

Course Specification

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| Published Date: | 03-Oct-2022 |
| Produced By: | Multi Type Usr Record For All Personnel |
| Status: | Validated |

Core Information

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| Awarding Body / Institution: | University of Wolverhampton | | |
| School / Institute: | School of Engineering | | |
| Course Code(s): | MA008K23UV | Sandwich | 4 Years |
| UCAS Code: | H714 | | |
| Course Title: | BEng (Hons) Mechatronics Engineering with Sandwich Placement | | |
| Hierarchy of Awards: | Bachelor of Engineering with Honours Mechatronics Engineering, having satisfactorily completed a sandwich placement Bachelor of Engineering Mechatronics Engineering with Sandwich Placement Diploma of Higher Education Mechatronics Engineering Certificate of Higher Education 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: | 2014/5 | | |
| Course Specification valid to: | 2024/5 | | |

Academic Staff

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

Course Information

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|--------------------------|---|
| 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)

2017 Entry

- A Level minimum of BB or CDD to include Mathematics and a Technology or Science based-subject
- BTEC National Diploma grade MMP, BTEC National Certificate grade DM
- BTEC QCF Extended Diploma grade MMP, BTEC QCF Diploma grade DM
- Applicants will normally be expected to hold GCSE English and Maths at grade C+/4 or equivalent
- Applicants holding/studying an Access to HE Diploma may be considered on an individual basis.
- 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](#)

- Successful completion of the [BSc\(Hons\) Science and Engineering with Foundation Year](#) guarantees entry on to this course

- Successful completion of the [International Foundation Year in Science and Engineering](#) guarantees entry on to this course

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

You will be using industry-standard software. In addition to experimental work at the University you will use Radar equipment at the Cosford Royal Air Force base - the same equipment used to train Air Force personnel.

You 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 Engineering course is one of a small number of accredited courses that you can undertake as either a full-time or part-time (day-release) student, thus providing all graduates with equal recognition.

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 mechatronic 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 |
| 2021/2 | H | Full Time / Sandwich | £9250.00 |
| 2021/2 | Overseas | Full Time / Sandwich | £12950.00 |
| 2022/3 | H | Full Time / Sandwich | £9250.00 |
| 2022/3 | Overseas | Full Time / Sandwich | £13450.00 |

PSRB:

MA008K23UV (Sandwich)

Professional Accreditation Body:
Institution of Engineering and Technology (IET)

Accrediting Body:
Institution of Engineering and Technology (IET)

Accreditation Statement:
Accredited by the Institution of Engineering and Technology (IET) on behalf of the Engineering Council for the purposes of fully meeting the academic requirement for registration as an Incorporated Engineer and partially meeting the academic requirement for registration as a Chartered Engineer.

| Approved | Start | Expected End | Renewal |
|-------------|-------------|--------------|-------------|
| 26/Apr/2019 | 01/Sep/2015 | 31/Aug/2022 | 31/Aug/2022 |

Course Structure:

September (Sandwich)

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 |
|--------|--|---------|--------|------|
| 4MM029 | Engineering Mathematics I | 20 | SEM1 | Core |
| 4MA008 | Engineering Science | 20 | SEM1 | Core |
| 4MM028 | Engineering Mathematics II | 20 | SEM2 | Core |
| 4MA020 | Electromechanical Engineering Principles | 20 | SEM2 | Core |
| 4MA029 | Industrial Design Project | 20 | SEM2 | Core |
| 4MA009 | Computer Aided Design | 20 | SEM1 | Core |

September (Sandwich)

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

September (Sandwich)

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| Module | Title | Credits | Period | Type |
|--------|----------------------|---------|--------|------|
| 5MA016 | Industrial Placement | 40 | CRYRA | Core |

September (Sandwich)

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 |
| 6MA016 | Structural Mechanics and Stress Analysis | 20 | SEM2 | Core |
| 6MA048 | Mechatronic System Design | 20 | SEM1 | Core |
| 6MA049 | Automation and Control | 20 | SEM1 | Core |
| 6MA038 | Individual Innovation Project | 40 | YEAR | 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:

In situations where Professional Body and University regulations differ, the respective Professional Body (IET) regulation will have precedent over the exempted University regulation;

Section 1.2.5 - Exemption to permit less than 33% differentiation (mainly at Level 4 and Level 5) between the majority of named undergraduate Engineering degree programmes.

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.

APPROVED (by Chair's Action on 11/7/2019).

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 all Level 6 modules according to weightings listed below as follows;

| Level | Weighting |
|-------|-----------|
| 4 | - |
| 5 | - |
| 6 | 100% |

For accredited programmes, the PSRB 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).

APPROVED on 17/5/2018.

Reference Points:

UK Quality Code for Higher Education <https://www.qaa.ac.uk/quality-code>

UK Quality Code for Higher Education Advice & Guidance <https://www.qaa.ac.uk/en/quality-code/advice-and-guidance>

Subject Benchmark Statements <https://www.qaa.ac.uk/en/quality-code/subject-benchmark-statements>

Qualifications and Credit Frameworks <https://www.qaa.ac.uk/en/quality-code/qualifications-and-credit-frameworks>

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

BHONS01 Design, analyse and synthesise mechatronics 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 mechatronics engineering, 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 mechatronics engineering systems.

Modules

BHONS04 Contribute to teamwork effectively and ethically, addressing prominent mechatronics 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 mechatronics 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 mechatronics engineering products, systems and processes.

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

BHONSN01 Design, analyse and synthesise mechatronics 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 mechatronics engineering, 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 mechatronics engineering systems.

BHONSN04 Contribute to teamwork effectively and ethically, addressing prominent mechatronics 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 mechatronics 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 mechatronics engineering products, systems and processes.

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
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:

Enhanced learning support is provided in the following areas:

1. Support for mathematics and analytic-based modules via the Mathletics software package
2. Face-to-face tutorial sessions in mathematics
3. Report writing and oral/presentation communications skills
4. Learning centre – literature searches and information searches
5. Practical/lab/experimental activities and reporting
6. Research for project work (major individual, group at M-level, plus group assignments at L5/6)
7. 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 courses 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 year-round 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 completion of a Sandwich Year will enable you to gain valuable hands on experience in a relevant work environment. This will not only provide additional practical subject skills but it will also develop personal transferable skills such as communication skills, problem solving skills and demonstrate competency in working with other people. This will increase your employability and assist you in gaining employment in the future.

