

Programme Specification for Undergraduate Programme

Leading to:

MEng Automotive Engineering

MEng Automotive Engineering with Placement

Applicable for all undergraduate students **starting at FHEQ Level 4 in 2021**

Version No.	Date	Notes – QA USE ONLY	QAO
2021-22 v1	17 August 2021	Programme ready for 2021/22 entrants.	JP

Undergraduate Programme	
1. Awarding institution	Brunel University London
2. Teaching institution(s)	Brunel University London
3. Home college / department / division / associated institution	College of Engineering, Design and Physical Sciences / Department of Mechanical Engineering and Aerospace Engineering
4. Contributing college / department / division / associated institution	Department of Mathematics; Department of Civil Engineering, Department of Electronic and Electrical Engineering, Department of Chemical Engineering
5. Programme accredited by	Institute of Mechanical Engineers (IMechE)
6. Final award(s) and FHEQ Level of Award	MEng Automotive Engineering (FHEQ level 7) MEng Automotive Engineering with Placement (FHEQ level 7)
7. Programme title	MEng Automotive Engineering
8. Programme type (Single honours/joint)	Single Honours
9. Normal length of programme for each mode of study	48 months FT; 60 months Sandwich
10. Maximum period of registration for each mode of study	Normal length of programme (as defined above in 9) + 3 years
11. Variation(s) to September start	None
12. Modes of study	Standard
13. Modes of delivery	Full Time, Thick Sandwich
14. Intermediate awards and titles and FHEQ Level of Award	CertHE Automotive Engineering (FHEQ level 4) DipHE Automotive Engineering (FHEQ level 5) DipHE Automotive Engineering with Placement (FHEQ level 5) BEng (Ord) Automotive Engineering (FHEQ level 6) BEng (Hons) Automotive Engineering (FHEQ level 6) BEng (Hons) Automotive Engineering with Placement (FHEQ level 6) BEng (Ord) Automotive Engineering with Placement (FHEQ level 6)
15. UCAS Code	FT: HHH0; SW: H3N1
16. HECoS Code	100201 (Automotive Engineering)
17. Route Code	H330UMAUTOEN

18. Relevant subject benchmark statements and other external and internal reference points used to inform programme design	<p><u>UK Quality Code for Higher Education</u> <u>QAA Subject Benchmark Statement (Engineering)</u> <u>Brunel 2030</u> Brunel Placement Learning Policy, as published under the 'Placements' section of the '<u>Managing Higher Education Provision with Others</u>' page.</p> <p>The Engineering Benchmark Statement (<u>http://www.qaa.ac.uk/en/Publications/Documents/Subject-benchmark-statement-Engineering-.pdf</u>)</p> <p>the Framework for Higher Education Qualifications (<u>http://www.qaa.ac.uk/en/Publications/Documents/qualifications-frameworks.pdf</u>)</p> <p>Engineering Council: UK-Spec (<u>https://www.engc.org.uk/ukspec</u>)</p>
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	The Institution of Mechanical Engineers: Academic Accreditation Guidelines (https://www.imeche.org/docs/default-source/tapd/acd001-annex-1-academic-accreditation-guidelines.doc?sfvrsn=4)
19. Admission Requirements	Details of <u>entry requirements</u> are provided on the University's and College website. Levels of English for non-native speakers are outlined on Brunel International's <u>language requirements</u> pages.
20. Other relevant information (e.g. study abroad, additional information on placements)	<ul style="list-style-type: none"> The programme of study will involve visits to Mechanical engineering industry, timetabled outside the above programme of study. A number of individual projects at Level 7 are expected to be on topics suggested and partly supervised by industry. Industrial placement takes place in a mechanical related industry.
21.. Programme regulations not specified in Senate Regulation 2. Any departure from regulations specified in Senate Regulation 2 must be stated here and approved by Senate.	<ol style="list-style-type: none"> Variation to SR2.16 – Level 6 Major Individual Project (30 credits) instead of 40 credits. Approved by Senate 23 September 2020 Where a student has failed the module L7-8 Major Group Project (45 credits) an exception to Senate Regulation 2 regarding the maximum amount of reassessment at Level 7 is allowed. The student will be permitted up to 45 credits of reassessment which will be applied to module L7-8 Major Group Project only.
22. Further information about the programme is available from:	Course website: https://www.brunel.ac.uk/study/undergraduate/Automotive-Engineering-MEng

23. EDUCATIONAL AIMS OF THE PROGRAMME

The Automotive Engineering programme at Brunel University London is part of the Brunel Engineering Curriculum portfolio. As such, its aim is to produce graduates that are creative, knowledgeable, have perspective and are professional in their approach.

