource constraint implications on management decision making.</p> <p>C7. Plan the effective implementation of appropriate management systems and processes.</p>	<p>Practical skills are developed throughout the programme through a series of case studies, experimental and simulation exercises, project reports and viva.</p> <p>Skills C1 – C4, C6 and C7 are developed through the programme of study and associated written reports and submissions.</p> <p>C5 is developed throughout the programme of the study, with one-to-one supervision during the individual project.</p>	<p>Practical skills C1-C7 are formerly assessed through assignment work on case studies and the individual project</p>
<p>Transferable skills:</p>	<p>Teaching/learning methods & strategies</p>	<p>Assessment</p>
<p>All awards</p> <p>D1. Communicate information effectively, orally and/or in writing.</p> <p>D2. Manage time and resources effectively.</p> <p>D3. Work effectively individually and/or within a team.</p>	<p>Transferable skills are developed throughout the programme by using group discussions and report writing and require students to manage their own time for achieving targets.</p>	<p>Transferable skills D1-D6 are assessed through assignment work and the project.</p>

D4. Solve problems in a logical and coherent manner.

D6. Learn effectively and independently, in preparation for lifelong learning.

Additionally for:

Aerospace Engineering, Automotive Engineering and Mechanical Engineering

D5. Manipulate, sort and present data.

Skill D1 is developed through coursework reports, oral presentations, research methods and the project report.

Skill D2 is developed through meeting deadlines for scheduled assignments and the individual project.

Skills D3, D4 and D5 are developed throughout most modules; through lectures, group work, assessments and the individual project.

Skill D6 is encouraged and developed by the nature of the programme of study and the acquisition of transferable skills.

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

The programme is offered in full-time and part-time modes.

Full-time students may enter the programme for a Semester A start in September when it runs over one calendar year or in January for a Semester B start when it runs over 18 months. Identical modules will be studied on both September and January intakes. Students on the September and January intakes complete their projects in Semester C or B respectively.

In a part-time mode, the programme is normally offered in 3 years with identical modules studied with the full-time students.

Entry is normally at Masters Level 7 with related degree qualifications.

Accreditation of prior learning (APEL/APCL) is available for this programme. Students wishing to claim APL must document their relevant prior learning in detail and must provide full evidence for their prior achievement of the learning outcomes of this programme.

The Programme Learning Outcomes detailed in section C are developed and assessed through the constituent modules. Table 2 (at the end of this document) identifies where each learning outcome is developed and assessed.

Professional and Statutory Regulatory Bodies

Accreditation is a mark of assurance that the degree meets the standards set by the Engineering Council in the UK Standard for Professional Engineering Competence (UK-SPEC). Some employers recruit preferentially from accredited degrees, and an accredited degree is likely to be recognised by other countries that are signatories to international accords.

Professional Accreditation by the IMechE

Accredited as meeting the further learning requirement for Chartered Engineer registration for the cohort intakes from 2016 up to and including, 2020.

MSc Aerospace Engineering (Full Time - 1 year duration; Part Time 2 years)

MSc Automotive Engineering (Full Time - 1 year duration; Part Time 2 years)
MSc Mechanical Engineering (Full Time - 1 year duration; Part Time 2 years)

Professional Accreditation by the RAes

Accredited as meeting the IEng and CEng requirements in full, for intake years 2016 to 2020, backdated to include the 2015 intake.

MSc Aerospace Engineering (Full Time - 1 year duration; Part Time 2 years)
MSc Automotive Engineering (Full Time - 1 year duration; Part Time 2 years)
MSc Mechanical Engineering (Full Time - 1 year duration; Part Time 2 years)

Recognition by the Institute of Manufacturing (IManf).

Recognition from intake 2016 until intake 2021

MSc Manufacturing Management (Full Time - 1 year duration; Part Time 2 years)
MSc Operations and Supply Chain Management (Full Time - 1 year duration; Part Time 2 years)

This course is recognised and graduates of this programme will be entitled to "Fellow membership of The Institute of Manufacturing" and once they can demonstrate 2 years' work experience in Manufacturing Management they will be entitled to apply for the award of "Certified Manufacturing Practitioner".

Work-Based Learning, including Sandwich Programmes

N/A

Programme Structure

The programme structure and progression information below (Table 1a and 1b) is provided for the 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.

Table 1a Outline Programme Structure

See pages 9 and 10

Mode of study: Full-time/Part-time

Part time: A typical study pattern for a 3-year part-time student would be 60 credit points of taught modules in the first year, a further 60 credit points of taught modules in the second year and the project in the final year. The order of the modules is agreed in consultation with the Programme Leader with a maximum of 75 credit points within any one academic year.

