



Faculty of Science and Engineering

MEng/BEng (Hons) Mechatronics Engineering

ON CAMPUS COURSE GUIDE 2015/6

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About this guide

This Course Guide has been designed to help you plan your course. You are encouraged to read this Guide through now. It will be a considerable advantage to you to be familiar from the outset with the various aspects of your studies that are described. It may be that the relevance of some of the sections will not be immediately obvious. Keep it somewhere accessible, so that you can refer to it as needed.

Obviously even in a document like this we have not covered every query and problem that you might have about the course. The Course Guide should be read in conjunction with the [Undergraduate Student Guide](#) / [Postgraduate Student Guide](#); the [Student Charter](#); the University's [Policies and Regulations](#) and the [University Assessment Handbook](#) documents should provide you with all the basic information that we think you will need for your period of study here.

If you find that there is something you need to know, please contact your Academic Faculty Office or local [Student Centre](#) on the details included below.

Please enter the contact details for your Personal Tutor for your future reference:	----- <i>The name of your Personal Tutor will be given to you at the beginning of your course and can be checked via e:Vision</i>
Your local Academic Faculty Office is:	Alex Hitch Faculty of Science and Engineering Telford Campus Telephone: 01902 323860 Email: Alex.Hitch@wlv.ac.uk
Your Student Centre (Here to Help) is:	Helen Harley Telford Campus Telephone: 01902 323626 Email: H.Harley@wlv.ac.uk Or log a call via e:Vision

Please note that in order to develop and improve the Course, it may be necessary on occasions to amend or revise the details given in this Course Guide. We are pleased to hear your views and welcome suggestions for ways of improving the operation of the Course.

Welcome

On behalf of the Course Management Team I should like to extend to you a very warm welcome and wish you every success in your studies at the University of Wolverhampton.

The University experience and academic success is all about the effort you put into learning and making the most of the wide range of opportunities available to you. We welcome students who are eager to think for themselves, to take control of their own learning and who are ready to get involved in developing the skills required in a highly competitive job market.

You will need to demonstrate good time management skills, independent learning, flexibility and discipline in order to achieve a study-work-life balance. We believe it is important that you are encouraged to make your own contribution to the effective operation and development of your chosen course. We are, therefore, keen to hear your views and would welcome any suggestions that you may have about ways of improving any aspect of your course and/or the student experience here at the University.

Ahmad Zakeri, Course Leader

Course Management and Staff Involved with the Course

Course Leader: Ahmad Zakeri

Telephone: 01902 322274 Email: A.Zakeri2@wlv.ac.uk

Placements Co-ordinator: Krystyna Nosek

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Faculty Enabling Tutors:

Gill Conde: Telephone: 01902 321153 Email: G.L.Conde@wlv.ac.uk

Katie Wood: Telephone: 01902 318452 Email: K.Wood@wlv.ac.uk

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Telephone: 01902 323897 Email: M.Basini@wlv.ac.uk

Student Support Team:

Telephone: 01902 322129 Email: FSEStudentSupport@wlv.ac.uk

Student Voice

The Student Voice is a partnership between the University and the Students' Union, put in place to make sure students opinions/feedback are heard at every level of university governance, from course level to the University's governing body.

The main positions within the Student Voice are Course Reps, who are volunteer students on every course. They have meetings with lecturers on a regular basis, highlighting both positive and negative feedback to Heads of Department or lecturers within their course. Faculty Reps are elected during the Spring Elections and have meetings with Senior Management within their Faculty. They are an essential link between Course Reps, the Students' Union and management within each Faculty. To find your Faculty Rep: [Faculty Representatives](#)

If you ever wanted to get involved with the student voice, or need more information please contact the Engagement Team in the Students' Union – [Student Voice](#)

For independent advice and guidance on all matters related to being a student eg. academic, finance, and housing issues, contact the Students' Union's Advice and Support Centre by telephone or e-mail [Advice and Support](#).