The programme will produce graduates equipped with comprehensive knowledge and understanding of the subject, its underlying principles and ability to apply them to complex engineering problems. They will possess analytical and computational skills, power of analysis of engineering problems, design skills, and transferable skills for demanding employment in the field of automotive engineering and related topics, requiring the exercise of leadership, initiative, personal responsibility and decision making in complex and unpredictable situations. The graduates will have the independent ability required for continuing professional development and acquiring new skills at a high level. The programme also aims to provide new areas of teaching in response to the needs of industry and community.

24. PROGRAMME AND INTERMEDIATE LEARNING OUTCOMES

The programme provides opportunities for students to develop and demonstrate knowledge and understanding (K) cognitive (thinking) skills (C) and other skills and attributes (S) in the following areas:

Level	Category (K = knowledge and understanding, C = cognitive (thinking) skills, S = other skills and attributes)	Learning Outcome	Associated Assessment Blocks Code(s)	Associated Study Blocks Code(s)	Associated Modular Blocks Code(s)
4					
	K [SM3m]	Knowledge, understanding, skills gathering and comprehension of the specific engineering disciplines relevant to engineering or Automotive engineering, including systems, mechanics and materials.			BE1603 BE1604 BE1606 ME1620
	K/C [SM1m]	Knowledge of the fundamental scientific principles that underpin an education relevant to engineering and demonstrating their application (e.g. basic energy and mass balance and fundamentals of thermodynamics and fluid mechanics)			BE1601 BE1603 ME1620
	K/C [SM2m]	Knowledge and understanding of the fundamental mathematical and statistical principles that underpin basic calculations in engineering			BE1601
	K/C [EA3m]	Apply a systems approach to identify the problems and apply core engineering principles to their analysis			BE1602 ME1620
	C [EA2, EA4m]	Ability to formulate basic problems, apply and demonstrate mathematical methods together with computational tools in the analysis of engineering problems			BE1601 ME1620 BE1604 BE1606
	C [EA1m, EA6m]	Ability to apply and demonstrate scientific principles to relevant engineering applications, collect, manipulate and interpret data (e.g. labs)			BE1602 ME1620
	K/S [P2m]	Knowledge and understanding in the use of computer tools in solving basic engineering problems			BE1601 BE1602 ME1620
	S [EL3m]	Basic knowledge of management, entrepreneurship and safety culture			BE1602 ME1620
	S [D6,G1]	Effective communication of technical material, ethics demonstration, in the form of written reports and oral presentations			BE1602 BE1604 ME1620 BE1606
	S [P11m]	Working effectively as a member of a team; managing time and resources to given constraints			BE1602 ME1620
	S [D3m, P3, P8]	Safely operate laboratory and workshop equipment, obtain data and assess measurement error			BE1604 BE1606 ME1620

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	K [SM1m]	A comprehensive synthesis and understanding of the principles, concepts and theories underpinning the study of aerospace engineering, and of the way they have developed.			ME2610 ME2611 ME2619 ME2614 ME2618 ME2616 ME2617
	K [SM2m]	Fundamentals of mathematical and statistical methods underpinning the education in automotive engineering.			ME2610 ME2613 ME2618
	K [SM3m]	Ability to use other engineering disciplines and evaluate them critically in order to support the study for automotive engineering.			ME2610 ME2613 ME2614 ME2616 ME2617
	K [SM3m]	A comprehensive understanding of mathematical and computational models relevant to automotive engineering and an appreciation of their limitations.			ME2610 ME2613 ME2614 ME2618 ME2616 ME2617
	K [SM4m]	Awareness of developing technologies related to automotive engineering			ME2618 ME2616
	C [SM5m]	Comparative analysis of experimental testing, FEA and analytical calculations.			ME2610 ME2614
	K, C [EA1m]	Understanding of engineering principles and the ability to apply them to undertake critical analysis of key automotive engineering processes.			ME2611 ME2614 ME2618 ME2616 ME2617
	C [EA2]	Ability to use analytical methods and modelling techniques for the understanding and assessment of systems in automotive engineering.			ME2610 ME2611 ME2618 ME2616 ME2617
	C [EA3m]	Use of alternative approaches, with understanding of their limitations, for the quantitative analysis and modelling of systems and structures for automotive engineering.			ME2610 ME2613 ME2614 ME2618 ME2617
	K, C [EA4m]	Understanding of, and the ability to apply, an integrated or systems approach to solving complex automotive engineering problems.			ME2610 ME2611 ME2613 ME2616
	[EA5m]	Ability to use fundamental knowledge to investigate new and emerging technologies in the field of automotive engineering.			ME2618 ME2616
	K [D1]	Understanding the business and customer needs			ME2611 ME2612 ME2618
	K [D2]	Understanding design process methods applied to engineering components and systems.			ME2611