Entry point: A or B

Note: Semester B entry students study the same modules as semester A entry students, except the MSc individual Project is studied in Semester B of the second year rather than semester C.

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

AM = Aerospace Engineering
AUM = Automotive Engineering
MECM = Mechanical Engineering
MMGM = Manufacturing Management
OSCM = Operations and Supply Chain Management

c = compulsory module
o = optional module.

Entry Point – Semester A

To progress to the project stage, the candidates are expected to have successfully completed a minimum of 90 credits.
The award of a Masters Degree requires 180 credit points passed at level 7, including the MSc Individual Project.

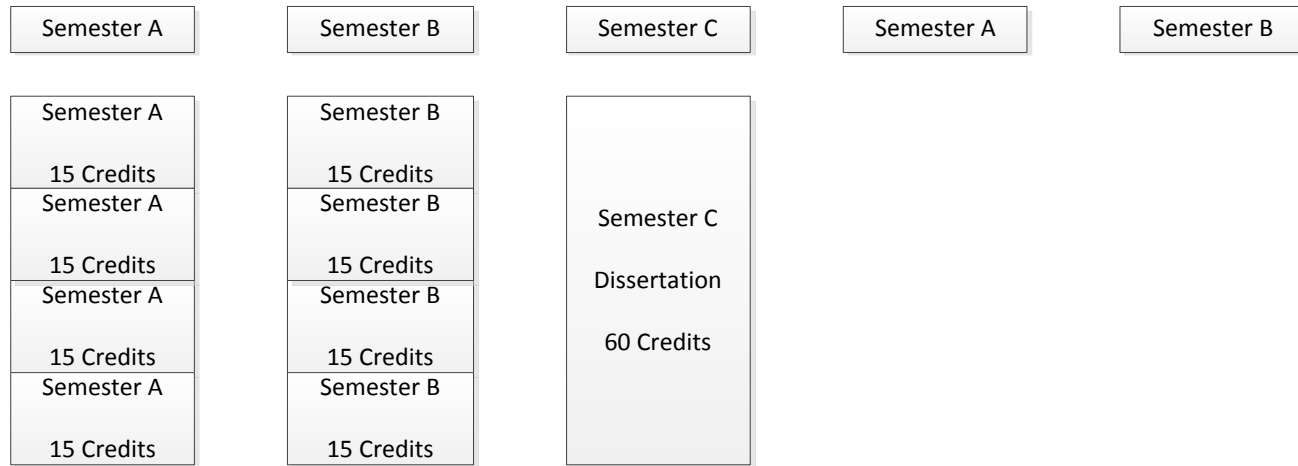
Module Title	Module Code	Award					Credit Pts.	Language of Delivery	% exam	% ICA	% Practical	Semester.	Year of Study	
		AM	AUM	MECM	MMG M	OSCM							Full Time Mode	Part Time Mode
Aeroelasticity	7AAD0039	c					15	English	60	40	-	A	1	1
CFD Techniques	7ENT1007	c	c	c			15	English	60	40	-	A	1	1
Automotive Materials & Manufacture	7ENT1063		c				15	English	60	40	-	A	1	2
Dynamics and Performance of Mechanical Systems	7ENT1081			c			15	English	60	40	-	A	1	1
Financial Control	7ENT1065				c	c	15	English	60	40	-	A	1	2
Manufacturing Information Systems	7AAD0059				c	c	15	English	60	40	-	A	1	1
Control of Engineering Systems	7ENT1074	c		c			15	English	60	40	-	A	1	2
Operations Management	7ENT1060	c		c	c	c	15	English	60	40	-	A	1	2
Integrated Product Engineering	7ENT1064		c		c		15	English	60	40	-	A	1	1
Automotive Electrical Systems	7AAD0056		c				15	English	60	40	-	A	1	2
Human Resource Management	7AAD0062					c	15	English	60	40	-	A	1	1
Operations Research	7ENT1070	c	c	c	c	c	15	English	60	40	-	B	1	2
Quality, Reliability & Maintenance	7ENT1068			c	c		15	English	60	40	-	B	1	1
Legal Aspects of Supply Chain	7LAW0155					c	15	English	-	100	-	B	1	1
Aerospace Applications	7ENT1111	c					15	English	60	40	-	B	1	1
Flight Mechanics	7AAD0038	c					15	English	60	40	-	B	1	2
Advanced Engines & Power Systems	7ENT1066		c				15	English	60	40	-	B	1	2
Automotive Dynamics & Safety	7AAD0054		c				15	English	60	40	-	B	1	1
FEA and Applications	7ENT1059	c	c	c			15	English	60	40	-	B	1	1
Advanced Thermodynamics and Thermal Systems	7ENT1071			c			15	English	60	40	-	B	1	2
Procurement & Supply Chain Management	7ENT1069				c	c	15	English	60	40	-	B	1	2
Manufacturing Strategy	7AAD0064				c	c	15	English	60	40	-	B	1	1
MSc Individual Project (MSc Projects)	7ENT1072	c	c	c	c	c	60	English	0	100	-	C or AB	2	3