Responding to Student Feedback “You said/We did”

You said:

Extra tutorials for examination revision would be helpful

We did

Arranged extra sessions with academic staff to prepare for examinations

You said

More information and support from the Learning Centre would be useful to your independent study

We did

Liaised with Learning Centre to arrange sessions; including Harvard referencing, report writing and research and literature review skills

You said

Facilities to work in the labs would increase practical knowledge

We did

Opened the labs and encouraged students to work both within the week and on weekends

Student Charter

The University's [Student Charter](#) has been developed primarily by the Students' Union and informed by student views. The Charter is not a contract, nor is it intended to be legally binding; it is a set of shared expectations which establishes the values and standards we are seeking to promote across all of our learning community. The Charter seeks to apply to all students on all courses and reflect our normal expectations of your experience at University. On occasions different types of study and interactions will mean necessary variations from time to time. However, what is important to us is that, whatever you are studying, your experience is a great one.

Engagement

The University recognises that you have made a significant investment in both time and money in choosing to study for a degree. The University is committed to helping you fulfil your potential. Your engagement with the study materials, and participation in the sessions, activities and assessment tasks are very important in ensuring that you are able to do so.

Your engagement will help you to:

- Understand the subject area you are studying;
- Acquire and develop the skills and knowledge needed to ensure success;
- Prepare for assessment tasks;
- Learn from and with your fellow students;
- Receive feedback from your tutors on your progress;
- Fully participate in sessions, forums, seminars and other activities;
- Develop your communication skills.

If you are unable to participate in any of the activities or sessions please let your tutor know that you are unable to do so. He/she will then be able to give you advice on what was dealt with during the session or activity, and what you need to do to catch up. Please do remember how important engagement and participation is to your success. You may be required to sign an attendance register at lectures so that we may monitor engagement. You are encouraged to engage with the University's Virtual Learning Environment (VLE) and Student Management System, further details of how to access these can be found [here](#).

Contact time with teaching and associated staff is available to help shape and guide your studies. The term 'contact hours' refers to the amount of time that you spend learning in contact with

teaching or associated staff, when studying your chosen course. The number of contact hours on a course is influenced by the subject, as well as how and where you are studying. Academic staff should make it clear how many hours contact time you should receive, and what these hours are at the beginning of the course/module.

The Wolverhampton Graduate

The experience of studying at University is about much more than just gaining knowledge and understanding of a subject(s), it is also about developing additional skills and capabilities that you can take with you into a wide range of different settings. Sometimes it can be difficult to explain to others what you have done and achieved. The following Graduate Attributes will help you think about the knowledge and skills you have gained and how these can be presented to prospective employers and/or other interested parties. This is not an exhaustive list and you will need to reflect on what you can personally demonstrate that is appropriate for different settings and contexts such as job interviews. You will also have formed your own opinion about what going to university means to you and how you think you have developed.

While at university you will have the opportunity to:

1. acquire, generate, interrogate and apply knowledge from a wide range of sources,
2. develop research skills to enable analysis, synthesis, understanding and evaluation of data and information.
3. demonstrate self-discipline and organizational skills by meeting deadlines, and taking responsibility for your own development and learning
4. present ideas clearly in an informed and persuasive manner to a variety of audiences.
5. be innovative, creative and enterprising work collaboratively, whilst acknowledging, respecting and engaging with the views of others in a constructive and empathetic manner
6. draw on professional advice and feedback to reflect on and improve your own learning and professional practice;
7. prepare for the world of work through engagement with real life situations, briefs and problems
8. engage with new ideas and ways of working as an active member of the communities in which you study, live and work.

About the Course

This Guide outlines the modules which are available, teaching and learning activities and assessment tasks. If there is anything you need to discuss further, please contact Dr Ahmad Zakeri, Course Leader

The educational aims of the course are:

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 of 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 mechatronics products and systems.
- provide a broadly based education in electrical engineering, electronics, 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 mechatronics 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.

The course learning outcomes are:

1. demonstrate creativity in the design and synthesis of mechatronic engineering products, systems, and processes and apply an innovative approach to their physical realisation
2. effectively research unfamiliar subject areas in mechatronics and cognate disciplines, and thereby propose and evaluate a broad range of solutions to engineering problems
3. select and apply appropriate mathematical methods to solve problems in the analysis and synthesis of mechatronic engineering systems
4. apply the skills gained in an industrial environment to individual and group project work, taking account of social, environmental and commercial issues at both the project planning and implementation stages
5. select and apply appropriate software packages for design, analysis, and synthesis applications and critically evaluate the results
6. relate theory and practice, thereby facilitating the efficient realisation of viable mechatronic engineering products and processes.