	K,C [D3m]	Work with information that may be incomplete or uncertain, quantify the effect of this on the design and, where appropriate, use theory or experimental research to mitigate deficiencies,			ME2611 ME2614 ME2618 ME2617
	K, C [D4]	Apply advanced problem-solving skills, technical knowledge and understanding, to establish rigorous and creative solutions that are fit for purpose for all aspects of the problem including production, operation, maintenance.			ME2611 ME2618
	K, C [D5]	Plan and manage the design process, including cost drivers, and evaluation of the outcomes, including a comprehensive understanding of the engineering materials and their applications in manufacturing processes for automotive engineering.			ME2611 ME2618
	S [D6]	Effective communication of technical material, in the form of written reports and oral presentations, and time management.			ME2613 ME2614 ME2616 ME2617
	K [EL1m,EL3m,EL6m, P4, P6, P8,P11m]	Understanding of the role of automotive engineering in industry and commerce, including legal, health and safety requirements, quality issues as well as the role of the professional engineer and industry regulatory bodies.			ME2612
	K [EL1m]	Understanding of the need for a high level of professional and ethical conduct in engineering, a knowledge of professional codes of conduct and how ethical dilemmas can arise.			ME2612 ME2614 ME2618
	K [EL2, EL4]	Application of methods in the analysis, planning, resourcing, progressing, monitoring and control of automotive engineering projects in a sustainable and, if possible, in a quantitative way.			ME2612 ME2618
	K, C [P2m]	Comprehensive understanding of the characteristics of materials and processes for automotive engineering.			ME2611 ME2614 ME2618
	C,S [P3]	Ability to apply relevant practical and laboratory skill, including data acquisition and interpretation of experimental data.			ME2613 ME2614 ME2616 ME2617
	K, S [P4]	Understanding of the use of technical literature and other information sources for design. Ability to develop writing skills.			ME2612 ME2613
	K,S [P6]	Understanding of appropriate codes of practice and industry standards.			ME2611 ME2612 ME2613
	K [P7, P8]	Awareness of quality issues and their application to continuous improvement and the ability to work with technical uncertainty.			ME2612 ME2618

	[P11m]	Knowledge of characteristics of particular equipment, processes or products, with extensive knowledge and understanding of a wide range of engineering materials and components.			ME2612 ME2616
	S [G1]	Basic information technology and communication (ITC) principles and writing skills relevant to automotive engineering.			ME2610 ME2618
	S [G1, G2, G3m, G4]	Understanding of the role of automotive engineering in industry and commerce, including legal, health and safety requirements, quality issues as well as the role of the professional engineer and regulatory bodies.			ME2612
	S [G1, G2, G3m]	Understanding of the use of technical literature and other information sources for self-learning for conceptual automotive vehicle design. Monitor and adjust proper planning for automotive design.			ME2618
	S	Adapt to the change in expectations and environments found during an industrial placement. 'with Placement' awards.			ME2555
6					
	K, C [SM1m]	A systematic understanding of key aspects in aerospace engineering, including acquisition of coherent and detailed knowledge, at least some of which is at, or informed by, the forefront of defined aspects of a discipline.			ME3625 ME3620 ME3621 ME3618 ME3626 ME3627 ME3638
	K, C [SM2m]	Fundamentals of mathematical and statistical methods underpinning the education in automotive engineering.			ME3625 ME3620 ME3621 ME3618 ME3619 ME3627 ME3638
	S [SM3m]	Apply mathematical and engineering science analytical tools to problem solving for automotive engineering.			ME3625 ME3621 ME3618 ME3626 ME3627 ME3638
	S [SM4m]	Awareness of developing technologies related to mechanical engineering			ME3625 ME3627
	S [SM5m]	A comprehensive knowledge and understanding of mathematical and computational models relevant to the engineering discipline, and an appreciation of their limitations.			ME3625 ME3626
	K, C [EA1m]	Understanding of engineering principles and the ability to apply them to undertake critical analysis of key automotive engineering processes.			ME3625 ME3620 ME3621 ME3627 ME3638