Entry Point – Semester B

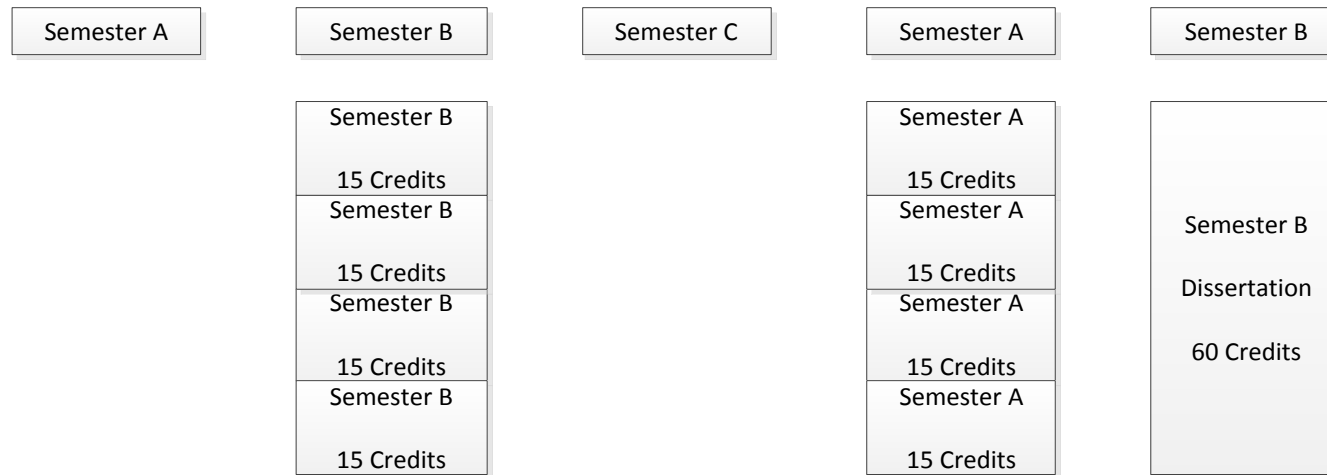
To progress to the project stage, the candidates are expected to have successfully completed a minimum of 90 credits.
The award of a Masters Degree requires 180 credit points passed at level 7, including the MSc Individual Project

Module Title	Module Code	Award					Credit Pts.	Language of Delivery	% exam	% ICA	% Practical	Semester.	Year of Study	
		AM	AUM	MECM	MMGM	OSCM							Full Time Mode	Part Time Mode
Operations Research	7ENT1070	c	c	c	c	c	15	English	60	40	-	B	1	2
Quality, Reliability & Maintenance	7ENT1068			c	c		15	English	60	40	-	B	1	1
Legal Aspects of Supply Chain	7LAW0155					c	15	English	-	100	-	B	1	1
Aerospace Applications	7ENT1111	c					15	English	60	40	-	B	1	1
Flight Mechanics	7AAD0038	c					15	English	60	40	-	B	1	2
Advanced Engines & Power Systems	7ENT1066		c				15	English	60	40	-	B	1	2
Automotive Dynamics & Safety	7AAD0054		c				15	English	60	40	-	B	1	1
FEA and Applications	7ENT1059	c	c	c			15	English	60	40	-	B	1	1
Advanced Thermodynamics and Thermal Systems	7ENT1071			c			15	English	60	40	-	B	1	2
Procurement & Supply Chain Management	7ENT1069				c	c	15	English	60	40	-	B	1	2
Manufacturing Strategy	7AAD0064				c	c	15	English	60	40	-	B	1	1
Aeroelasticity	7AAD0039	c					15	English	60	40	-	A	2	1
CFD Techniques	7ENT1007	c	c	c			15	English	60	40	-	A	2	1
Automotive Materials & Manufacture	7ENT1063		c				15	English	60	40	-	A	2	2
Dynamics and Performance of Mechanical Systems	7AAD0068			c			15	English	60	40	-	A	2	1
Financial Control	7ENT1065				c	c	15	English	60	40	-	A	2	2
Manufacturing Information Systems	7AAD0059				c	c	15	English	60	40	-	A	2	1
Control of Engineering Systems	7ENT1074	c		c			15	English	60	40	-	A	2	2
Operations Management	7ENT1060	c		c	c	c	15	English	60	40	-	A	2	2
Integrated Product Engineering	7ENT1064		c		c		15	English	60	40	-	A	2	1
Automotive Electrical Systems	7AAD0056		c				15	English	60	40	-	A	2	2
Human Resource Management	7AAD0062					c	15	English	60	40	-	A	2	1
MSc Individual Project (MSc Projects)	7ENT1072	c	c	c	c	c	60	English	0	100	-	B or BC	2	3