These will be achieved through the following learning activities:

The course adopts a variety of learning and teaching methods, as appropriate to the nature and content of the individual modules, with the principle contact modes of delivery being: lecture/tutorial and practical/laboratory periods. All such face-to-face sessions are interactive, with the lecturer providing guidance on formative exercises and/or conducting discussions on prominent module-specific topics and issues.

All modules that comprise this course are supported by Wolf topics. Lecturer-produced material is uploaded, in addition to formative exercises in various formats, with assessment feedback through in-class tutorials and/or electronic feedback. An important part of the learning process is discussion with other students in the cohort. Recognising that this requirement extends outside classroom face-to-face sessions, Wolf topics include a forum and students are encouraged to use this facility to enhance their learning experience and benefit from the pooling and discussion of ideas with their peers.

Students are introduced to ePDP (electronic Personal Development Planning) during their first year of study and are encouraged to maintain and update their ePDP profile as they progress through the course. This ensures that individuals regularly reflect upon their own learning, performance and achievement, and facilitates planning for their personal, educational and career development.

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

The course is accredited, endorsed or approved (depending on the professional body requirements)

This Course has been designed to meet educational requirements for the accreditation of Higher Education programmes as defined by the Engineering Council. Normal practice for new courses is to seek accreditation by engaging Professional Bodies once there has been a graduating cohort. In the meantime the School of Engineering will be working with the Professional Bodies to assure accreditation. Once accreditation is given this will be applied retrospectively to cover students from the first intake.

Contact Hours

At University, the term 'contact hours' is used very broadly to refer to the amount of time that you spend learning in contact with teaching or associated staff, when studying for a particular course. This time provides you with support in developing your subject knowledge and skills, and provides opportunities to develop and reflect on your own, independent learning.

Contact time on this course will be based on your interaction with staff in some or all of the following situations: lectures, seminars, tutorials, demonstrations, practical classes and workshops, project supervisions, fieldwork, external visits, one-to-one sessions and discussions, interaction by email and other electronic or virtual media and situations where feedback is given on assessed work.

During your study this interaction takes place with academic (teaching and research) staff, teaching assistants, technical and specialist support staff, employers and others.

Alongside contact time, private and independent study is therefore very significant. This is the time that you spend learning without direct supervision from, or contact with, a member of staff. Your

independent study time will include background reading, preparation for seminars or tutorials, follow-up work, wider practice, the completion of assignments, revision and others.

External Examiners

Tim Collins, Senior Lecturer, University of Birmingham

External Examiners play a key role in helping the University to ensure that our standards are comparable with other institutions in the sector and are consistent over the years and that our assessment processes and regulations treat all students fairly and equitably. It is not part of their remit to communicate with individual students (it is to be noted that students are given access to External Examiner reports in their entirety via the Modules and Programmes page on e-vision in line with the HEFCE Publication 06/45 and some students may have the opportunity to meet with externals if they visit placement areas or attend for planned meetings or assessment). Students are therefore reminded that they must not make direct contact with External Examiners in respect of their assessed work or performance. Any student issues should be relayed either directly to the Module or Course Leader.

Academic Regulations

This course follows the University's academic regulations. A full version of these regulations can be found on the University web page for [Policies and Regulations](#). These regulations govern your course and will be binding on you. It is, therefore, important that you read and become familiar with them. If you have any questions regarding the regulations you should raise your query by logging an [e:Vision](#) Helpdesk call.

Exam Regulations

The University also have regulations that specifically cover examinations. [Exam Regulations](#)

The maximum period over which an award may be studied is detailed in the regulations appropriate to your course. Typically these are:

Undergraduate Honours Degrees

Full Time Students	Normal	Maximum
Honours Degree	3 years	5 years
Degree	3 years	5 years

Part Time Students	Normal	Maximum
Honours Degree	5 years	8 years
Degree	4 years	8 years

Undergraduate Sandwich Honours Degrees

Full Time Students	Normal	Maximum
Honours Degree (sandwich)	4 years	6 years
Degree (sandwich)	4 years	6 years

Part Time Students	Normal	Maximum
Honours Degree (sandwich)	6 years	10 years
Degree (sandwich)	5 years	10 years

The above maximum registration periods do not include time away from study approved under the [Leave of Absence](#) procedure.

Please be aware that to be eligible to continue on your course you must pass at **least one module** in your first year of study.