	K, S [EA2]	Ability to use analytical methods and modelling techniques for the understanding and assessment of systems in automotive engineering.			ME3620 ME3626 ME3627
	K, C, S [EA3m]	Use of alternative approaches, with understanding of their limitations, for the quantitative analysis and modelling of systems and structures for automotive engineering.			ME3625 ME3621 ME3618 ME3626 ME3627 ME3638
	C [EA4m]	Application of appropriate techniques that may include theories, formulae, data, and experimental and/or numerical techniques to solve automotive problems presented by the project.			ME3625 ME3620
	C [EA6m]	Ability to extract and evaluate pertinent data and to apply engineering analysis techniques in the solution of unfamiliar problems			ME3620 ME3625
	K [D1]	Understand the multi-disciplinary nature of sustainability and stakeholder dynamics.			ME3626 ME3619 ME3627
	K, S [D2]	Understanding and appraisal of the automotive problem using a review of related literature and technical reports, including quality, environmental, health and safety issues. Evaluation and simplification of the automotive problem and validation of the results.			ME3625 ME3620 ME3621 ME3626 ME3619 ME3627 ME3638
	C [D3m]	Critical assessment, analysis and interpretation of results of automotive engineering projects.			ME3620 ME3626 ME3619
	K, C, S [D4]	Principles of the engineering design process, including objectives and methods to identify design requirements and apply formulae, data and experimental and/or numerical techniques for automotive vehicle design.			ME3625 ME3620 ME3621 ME3619 ME3638
	S [D6]	Effective communication of technical material, in the form of written reports and oral presentations, and time management.			ME3625 ME3620 ME3621 ME3626 ME3619 ME3638
	K [EL1m]	Understanding of the need for a high level of professional and ethical conduct in engineering, a knowledge of professional codes of conduct and how ethical dilemmas can arise.			ME3619
	K [EL2]	Knowledge and understanding of the commercial, economic and social context of engineering processes.			ME3619 ME3627
	K, S [EL3m]	Application of methods in the analysis, planning, resourcing, progressing, monitoring and control of automotive engineering projects in a sustainable and, if possible, in a quantitative way.			ME3620 ME3619

	K, S [EL4m]	Understanding of the requirement for engineering activities to promote sustainable development and ability to apply quantitative techniques where appropriate.			ME3619
	K, S [EL5m]	Understanding of the role of automotive engineering in industry and commerce, including legal, health and safety requirements, quality issues as well as the role of the professional automotive engineer and automotive regulatory bodies.			ME3619
	C [EL6m]	Knowledge and understanding of risk issues, including health and safety, environmental and commercial risk, risk assessment and risk management techniques and an ability to evaluate commercial risk.			ME3619
	K, S [P1]	Understanding of the background to the problem using a review of related literature and technical reports. Appreciation of the context in which engineering knowledge is applied.			ME3625 ME3620 ME3621 ME3627 ME3638
	K, C [P2m]	Comprehensive understanding of the characteristics of materials and processes for automotive engineering.			ME3625 ME3621 ME3626 ME3620 ME3627 ME3638
	K [P3]	Ability to apply relevant practical and laboratory skills			ME3618 ME3627
	K [P4]	Understanding of the background to the problem using a review of related literature and technical reports.			ME3620 ME3618 ME3619 ME3627
	K, S [P6, P7,P8]	Understanding of the role of automotive engineering in industry and commerce, including legal, health and safety requirements, quality issues as well as the role of the professional engineer and regulatory bodies.			ME3619
	K, S [P6]	Understanding of appropriate codes of practice and industry standards.			ME3620 ME3626
	S [P11m]	Understanding of different roles within an engineering team and the ability to exercise initiative and personal responsibility, which may be as a team member or leader			ME3619
	S [G1]	Apply their skills in problem solving, communication, information retrieval, working with others and the effective use of general IT facilities			ME3625 ME3620 ME3620 ME3619 ME3638
	S [G2]	Apply their skills in problem solving, communication, information retrieval, working with others and the effective use of general IT facilities Plan the project with identifiable objectives/milestones and timescale, and complete the project under given time and resource constraints. Effectively communicate the ideas and results within a written report and/or oral form.			ME3620 L6-4 ME3618