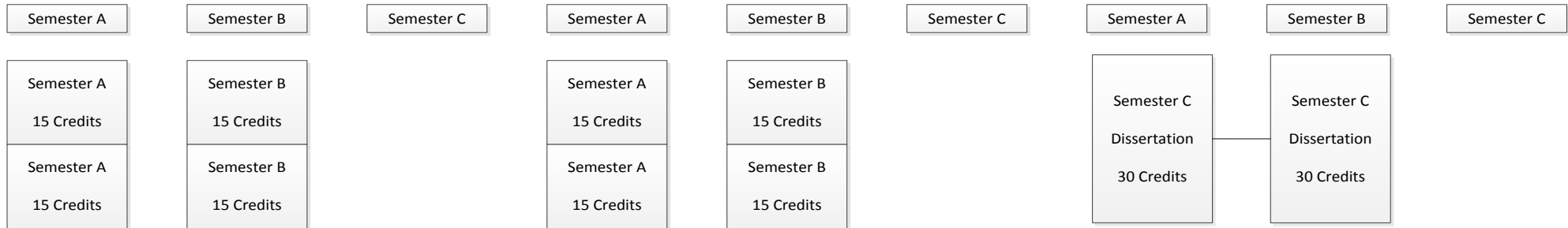
MSc (Semester A Entrant) – Full Time Structure



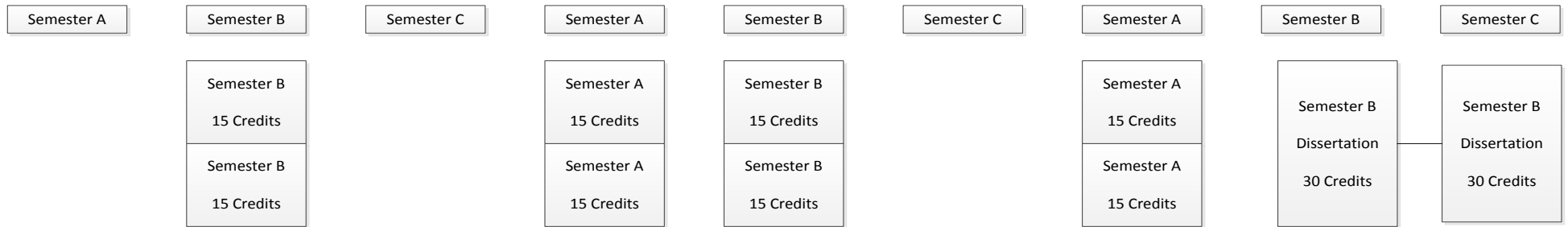
MSc (Semester B Entrant) – Full Time Structure



MSc (Semester A Entrant) Part Time Structure



MSc (Semester B Entrant) Part Time Structure



The award of an MSc requires 180 credit points passed at level 7, including the Masters project.

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 (normally):	Programme Learning Outcomes developed (see above)
MSc in named award	Aerospace Engineering Automotive Engineering Mechanical Engineering Manufacturing Management Operations and Supply Management	180 credit points including at least 150 at level 7	3 Semesters	All programme learning outcomes (see Table 2)
Interim Award	Award Title	Minimum requirements	Available at end of Level	Programme Learning Outcomes developed (see above)
Postgraduate Diploma	Aerospace Engineering Automotive Engineering Mechanical Engineering Manufacturing Management Operations and Supply Management	120 credit points, including at least 90 at level 7	2, 3 Semesters	List all relevant learning outcomes, e.g. A1, A3, A4, A5, B1, B2, B6, C1, C2, C3, C5, D1, D2, D3, D4, D5, D6
Postgraduate Certificate	Untitled	60 credit points, including at least 45 at level 7	1-2 Semesters	For untitled awards: See UPR AS11, section 13: http://sitem.herts.ac.uk/secreg/upr/AS11.htm

Masters and Diploma awards can be made "with Distinction" or "with Commendation" where criteria as described in [UPR AS14](#), Section D and the students' handbook are met.

