

Course Specification

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Core Information

Awarding Body / Institution:	University of Wolverhampton		
School / Institute:	School of Engineering		
Course Code(s):	MA008T01UV MA008T31UV	Full-time Part-time	4 Years 8 Years
UCAS Code:	H715		
Course Title:	BEng (Hons) Mechatronics Engineering with Foundation Year		
Hierarchy of Awards:	Bachelor of Engineering with Honours Mechatronics Engineering Bachelor of Engineering Mechatronics Engineering Diploma of Higher Education Mechatronics Engineering Certificate of Higher Education Mechatronics Engineering University Statement of Credit University Statement of Credit		
Language of Study:	English		
Date of DAG approval:	05/Oct/2015		
Last Review:	2019/0		
Course Specification valid from:	2018/9		
Course Specification valid to:	2024/5		

Academic Staff

Course Leader:	NADER ANANI
Head of Department:	Dr Aman Dhir

Course Information

Location of Delivery:	University of Wolverhampton
Category of Partnership:	Not delivered in partnership
Teaching Institution:	University of Wolverhampton
Open / Closed Course:	This course is open to all suitably qualified candidates.

Entry Requirements:

Entry requirements are subject to regular review. The entry requirements applicable to a particular academic year will be published on the University website (and externally as appropriate e.g. UCAS)

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- DD from A level
- BTEC QCF Extended Diploma grade PPP, BTEC QCF Diploma grade MP
- Pass Access to HE Diploma (Full Award)
- If you've got other qualifications or relevant experience, please contact The Gateway for further advice before applying.
- International entry requirements and application guidance can be found [here](#)

Other Requirements

Students must have studied a minimum of two years post GCSE level. However, it is expected that some applicants will be mature students with work experience, who wish to further their career development.

These applicants will be processed through standard procedures, which may involve an interview as part of the process. Please see <http://wlv.ac.uk/mature> for further information.

Those who do not meet the entry requirements may be offered an alternative course.

Distinctive Features of the Course:

The School of Engineering specialises in the integration of the mechanical engineering and electrical/electronic engineering disciplines. The BEng Mechatronics course reflects this emphasis and, in addition to gaining in-depth knowledge and understanding of the mechanical engineering subject, students also gain experience of designing engineering systems that incorporate aspects of the mechanical and electrical/electronic technologies.

Students will be taught by lecturers who have a wealth of industrial experience in an environment focused on working with, and supporting engineering and technology companies

The BEng (Hons) Mechatronics course is one of a small number of accredited courses that you can undertake as either a full-time or part-time student

The students will also benefit from the schools USP's and the integration into the curriculum of practical work & analysis, mimicking the working environment of post education. Club activities are used to offer kinesthetic outlets for students wishing to place themselves ahead of competition by giving real experience while studying, these traits make the Motorsport Engineering course unique within the sector and when combined with the large local industry, offer graduates real future potential.

Educational Aims of the Course:

The overall aim of this course is to ensure graduates have a comprehensive engineering education combined

with specialist knowledge of mechatronics engineering recognised in the professional engineering community by an accredited degree. This ensures that graduates are equipped with the appropriate knowledge and enterprising spirit to practise professionally and ethically. Thus, the course will:

- -address industry's demand for graduates who can integrate the principles and applications mechatronics engineering, and apply them to the analysis and synthesis of engineering products and systems across the engineering sector
- -enable students to pursue professional careers in the mechatronics engineering field at a level which requires the exercise of sound judgement, and initiative, and the ability to make informed decisions in complex and unpredictable circumstances that reflect a responsible, ethical, and socially aware outlook
- -furnish students with a detailed understanding of the principles of electrical engineering, electronics and mechanical engineering science, enabling the rational selection of the most appropriate approach to solve engineering problems
- -engender a top-down, systems approach to the analysis, synthesis and realisation of mechatronic products and systems.
- -provide a broadly based education in electrical engineering, electronics and mechanical engineering and design allowing scope for entry into a wide range of disciplines within the engineering field.
- -require students to participate in a group project where the project team members are drawn from a range of cognate engineering disciplines
- -develop the ability to research unfamiliar subject areas in mechatronic engineering and cognate disciplines, thereby enhancing the creative aspects of engineering design and innovation

-require the application of the knowledge and skills, in an appropriate industrial environment, thereby broadening the student's knowledge of industrial procedures and practices.