	S [G3m]	Apply their skills in problem solving, communication, information retrieval, working with others and the effective use of general IT facilities Plan the project with identifiable objectives/milestones and timescale, and complete the project under given time and resource constraints. Effectively communicate the ideas and results within a written report and/or oral form.			ME3620
	S [G4]	Apply their skills in problem solving, communication, information retrieval, working with others and the effective use of general IT facilities Plan the project with identifiable objectives/milestones and timescale, and complete the project under given time and resource constraints. Effectively communicate the ideas and results within a written report and/or oral form.			ME3620 ME3619 ME3627
7					
	K [SM1m]	A systematic understanding of knowledge, and a critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of the automotive engineering.			L7-21 L7-8 L7-13 L7-14 L7-9 L7-10 L7-11 L7-12
	K [SM2m]	Critically apply a range of concepts in the automotive engineering design process, including some from outside of engineering.			L7-8 L7-13 L7-14 L7-10 L7-11 L7-12
	K [SM3m]	Demonstrate a comprehensive understanding and critical ability to apply scientific and engineering principles and knowledge from other disciplines as part of an integrated sustainable design project. Demonstrate the ability to critically apply appropriate analytical methods to evaluate elements of a design.			L7-21 L7-8 L7-14 L7-10 L7-11 L7-12
	K,C [SM4m]	Ability to apply and integrate knowledge and understanding of other engineering disciplines and developing technologies to support the study of automotive engineering.			L7-13 L7-14 L7-10 L7-11 L7-12
	K [SM5m]	A comprehensive knowledge and understanding of mathematical and computational models relevant to the engineering discipline, and an appreciation of their limitations.			L7-8 L7-13 L7-9 L7-11
	K,C [SM6m]	Critically analyse unfamiliar automotive engineering related problems using appropriate basic or advanced mathematical and computer-based engineering tools and apply them effectively in engineering projects.			L7-21 ME5661 L7-11
	S [EA1m]	Comprehensive understanding of automotive engineering principles and the ability to apply them to undertake critical analysis of key engineering processes.			L7-21 L7-8 L7-13 L7-14 L7-10 L7-11

	S [EA2m]	Ability to identify, classify and describe the performance of systems and components through the use of analytical methods and modelling techniques.			L7-8 L7-13 L7-14 L7-11 L7-12
	K,C [EA3m]	Ability to apply quantitative and computational methods, using alternative approaches and understanding their limitations, in order to solve engineering problems and implement appropriate action.			L7-8 L7-13 L7-14 L7-9 L7-10 L7-11 L7-12
	K [EA4m]	Application of appropriate techniques that may include theories, formulae, data, and experimental and/or numerical techniques to solve automotive problems presented by the project.			L7-8 L7-13 L7-10 L7-11
	C [EA5m]	Ability to use fundamental knowledge to investigate new and emerging technologies.			ME5661 L7-8 L7-14 L7-11
	C,S [EA6m]	Ability to extract and evaluate pertinent data and to apply engineering analysis techniques in the solution of unfamiliar problems.			L7-21 L7-8 L7-10 L7-11
	K,C,S [D3m,D4,D5, D6,D7m,D8m]	Develop an advanced understanding of the construction, manufacturing and management related to automotive design, including the review of quality, environmental, health and safety issues and risk assessment. Development of the ability to act autonomously in planning and implementing tasks at a professional level adapting to unfamiliar situations. Work with information that may be incomplete or uncertain, quantify the effect of this on the design and, where appropriate, use theory or experimental research to mitigate deficiencies			L7-21
	K [D1]	Comprehensive understanding and evaluation of business, customer and user needs, including considerations such as the wider engineering context, public perception and aesthetics.			L7-21 L7-14
	K,S [D2]	Investigate and define the problem, identifying any constraints including environmental and sustainability limitations; ethical, health, safety, security and risk issues; intellectual property; codes of practice and standards.			L7-21 L7-14
	C [D3m]	Work with information that may be incomplete or uncertain, quantify the effect of this on the design and, where appropriate, use theory or experimental research to mitigate deficiencies.			L7-9 L7-11 L7-12
	K,C,S [D4]	A synthesis of broad engineering knowledge and recognition of practical design drivers and constrains in order to establish rigorous and creative solutions that are fit for purpose for all aspects of automotive design, including production, operation, maintenance and disposal.			L7-21 L7-10