Programme-specific assessment regulations

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

Further points of clarification and interpretation relevant to this specific programme are given below:

Compensation

Compensatory credit on this award shall be awarded in accordance with UPR AS14 Sections D4.1, D4.2 and D4.5. In exercising their discretion under D4.1, Programme Boards shall not award compensatory credit unless the module under consideration for compensation has an overall pass mark of 40%, together with a serious attempt at all elements of assessment.

Compensation is not permitted for individual modules worth 30 or more credit points at level 7. Major projects such as the MSc individual project cannot be compensated.

Attendance

The attendance requirement is as follows:

Attendance at all timetabled learning and teaching sessions is required.

If attendance falls below 75% but not lower than 50% and the student passes the assessment, the module grade will be capped at the pass mark.

If attendance falls below 75% and a student fails the assessment, or attendance falls below 50%, the student will normally be deemed to have failed the module at the first attempt and will not be permitted to undertake referred assessment in the module.

Missing classes due to Serious Adverse Circumstances

If a student misses more than 25% of classes, then the student needs to submit a Claim to Serious Adverse Circumstances with the appropriate evidence. Any non-attendance of up to 50% of the module can be excused based on a valid SAC claim.

If a student has valid reasons for non-attendance of more than 50% of the module but has passed the assessment, the Board of Examiners can recommend one or more 'Tasks in lieu of attendance'.

When a student has valid reasons for non-attendance of more than 50% of the module and hasn't passed the assessment, the Board of Examiners can recommend 'Deferral with attendance in the next academic year'.

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;
- 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 [Ask Herts](#) website provides information on a wide range of resources and services available at the University of Hertfordshire including academic support, accommodation, fees, funding, visas, wellbeing services and student societies.

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.

In accordance with section 4(5) of the Higher Education and Research Act 2017 (HERA), the UK Office for Students (OfS) has registered the University of Hertfordshire in the register of English higher education providers. The Register can be viewed at: <https://www.officeforstudents.org.uk/advice-and-guidance/the-register/the-ofs-register/>. Furthermore, the OfS has judged that the University of Hertfordshire delivers consistently outstanding teaching, learning and outcomes for its students. It is of the highest quality found in the

UK. Consequently, the University received a Gold award in the 2018 Teaching Excellence and Student Outcomes (TEF) exercise. This award was made in June 2018 and is valid for up to 3 years. The TEF panel's report and conclusions can be accessed at: <https://www.officeforstudents.org.uk/advice-and-guidance/teaching/tef-outcomes/#/provider/10007147>

G. Entry requirements

The normal entry requirements for the programme are:

- i. typically a minimum of 2:ii honours degree in Aerospace, Automotive, Mechanical, or Manufacturing (with a relevant analytical content) based discipline; **or**
- ii. any other contiguous discipline the subject content of which does not overlap with that of the programme to any substantial extent; **or**
- iii. a qualification from any other recognised International academic institution which is of comparable academic standard to those identified above; **or**
- iv. Exceptionally, a number of applicants with other relevant professional qualifications who have the necessary academic achievements and experience will be considered under APCL and APEL.

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 IELTS 6.0 or an equivalent recognised qualification. For IELTS, this should include a minimum score of 5.5 in each band. Students without IELTS of 6.0 or equivalent, depending on the Country of Origin, would normally be expected to complete a suitable programme of study prior to the commencement of their MSc programme, such as Pre-Sessional English Classes or any other suitable programme deemed appropriate by the University.

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: 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

MSc Aerospace 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.

Module Title		Programme Learning Outcomes (as identified in section 1 and below)																			
		Knowledge & Understanding				Intellectual Skills				Practical Skills					Transferable Skills						
		A1am	A2am	A3	A4	B1	B2	B3	B4	C1am	C2	C3	C4	C5	D1	D2	D3	D4	D5	D6	
Level 7	Aeroelasticity	7AAD0039	X	X		X	X	X			X	X		X			X				
	Flight Mechanics	7AAD0038	X	X		X	X	X			X	X		X			X				
	CFD Techniques	7ENT1007	X	X			X	X			X	X	X	X			X		X	X	
	Aerospace Applications	7ENT1111	X	X		X	X	X			X	X	X	X			X		X	X	
	MSc Individual Project	7ENT1072		X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	X
	Operations Management	7ENT1060				X	X	X		X			X	X	X	X		X	X		
	Control of Engineering Systems	7ENT1074	X	X			X	X			X	X	X	X					X	X	
	Operations Research	7ENT1070	X	X		X	X	X	X	X	X	X	X	X			X		X	X	X
	FEA and Applications	7ENT1059				X	X	X	X		X			X			X		X	X	