Intakes:

September

Major Source of Funding:

Office for Students (OFS)

Tuition Fees:

Tuition fees are reviewed on an annual basis. The fees applicable to a particular academic year will be published on the University website.

Year	Status	Mode	Amount
2020/1	H	Full Time / Sandwich	£9250.00
2020/1	Overseas	Full Time / Sandwich	£12250.00
2020/1	H	Part Time	£3050.00
2020/1	Overseas	Part Time	£6125.00
2021/2	H	Full Time / Sandwich	£9250.00
2021/2	Overseas	Full Time / Sandwich	£12950.00
2021/2	H	Part Time	£3100.00
2022/3	H	Full Time / Sandwich	£9250.00
2022/3	Overseas	Full Time / Sandwich	£13450.00
2022/3	H	Part Time	£3120.00

PSRB:

None

Course Structure:

September (Full-time)

Full time and Sandwich Undergraduate Honours students normally study 120 credits per academic year; 60 credits semester 1 and 60 credits semester 2.

Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

Module	Title	Credits	Period	Type
3CC004	Problem Solving in Science and Technology	20	SEM1	Core
3PY002	Communication and study skills	20	SEM1	Core
3MM003	Foundation Mathematics I	20	SEM1	Core
3MM004	Foundation Mathematics II	20	SEM2	Core
3ET007	Practical Engineering Science for Electro-Mechanical design	20	SEM2	Core

Group 01 | Min Value: 20 | Max Value: 20

3AP004	Physics	20	SEM2	
3CS001	Fundamentals of Computing	20	SEM2	

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Module	Title	Credits	Period	Type
4MM028	Engineering Mathematics II	20	SEM2	Core
4MA029	Industrial Design Project	20	SEM2	Core
4MM029	Engineering Mathematics I	20	SEM1	Core
4MA008	Engineering Science	20	SEM1	Core
4MA009	Computer Aided Design	20	SEM1	Core
4MA020	Electromechanical Engineering Principles	20	SEM2	Core

September (Full-time)

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Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

Module	Title	Credits	Period	Type
5MA037	Materials Science and Manufacturing	20	SEM2	Core
5MA042	Digital Systems and Embedded Computing	20	SEM1	Core
5MA044	Applied Instrumentation and Control	20	SEM1	Core
5MA041	Signal Processing	20	SEM2	Core
5MA038	Enterprising Group Innovation Project	40	YEAR	Core

September (Full-time)

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Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

Module	Title	Credits	Period	Type
6MA036	ESEE - Economic, Social, Ethical and Environmental	20	SEM2	Core
6MA038	Individual Innovation Project	40	YEAR	Core
6MA048	Mechatronic System Design	20	SEM1	Core
6MA016	Structural Mechanics and Stress Analysis	20	SEM2	Core
6MA049	Automation and Control	20	SEM1	Core

Please note: Optional modules might not run every year, the course team will decide on an annual basis which options will be running, based on student demand and academic factors, to create the best learning experience.

Learning, Teaching and Assessment

Academic Regulations Exemption:

BEng/MEng Engineering Portfolio - In cases where Professional Body and University regulations differ, the respective Professional Body (IET) regulation will have precedent over the exempted University regulation, as follows;

1.2.5 - Programmes are contextualised per area of study to ensure industry relevance is maintained while covering the broadest possible topics.

Section 4.4.1 - Exemption in accordance with Institution of Engineering and Technology (IET) requirements.

Compensation will be limited to no more than 20 credits at each level of study and maximum of 40 credits overall. There is no compensation permitted for independent study or postgraduate modules. Deferment of a project submission date at Level 6 or Level 7 is allowed only for exceptional reasons and for a maximum of three months.

Section 4.5.8 - Exemption permitting MEng students to progress from Level 6 to Level 7 of their integrated masters qualifications with a minimum lower second class degree classification.