	C,S [D6]	Communicating information, opinions and arguments coherently and effectively. Using a balanced analysis supported by appropriate source materials. Research and technical report writing skills.			L7-21 L7-10
	K,C,S [EL1m,EL2,EL3m, EL4, EL5m,EL6m,EL7m]	Systematic understanding of organisations that pursue engineering business, or that employ engineering to support the pursuit of their core business, presenting awareness of research and development trends. Knowledge and understanding of risk issues, including health and safety, environmental and commercial risk, risk assessment and risk management techniques and an ability to evaluate commercial risk.			L7-21
	K,C,S [EL2,EL3m,EL6m]	Comprehensive knowledge and understanding of the commercial, economic and social context of engineering processes, of risk issues, including health and safety, environmental and commercial risk; knowledge and understanding of management techniques.			ME5661
	K [EL2]	Comprehensive knowledge and understanding of the commercial, economic and social context of engineering processes.			L7-14
	K,S [EL4]	Systematic understanding of the requirement for engineering activities to promote sustainable development and ability to apply quantitative techniques where appropriate.			L7-13
	K [P1]	Systematic understanding of contexts in which engineering knowledge can be applied (eg operations and management, application and development of technology, etc)			ME5661 L7-8 L7-14 L7-11
	S [P2m]	Comprehensive knowledge of characteristics of particular equipment, processes or products, with extensive knowledge and understanding of a wide range of engineering materials and components.			ME5661 L7-8 L7-13 L7-14 L7-10 L7-11
	C,S [P3]	Ability to apply relevant practical and laboratory skills.			ME5661 L7-8 L7-13 L7-9 L7-10 L7-11
	K [P4m]	Systematic understanding of the use of technical literature and other information sources.			ME5661 L7-8 L7-14 L7-10 L7-11
	K [P5]	Comprehensive knowledge of relevant legal and contractual issues.			L7-21
	K,S [P6]	Systematic understanding of appropriate codes of practice and industry standards.			L7-21 L7-8 L7-11
	K,S [P7]	Awareness of quality issues and their application to continuous improvement.			L7-21
	C [P8]	Ability to work with technical uncertainty.			L7-8 L7-11

	K [P9m]	A thorough understanding of current practice and its limitations, and some appreciation of likely new developments.			L7-21 L7-8 L7-11
	S [P10M]	Ability to apply engineering techniques taking account of a range of commercial and industrial constraints.			L7-21 L7-8
	S [P11m]	Systematic understanding of different roles within an engineering team and the ability to exercise initiative and personal responsibility, which may be as a team member or leader.			L7-21 ME5661
	S [G1]	Apply skills in problem solving, communication, information retrieval, working with others and the effective use of general IT facilities			L7-21 ME5661 L7-13 L7-9 L7-10 L7-11
	S [G2]	Self-awareness of one's own skills and how these may be improved, thus understanding the employability qualities necessary for work requiring the exercise of initiative, professionalism and personal responsibility.			ME5661 L7-9 L7-11
	S [G3m]	Plan the project with identifiable objectives/milestones and timescale, and complete the project under given time and resource constraints. Effectively communicate the ideas and results within a written report and/or oral form.			ME5661 L7-11
	S [G4]	Effectively and professionally manage the design process as part of a team.			L7-21 L7-14 L7-11

Learning/teaching strategies and methods to enable learning outcomes to be achieved, including formative assessments

Study

Students will be introduced to subject material, including key concepts, information and approaches, through a mixture of standard lectures, tutorials and seminars, laboratory practicals, field work, self study and individual research reports. Supporting material will be provided via the University's e-Learning platform. The aim is to challenge students and inspire them to expand their own knowledge and understanding.

Work

Preparation for work will be achieved through the development of 'soft' skills such as communication, planning, management and team work. This will be supported by the University's central services, principally the Library and ASK teams. In addition, guest speakers from industry will provide a valuable insight into the real world of automotive engineering.