Key to Programme Learning Outcomes

Knowledge and Understanding

- A1am. The advanced CAE and simulation methods employed by aerospace engineers.
- A2am. The fundamental sciences appropriate to aerospace engineering.
- A3. Appropriate research methods employed in analysis of technical and commercial problems.
- A4. The product/process definition and systems design process.

Intellectual Skills

- B1. Analyse and solve engineering problems using appropriate techniques.
- B2. Design/model/analyse relevant engineering systems/subsystems.
- B3. Critically review and select appropriate research methods to solve engineering and commercial problems.
- B4. Evaluate external influences on the design process.

Practical Skills

- C1am. Apply appropriate experimental, analytical and modelling techniques to a range of aerospace engineering problems and draw conclusions.
- C2. Use advanced computer-aided engineering tools.
- C3. Prepare technical documentation.
- C4. Evaluate the design of appropriate systems, components or processes.
- C5. Plan and manage a project, taking into account commercial, industrial and resource constraints.

Transferable Skills

- D1. Communicate information effectively, orally and/or in writing.
- D2. Manage time and resources effectively.
- D3. Work effectively individually and/or within a team.
- D4. Solve problems in a logical and coherent manner.
- D5. Learn effectively and independently, in preparation for lifelong learning.
- D5. Manipulate, sort and present data.

MSc Automotive Engineering

		Programme Learning Outcomes (as identified in section 1 and below)																			
		Knowledge & Understanding				Intellectual Skills				Practical Skills					Transferable Skills						
Module Title	Module Code	A1aum	A2aum	A3	A4	B1	B2	B3	B4	C1aum	C2	C3	C4	C5	D1	D2	D3	D4	D5	D6	
Level 7	Integrated Product Engineering	7ENT1064			X	X	X	X		X			X	X	X		X		X	X	
	CFD Techniques	7ENT1007	X	X			X	X			X	X	X	X		X			X	X	
	FEA and Applications	7ENT1059	X	X		X	X	X	X	X	X	X	X	X		X			X	X	
	Operations Research	7ENT1070	X	X		X	X	X	X	X	X	X	X	X		X		X	X	X	
	Automotive Dynamics & Safety	7AAD0054	X	X			X	X		X	X	X	X	X		X			X	X	
	MSc Individual Project	7ENT1072		X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	X
	Advanced Engines & Power Systems	7ENT1066		X		X	X	X		X	X			X		X			X	X	
	Automotive Electrical Systems	7AAD0056		X		X	X	X		X	X			X		X			X	X	
	Automotive Materials & Manufacture	7ENT1063		X			X	X		X			X	X		X			X		

Key to Programme Learning Outcomes

Knowledge and Understanding

A1aum. The advanced CAE and simulation methods employed by automotive engineers.

A2aum. The fundamental sciences appropriate to automotive engineering.

A3. Appropriate research methods employed in analysis of technical and commercial problems.

A4. The product/process definition and systems design process.

Intellectual Skills

B1. Analyse and solve engineering problems using appropriate techniques.

B2. Design/model/analyse relevant engineering systems/subsystems.

B3. Critically review and select appropriate research methods to solve engineering and commercial problems.

B4. Evaluate external influences on the design process.

Practical Skills

C1aum. Apply appropriate experimental, analytical and modelling techniques to a range of automotive engineering problems and draw conclusions.

C2. Use advanced computer-aided engineering tools.

C3. Prepare technical documentation.

C4. Evaluate the design of appropriate systems, components or processes.

C5. Plan and manage a project, taking into account commercial, industrial and resource constraints.

Transferable Skills

D1. Communicate information effectively, orally and/or in writing.

D2. Manage time and resources effectively.

D3. Work effectively individually and/or within a team.

D4. Solve problems in a logical and coherent manner.

D5. Manipulate, sort and present data.

D6. Learn effectively and independently, in preparation for lifelong learning.