Section 5.2.2 - Exemption to use all Level 5 and Level 6 module grades excluding placement modules (assessed using a Pass/Fail marking scheme) to contribute towards overall BEng classifications with aggregated weightings at each level of study as follows;

Level	Weighting
4	-
5	25%
6	75%

These above weightings also apply to any students studying less than 120 credits at Level 5. For students being admitted directly at Level 6, on degrees which do not have professional accreditation, student degree classifications are based upon the average of their highest module grades achieved over 100 credits at Level 6 according to weightings listed below as follows;

Level	Weighting
4	-
5	-
6	100%

Section 5.4.1 - Exemption to use all Level 5, Level 6 and Level 7 module grades excluding placement modules (assessed using a Pass/Fail marking scheme) to contribute towards overall MEng classifications with aggregated weightings at each level of study as follows;

Level	Weighting
4	-
5	20%
6	30%
7	50%

Students who fail the MEng qualification at Level 7 will be eligible to receive the BEng qualification achieved at Level 6. For students being admitted directly at Level 6, on degrees which do not have professional accreditation, student degree classifications are based upon the average of all Level 6 and Level 7 modules according to weightings listed below as follows;

Level	Weighting
4	-
5	-
6	50%
7	50%

For accredited programmes, the PSRB (IET) will assess the educational qualifications of an applicant for either IEng or CEng status based upon the receipt of a certified transcript from the University Registry (and with the applicant's authorisation).

Reference Points:

[UK Quality Code for Higher Education](#)

[Qualifications and Credit Frameworks](#)

[Subject Benchmark Statements](#)

[University Policies and Regulations](#)

Equality Act (2010)

- The Engineering Council UK-SPEC 3rd edition-2014 QAA Engineering Benchmark Statement
- QAA-2010 and Accreditation of Higher Education Degree Programmes AHEP 3rd edition-2014
- The Institution of Mechanical Engineers (IMechE) Academic Accreditation Guidelines 2013
- IET Learning Outcomes Handbook Incorporating UK-SPEC for Bachelors and MEng Degree Programmes 2009 has been used to inform the selection and development of learning outcomes, thereby ensuring that the academic requirements of the appropriate PSRBs 'Institution of Engineering and Technology' (IET) and The Institution of Mechanical Engineers (IMechE) are addressed.

In addition to these the following reference points were also used in the development of this module:

- Skills Framework for the Information Age
- e-Skills
- The Equality Act 2010
- University Blended Learning Strategy

University Learning and Teaching Strategy

Overview of Assessment:

As part of the course approval process, the course learning outcomes were mapped to each of the modules forming the diet of the programme of study. This process confirmed that all course learning outcomes can be met through successful completion of the modules. This mapping applies to the final award as well as to all of the intermediate awards.

Learning Outcomes	Modules
CERTHE01 Demonstrate knowledge of the underlying concepts and principles associated with your area(s) of study, and an ability to evaluate and interpret these within the context of that area of study	
CERTHE02 Demonstrate an ability to present, evaluate and interpret qualitative and quantitative data, in order to develop lines of argument and make sound judgements in accordance with basic theories and concepts of your subject(s) of study.	
CERTHE03 Evaluate the appropriateness of different approaches to solving problems related to your area(s) of study and/or work	
CERTHE04 Communicate the results of your study/work	

accurately and reliably, and with structured and coherent arguments

Learning Outcomes

Modules

CERTHE05 Demonstrate the qualities and transferable skills necessary for employment requiring the exercise of some personal responsibility

BHONS01 Design, analysis and synthesise of automotive engineering products, systems, and processes to demonstrate an innovative and creative approach to design realisation.

BHONS02 Analyse and evaluate a range of solutions appropriate to automotive engineering problems, drawn from a broad range of engineering and technology specialities with an ability to adapt theories or methods to solve unfamiliar problems.

BHONS03 Select and apply appropriate mathematical and scientific methods to solve problems in the analysis and synthesis of automotive engineering systems and products.