Play

Many of the practical activities in which the students engage develop into enjoyable experiences, for example working in teams for laboratory work and field work. Various engineering and technology societies, run by the students (with staff support) form the focus for many extra-curricular activities for all students within the Mechanical and Aerospace Engineering Department.

Grow

Students are encouraged to develop personal responsibility throughout the course. Many elements of coursework involve, and reward, the use of initiative and imagination. Students are guided into this through the use of one-to-one tutorials. This aids them in developing reflective skills. Students on the Placement route record their personal development as part of the placement assessment, and are assisted in this by their industrial placement tutor and employer.

Experienced engineers working in industry will deliver selected parts of the programme, ensuring students are exposed to the practicalities of the industry and understand more of the world of work. A group poster conference (part of BE1602) will take place

towards the end of FHEQ L4, with a range of industrial specialists invited to examine the posters and talk with the students. Students will also have the opportunity to work on industry-related projects at FHEQ L6.

The opportunity to think creatively will be given at all levels, particularly:

FHEQ L4: BE1602 Engineering Practice; ME1620 Mechanical Engineering Science

FHEQ L5: ME2618 Vehicle Design and Performance

FHEQ L6: ME3620 Major Individual Project; ME3618 Mechatronics and Control Engineering; ME3626 Vehicle Structures and FEA

Summative assessment strategies and methods to enable learning outcomes to be demonstrated.

To ensure any course related documentation is flexible and CMA compliant all assessments will be specified on module outlines as one of the following three:

- *Coursework*
- *In-person assessment*
- *Examination*

Every assessment type falls within these three categories

Coursework

For example

- Essays – to develop skills in research (collecting, managing and interpreting evidence)
- Laboratory reports – to develop skills in interpretation of experimental, theoretical and computational findings and skills in communicating a systematic process and results
- Assignment to develop transferable skills
- Design labs – to develop and assess engineering design skills (including basic information, technology and computer aided design skills) and visual and written communication
- Individual major report - to develop advanced abilities in research and communication, further develop engineering design, development and/or analysis skills and assess knowledge and understanding
- Group reports – to develop team skills and assess understanding of the interactions between engineering design, development and analysis processes
- Project portfolios - to develop skills in gathering, integrating, evaluating and presenting information and data from a variety of sources

In-person assessment

Any assessment were the actions (verbal or non-verbal) of the student are being assessed in their presence and thus for which the student must be in attendance.

- Oral presentations – to develop and assess verbal presentation skills

Examination

- Examinations will be used to assess knowledge and understanding, ability to solve numerical and qualitative engineering problems and present a reasoned argument.

25. Programme Structure, progression and award requirements

Programme structures and features: levels, assessment blocks, credit and progression and award requirements

- **Compulsory block:** one which all students registered for the award are required to take as part of their programme of study. These will be listed in the left hand column;
- **Optional block:** one which students choose from an 'option range'. These will be listed in the right hand column;
- A **core assessment** is an assessment identified within an assessment block or modular block (either compulsory or optional) which must be passed (at grade D- or better) in order to be eligible to progress and to be eligible for the final award, (at FHEQ Level 7 the threshold is C- or better). All core assessments must be specified on the programme specification next to the appropriate assessment or modular block:

Where students are expected to pass the block at D- or better, (FHEQ Level 7 the threshold is C- or better), but not necessarily all elements, then the block itself is core.

e.g. AB3000 Project (40)
Core: Block

Where only some elements of assessments are required to be passed at D- or better, (FHEQ Level 7 the threshold is C- or better), these will be identified by listing each element that is core

e.g. ABXXX1 Title (XX credits)
Core: 1 & 4

Where students are expected to pass all assessments in a block then this will be identified. By setting the assessment this way, students are also required to pass the block by default. This will be identified thus:

e.g. ABXXXX Title (XX credits)
Core: All, Block

- A **non-core assessment** does not have to be passed at grade D- or better, but must be better than a grade F, in order to progress and to be eligible for the final award. At FHEQ Level 7 the threshold is C- or better.