MSc Mechanical Engineering

		Programme Learning Outcomes (as identified in section 1 and below)																			
		Knowledge & Understanding				Intellectual Skills				Practical Skills					Transferable Skills						
Module Title	Module Code	A1mecm	A2mecm	A3	A4	B1	B2	B3	B4	C1mecm	C2	C3	C4	C5	D1	D2	D3	D4	D5	D6	
Level 7	Control of Engineering Systems	7ENT1074	X	X			X	X			X	X	X	X					X	X	
	Dynamics and Performance of Mechanical Systems	7AAD0068	X	X			X	X			X	X	X	X					X	X	
	FEA and Applications	7ENT1059	X	X		X	X	X	X	X	X	X	X	X		X				X	X
	CFD Techniques	7ENT1007	X	X			X	X			X	X	X	X		X				X	X
	MSc Individual Project	7ENT1072		X	X		X	X	X	X	X		X	X	X	X	X	X	X	X	X
	Operations Management	7ENT1060				X	X	X		X			X	X	X	X		X	X		
	Advanced Thermodynamics and Thermal Systems	7ENT1071		X			X	X			X		X	X					X	X	
	Operations Research	7ENT1070	X	X		X	X	X	X	X	X	X	X	X		X		X	X	X	X
	Quality, Reliability & Maintenance	7ENT1068			X	X	X	X		X				X		X				X	

Key to Programme Learning Outcomes

Knowledge and Understanding

- A1mecm. The advanced CAE and simulation methods employed by mechanical engineers.
- A2mecm. The fundamental sciences appropriate to mechanical engineering.
- A3. Appropriate research methods employed in analysis of technical and commercial problems.
- A4. The product/process definition and systems design process.

Intellectual Skills

- B1. Analyse and solve engineering problems using appropriate techniques.
- B2. Design/model/analyse relevant engineering systems/subsystems.
- B3. Critically review and select appropriate research methods to solve engineering and commercial problems.
- B4. Evaluate external influences on the design process.

Practical Skills

- C1mecm. Apply appropriate experimental, analytical and modelling techniques to a range of mechanical engineering problems and draw conclusions.
- C2. Use advanced computer-aided engineering tools.
- C3. Prepare technical documentation.
- C4. Evaluate the design of appropriate systems, components or processes.
- C5. Plan and manage a project, taking into account commercial, industrial and resource constraints.

Transferable Skills

- D1. Communicate information effectively, orally and/or in writing.
- D2. Manage time and resources effectively.
- D3. Work effectively individually and/or within a team.
- D4. Solve problems in a logical and coherent manner.
- D5. Manipulate, sort and present data.
- D6. Learn effectively and independently, in preparation for lifelong learning.

MSc Manufacturing Management

		Programme Learning Outcomes (as identified in section 1 and below)																					
		Knowledge & Understanding						Intellectual Skills						Practical Skills				Transferable Skills					
Module Title	Module Code	A5	A6	A7mmgm	A8	A9	A10	B1mmgm	B2	B3	B4mmgm	B5	B6	C1mmgm	C5	C6	C7	D1	D2	D3	D4	D6	
Operations Management	7ENT1060		X		X	X		X	X		X	X			X	X	X	X			X	X	
Financial Control	7ENT1065	X					X		X			X		X				X					
Integrated Product Engineering	7ENT1064		X					X	X		X	X			X			X			X	X	
Operations Research	7ENT1070			X	X	X	X	X	X		X	X		X		X		X			X	X	
Manufacturing Information Systems	7AAD0059		X			X		X					X	X			X	X				X	
MSc Individual Project	7ENT1072		X			X	X	X	X	X	X		X	X	X			X	X	X	X	X	X
Procurement & Supply Chain Management	7ENT1069			X							X	X						X			X		
Manufacturing Strategy	7AAD0064	X				X		X			X							X					
Quality, Reliability & Maintenance	7ENT1068		X				X	X	X		X	X		X				X				X	

Key to Programme Learning Outcomes

Knowledge and Understanding

- A5. The techniques relevant to the analysis of business strategy and planning.
- A6. The product definition and systems design process.
- A7mmgm. Relevant techniques for commercial and professional engineering practice in the context of Manufacturing Management.
- A8. Operations management techniques and processes in manufacturing and service sectors.
- A9. Resource management planning and systems implications.
- A10. The analytical techniques employed in management and process control.

Intellectual Skills

- B1mmgm. Analyse and solve Manufacturing Management problems using appropriate techniques.
- B2. Design/model/analyse relevant engineering systems/subsystems.
- B3. Critically review and select appropriate research methods to solve engineering and commercial problems.
- B4mmgm. Evaluate external influences on the design process in the context of Manufacturing Management.
- B5. Identify the influence of resource related issues on operations and business.
- B6. Design appropriate management systems and processes.