BHONS04 Contribute to teamwork effectively and ethically, addressing prominent automotive concepts, considering also the wider aspects of social, environmental, ethical, commercial, legal, and enterprise issues through the effective management, communication, policy integration, standard-compliance, planning and self-learning.

BHONS05 Select and apply appropriate software packages along with relevant professional codes for design, analysis, and synthesis of automotive engineering systems to critically reflect and communicate the results with appropriate levels of detail.

BHONS06 Relate theory and practice to the recognition of processes and products thereby facilitating the efficient realisation of viable automotive engineering products, systems and processes.

BHONS07 Validate, manage and implement a research study in your discipline and effectively disseminate the findings that arise.

DIPHE01 Demonstrate knowledge and critical understanding of the well-established principles of your area(s) of study, and of the way in which those principles have developed with an understanding of the limits of your knowledge, and how this influences analyses and interpretations based on that knowledge.

DIPHE02 Demonstrate the ability to apply underlying concepts and principles outside the context in which they were first studied, including, where appropriate, the application of those principles in an employment context

DIPHE03 Demonstrate knowledge of the main methods of enquiry in the subject(s) relevant to the named award, and ability to evaluate critically the appropriateness of different approaches to solving problems in the field of study

DIPHE04 Use a range of established techniques to initiate and undertake critical analysis of information, and to propose solutions to problems arising from that analysis

DIPHE05 Effectively communicate information, arguments and analysis in a variety of forms to specialist and non-specialist audiences, and deploy key techniques of the discipline effectively

DIPHE06 Demonstrate the qualities and transferable skills necessary for employment, requiring the exercise of personal responsibility and decision-making and undertake further training, developing existing skills and acquire new competences that will enable them to assume significant responsibility within organisations.

BHONSN01 Design, analysis and synthesise of automotive engineering products, systems, and processes to demonstrate an innovative and creative approach to design realisation.

BHONSN02 Analyse and evaluate a range of solutions appropriate to automotive engineering problems, drawn from a broad range of engineering and technology specialities with an ability to adapt theories or methods to solve unfamiliar problems.

BHONSN03 Select and apply appropriate mathematical and scientific methods to solve problems in the analysis and synthesis of automotive engineering systems and products.

BHONSN04 Contribute to teamwork effectively and ethically, addressing prominent automotive concepts, considering also the wider aspects of social, environmental, ethical, commercial, legal, and enterprise issues through the effective management, communication, policy integration, standard-compliance, planning and self-learning.

BHONSN05 Select and apply appropriate software packages along with relevant professional codes for design, analysis, and synthesis of automotive engineering systems to critically reflect and communicate the results with appropriate levels of detail.

BHONSN06 Relate theory and practice to the recognition of processes and products thereby facilitating the efficient realisation of viable automotive engineering products, systems and processes.

UGCRED01 Solve real world problems using mathematical and statistical techniques.

UGCRED02 Communicate scientifically using oral and written skills to provide information to a variety of audiences.

UGCRED03 Demonstrate and apply problem solving skills to a range of scientific and technological scenarios.

UGCRED04 Demonstrate and apply knowledge of a range of scientific and technological subjects.

Teaching, Learning and Assessment:

The following learning activities support the achievement of the course learning outcomes:

1. Reading – core and supplementary texts, journals and electronic sources
2. Group activities aimed at developing team-working skills in a multi-disciplinary environment
3. Preparing written presentations; both analytically and textually based
4. Oral presentations; both group and individual
5. Lectures and laboratory sessions
6. Group and individual tutorials
7. Engaging in informed discussion with fellow students and academic staff in tutorials and seminars

Modules

8. Information retrieval from articles, journals and books for assessments
9. Problem-based learning techniques, e.g. design projects, case studies
10. Providing solutions to meet real world problems/requirements
11. Solving closed and open ended problems
12. Using computer software and hardware to model and simulate products and engineering systems
13. Engaging in informed discussion with fellow students and academic staff in tutorials
14. Student led presentations
15. Researching articles, journals and books for assessments
16. Applying systematic methods to develop (novel) solutions
17. Coursework reports (technical and discursive)
18. Preparing for unseen examinations
19. Writing Project dissertation
20. Critical examination of data
21. Working within accepted guidelines
22. Simulation and problem solving exercises