Level 4	
Compulsory assessment block codes, titles and credits	Optional assessment block codes, titles and credits
Compulsory study block codes, titles and credit volume	Optional Study block codes, titles and credit volume
Compulsory modular block codes, titles and credits BE1601 Engineering Mathematics & Programming (20) (Core) BE1602 Engineering Practice (20) BE1603 Engineering Systems and Energy (30) BE1604 Engineering Mechanics and Materials I (15) BE1606 Engineering Mechanics and Materials II (15) ME1620 Mechanical Engineering Science (20)	Optional modular block codes, titles and credits
Level 4 Progression and Award Requirements <u>As per Senate Regulation 2</u>	

Level 5	
Compulsory study block codes, titles and credits ME2554 Mechanical Engineering Pre-placement (0 credits)	Optional study block codes, titles and credits None
Compulsory modular block codes, titles and credits 15 Credit Blocks: ME2610 Engineering Mathematics and Programming ME2611 Design Process for Machine Elements, Manufacturing Processes, Materials and CAD ME2612 Engineering Business Core: Block ME2613 Fluid Mechanics ME2614 Solid Mechanics and Intro to FEA ME2616 Thermodynamics and Heat Transfer ME2617 Dynamics of Machines ME2618 Vehicle Design and Performance	Optional modular block codes, titles and credits None
Level 5 Progression and Award Requirements <u>As per Senate Regulation 2</u>	

Level 5 – Sandwich Placement	
Compulsory modular block codes, titles and credits This block is only a requirement for the 'with Placement' awards. ME2555 Work Placement (120) Core: Block	Optional modular block codes, titles and credits None
Level 5 Placement Progression and Award Requirements <u>As per Senate Regulation 2</u> For DipHE Automotive Engineering, ME2555 will contribute 25% of the Level 5 profile Module ME2555 may be undertaken between Levels 5 and 6, or between Levels 6 and 7. Students must also register on the IMechE MPDS scheme. Students must also register on the IMechE MPDS scheme. if they wish for their placement year to be accredited by the IMechE. If a student does not register it will not affect the title of the award made the University.	

Level 6	
<p>Compulsory modular block codes, titles and credits</p> <p>All blocks are 15 credits unless otherwise specified</p> <p>ME3620 Major Individual Project (30) Core: 1 and 3 The student chooses the individual project topic in ME3620, subject to staff approval. The individual project topic must be directly relevant to automotive engineering.</p> <p>ME3625 Vehicle Dynamics and Aerodynamics ME3618 Mechatronics and Control Engineering ME3626 Vehicle Structures and FEA</p> <p>ME3619 Sustainable Engineering Management and Practice Core Block</p> <p>ME3627 Vehicle Propulsion ME3628 Technologies for Future Transport</p>	<p>Optional modular block codes, titles and credits</p> <p>None</p>
<p>Level 6 Progression and Award Requirements</p> <p><u>As per Senate Regulation 2</u></p> <p>For BEng Automotive Engineering with Placement, ME2555 will contribute 8.3% of the overall degree calculation.</p>	

Level 7	
<p>Compulsory modular block codes, titles and credits</p> <p>All blocks are 15 credits unless otherwise specified</p> <p>L7-21 Major Group Project (45) Core Block</p> <p>The student's input to the major group project topic must be directly relevant to automotive engineering.</p> <p>ME5661 Strategy and Business Planning Core Block</p> <p>L7-8 Advanced Vehicle Dynamics and Advanced CAD</p> <p>L7-13 Advanced Vehicle Materials and Manufacturing</p> <p>L7-14 Advanced Vehicle Propulsion Technologies and Systems</p>	<p>Optional modular block codes, titles and credits</p> <p>One from:</p> <p>L7-9 Advanced Solid Body Mechanics and FEA</p> <p>L7-10 Advanced Electrical Systems and Power Electronics</p> <p>L7-11 Advanced Thermofluids</p> <p>L7-12 Robotics and Automation</p>
<p>Level 7 Progression and Award Requirements</p> <p><u>As per Senate Regulation 2</u> except where the following specific rule applies:</p> <p>Where a student has failed the module L7-21 Major Group Project (45 credits) an exception to Senate Regulation 2 regarding the maximum amount of reassessment at Level 7 is allowed. The student will be permitted up to 45 credits of reassessment which will be applied to Major Group Project only. For MEng Automotive Engineering with Placement, ME2555 will contribute 5% of the overall degree calculation</p>	
<p><small>Please note: this specification provides a concise summary of the main features of the programme and the learning outcomes that a 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 learning outcomes, content and teaching, learning and assessment methods can be found in the modular block, assessment and study block outlines and other programme and block information. The accuracy of the information contained in this document is reviewed by the University from time to time and whenever a modification occurs.</small></p>	