Practical Skills

- C1mmgm. Apply appropriate experimental, analytical and modelling techniques to a range of manufacturing problems and draw conclusions.
- C5. Plan and manage a project, taking into account commercial, industrial and resource constraints.
- C6. Appropriate evaluation of the resource constraint implications on management decision making.
- C7. Plan the effective implementation of appropriate management systems and processes.

Transferable Skills

- D1. Communicate information effectively, orally and/or in writing.
- D2. Manage time and resources effectively.
- D3. Work effectively individually and/or within a team.
- D4. Solve problems in a logical and coherent manner.
- D6. Learn effectively and independently, in preparation for lifelong learning.

MSc Operations and Supply Chain Management

		Programme Learning Outcomes (as identified in section 1 and below)																					
		Knowledge & Understanding						Intellectual Skills						Practical Skills				Transferable Skills					
Module Title	Module Code	A5	A6	A7oscm	A8	A9	A10	B1oscm	B2	B3	B4oscm	B5	B6	C1oscm	C5	C6	C7	D1	D2	D3	D4	D6	
Operations Management	7ENT1060		X		X	X		X	X		X	X			X	X	X	X		X	X		
Financial Control	7ENT1065	X					X		X			X		X				X					
Procurement & Supply Chain Management	7ENT1069			X							X	X						X		X			
Operations Research	7ENT1070				X	X	X	X	X	X	X			X		X		X		X		X	
Manufacturing Information Systems	7AAD0059		X			X		X					X	X			X	X				X	
MSc Individual Project	7ENT1072		X			X	X	X	X	X	X		X	X	X			X	X	X	X	X	X
Human Resource Management	7AAD0062			X							X	X						X		X			
Manufacturing Strategy	7AAD0064	X				X		X			X							X					
Legal Aspects of Supply Chain	7LAW0155			X							X				X	X		X				X	X

Knowledge and Understanding

A5. The techniques relevant to the analysis of business strategy and planning.

A6. The product definition and systems design process.

A7oscm. Relevant techniques for commercial and professional engineering practice in the context of Operations and Supply Chain management.

A8. Operations management techniques and processes in manufacturing and service sectors.

A9. Resource management planning and systems implications.

A10. The analytical techniques employed in management and process control.

Intellectual Skills

B1oscm. Analyse and solve Operations and Supply Chain management problems using appropriate techniques.

B2. Design/model/analyse relevant engineering systems/subsystems.

B3. Critically review and select appropriate research methods to solve engineering and commercial problems.

B4oscm. Evaluate external influences on the design process in the context of Operations and Supply Chain Management.

B5. Identify the influence of resource related issues on operations and business.

B6. Design appropriate management systems and processes.

Practical Skills

C1oscm. Apply appropriate experimental, analytical and modelling techniques to a range of business applications and draw conclusions.

C5. Plan and manage a project, taking into account commercial, industrial and resource constraints.

C6. Appropriate evaluation of the resource constraint implications on management decision making.

C7. Plan the effective implementation of appropriate management systems and processes.

Transferable Skills

D1. Communicate information effectively, orally and/or in writing.

D2. Manage time and resources effectively.

D3. Work effectively individually and/or within a team.

D4. Solve problems in a logical and coherent manner.

D6. Learn effectively and independently, in preparation for lifelong learning.

Section 2

Programme management

Relevant QAA subject benchmarking statements	Engineering
Type of programme	Taught postgraduate
Date of validation/last periodic review	October 17
Date of production/ last revision of PS	April 2019
Relevant to level/cohort	Level 7 entering September 2019
Administrative School	School of Engineering and Technology

Table 3 Course structure

Course details		
Course code	Course description	JACS/HECOS
EIMASTADAE	Modular Masters in Aerospace, Automotive, Manufacturing and Mechanical	H400/100115

Course details		
Course code	Course description	JACS/HECOS
EIMASTADAU	Modular Masters in Aerospace, Automotive, Manufacturing and Mechanical	H330/100201

Course details		
Course code	Course description	JACS/HECOS
EIMASTADME	Modular Masters in Aerospace, Automotive, Manufacturing and Mechanical	H300/100209

Course details		
Course code	Course description	JACS/HECOS
EIMASTADMA	Modular Masters in Aerospace, Automotive, Manufacturing and Mechanical	H700/100209

Course details		
Course code	Course description	JACS/HECOS
EIMASTADOS	MSc (Modular) Operations and Supply Chain Management	H700/100209