Assessment Methods:

At the University of Wolverhampton, a variety of modes of assessment will be used to support and test your learning and progress and to help you develop capabilities that are valued beyond your University studies and into your working life. Your course may include a variety of assessment activities:

Written examinations (including online examinations, open and closed book examinations and quizzes)
Coursework (for example, essays, reports, portfolios, project proposals and briefs, CVs, poster presentation)
Practical (for example, oral and video presentations, laboratory work, performances, practical skills assessment)

In the final year of your undergraduate degree, and at the end of your postgraduate degree, you are likely to be expected to write an extended piece of work or research, such as a dissertation or a practice-based piece of research.

Student Support:

General University support:

[University Learning Centres](#) are the key source of academic information for students. Learning Centres provide physical library resources (books, journal, DVDs etc.) and offer a range of study areas to allow students to study in the environment that suit them best: Social areas, quiet and silent areas. Learning Centres also provide access to wide range of online information sources, including eBooks, e-Journals and subject databases.

Learning Centres also provide students with academic skills support via the [Skills for Learning programme](#). Students on campus can attend workshops or ask for one-to-one help on a range of skills such as academic writing and referencing. Students can access a range of online skills material at: www.wlv.ac.uk/lib/skills

The [University Student Support website](#) offers advice on a variety of matters (careers, counselling, student union advice, etc.) Students can also access these services by booking appointment with the SU, careers, counselling services, etc.

Course Specific Support

Enhanced learning support is provided in the following areas:

1. Generic support to link theory with practice and to establish the need for learning through project based club activities such as the Formula Student Project and Formula Renault Project.
2. Support for mathematics and analytic-based modules through CANVAS and custom workshops.
3. Face-to-face tutorial sessions in mathematics
4. Report writing and oral/presentation communications skills workshop
5. Learning centre support for literature searches and information searches
6. Practical/lab/experimental activities and reporting to link theory with practice
7. Research for project work (major individual and group projects, assignments and team building activities).
8. Promotion of independent learning during tutorials, face-to-face sessions.

University provided support:

As well as providing general counselling support the University Counselling Service provides short course on topics such as "Self Confidence", "Stress Management and Relaxation" and "Life Skills". They also provide study skills and academic support, providing short courses such as provide help in areas such as "Writing and Assignment Skills", "Exam Techniques", "Enhancing Professional Skills", "Personal Development Planning" and "Making Choices for the Future."

In addition to the subject knowledge that you will gain from studying on your course, there are opportunities available to develop a range of skills that will help with your academic work; such academic skills include giving presentations, group work, academic writing, referencing and time management (specific help for maths is also available). The Learning and Skills Team in Learning and Information Services (LIS) offer yearround academic skills support and guidance to all students. Students who are new to academic study and unsure of how to get started, or any student who wants to improve on their academic performance can attend drop-in sessions and workshops, or obtain advice via email or Skype. More details about how the Learning and Skills Team can help you are available at; <http://www.wlv.ac.uk/skills>

Employability in the Curriculum:

The Mechatronics subject area provides career opportunities in a broad spectrum of industrial activities, as well as offering a gateway to all levels in the education sector. Mechatronics graduates have followed career paths as diverse as research and development within aerospace companies through to secondary school teaching.

In the contemporary industrial environment, the approach to problem solving, design, and research and development activities is to form multidisciplinary teams, thereby ensuring that all avenues are explored and evaluated. The Mechatronics engineer is well placed in this structure, since the ethos of the subject is broad based.

The course enables graduates to attain management positions, with significant levels of responsibility within a relatively short time.

Graduates may also study for a taught postgraduate degree, MSc, or a research degree, MPhil/PhD, within the Department.

The transferable skills gained during the course, including: project management, group working, and analytical thinking, also enable a graduate to pursue careers in non-technical fields such as: law, accountancy, authoring, and computing.



THE UNIVERSITY OF OPPORTUNITY