In order to progress from one level of study to the next, you must successfully pass 100 credits out of the 120 credits. Given that your course contains some 40-credit modules at levels 4, 5 and 6 you need to be aware that if you fail one of these modules, you will not be entitled to progress to the next level. You can only progress if you fail a maximum of 20 credits within a level.

Students will be required to achieve a 2:2 or better in order to progress to level 7.

Course Information

Additional sections from the Course Specification that should be added here are:

- **Reference points**

The following PSRB and QAA subject benchmarks have been consulted in the development of learning outcomes of this course, thereby ensuring that the academic requirements of the appropriate PSRBs (Institution of Engineering and Technology (IET)) are addressed:

- Engineering Council UK-SPEC 2015.
- Framework for Higher Education Qualifications (FHEQ) - descriptors for a qualification at Honours (H) level and at Masters (M) level:
- The School of Engineering and the Built Environment publication “Equality and Diversity in the Curriculum” has been used to inform the design of the teaching and learning materials and the assessment regime.

- **Blended learning**

- have access to a digital copy of all lecturer-produced course documents
- have formative assessment opportunities on line with meaningful electronic assessment feedback
- collaborate on line with others in their learning cohort
- participate in ePDP
- submit all (appropriate) assessments online (*note: this entitlement will be adopted as and when University IT and Registry systems permit*)
- engage in interactive learning during all face-to-face sessions.

- **Assessment methods**

Students experience a variety of formative and summative assessments that serve to demonstrate the achievement of learning outcomes. Due to the nature of the discipline, both theoretical- and laboratory-based assessment tasks will be undertaken, and these are designed to emphasise, and develop the students’ understanding of, the link between theory and practice.

Types of formative and summative assessments included in the course are listed below:

1. Preparing reports to demonstrate levels of analytic skills and written presentation skills
2. Critical examination of data
3. Working within accepted guidelines
4. Computer-based exercises
5. Written assignments
6. Simulation and problem solving exercises
7. Practical work and associated report-writing
8. Unseen examinations
9. Individual projects
10. Group assignments

11. Making individual and group presentations
12. Team/individual performance in group work
13. Preparation and presentation of Dissertation.

- **Support for learning**

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>

- **Distinctive features of the course**

The Department of Engineering and Technology specialises in the integration of the mechanical engineering and electrical/electronic engineering disciplines.

The MEng 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.

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 MEng (Hons) Mechatronics 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.

Students may be asked to contribute to the purchase of Personal Protection Equipment (PPE).

Personal Tutor

When you join the University you will be given a [Personal Tutor](#). This information can be found in your e-vision homepage. Your personal tutor is someone who can offer you guidance and advice, this could be about your course, and any other aspects that affect your study. In order for personal tutoring to be a beneficial and meaningful relationship for you, you need to communicate with your personal tutor.

Academic Misconduct

We take pride in the academic integrity of our staff and students but when academic misconduct is suspected the University will take action. The University considers seriously all acts of academic misconduct, which by definition are dishonest and in direct opposition to the values of a learning community. If not challenged, academic misconduct will ultimately devalue our academic standards and undermines the honest efforts on the part of our staff and students.

Academic misconduct includes plagiarism, collusion and cheating and may be deliberate or unintentional. Whatever form it takes, it will be thoroughly investigated and penalties will be applied if proven.

Support for Students

The University and the Students' Union believe that many incidents of academic misconduct can be avoided by increasing students' knowledge and skill.

A variety of support mechanisms are in place to help students succeed and avoid academic misconduct:

- Visit the Learning Centre or our study skills support website at www.wlv.ac.uk/skills
 - Download the Students' Union guide to Avoiding Academic Misconduct ("Write Right") - available from the [Student's Union website](#):
 - Book a Skype appointment with study skills adviser or join the online chat service [ASSIST](#) - through the [Learning Centre "Skills for Learning"](#) website.
 - Contact your personal tutor or module leader.

Remember – there is help available if you need it.

Defining Academic Misconduct

Cheating

Cheating is defined as any attempt to gain unfair advantage in an assessment by dishonest means, and includes, for example, all breaches of examination room rules, impersonating another student, falsifying data, and obtaining an examination paper in advance of its authorised release. Cheating attracts the University's most severe penalties.

Other common examples of cheating would include –

- Being in possession of "revision notes" during an examination
- The purchase or commission of assignments from others
- Theft of other students' work
- Prohibited communication during an examination

Plagiarism

Plagiarism is the act of taking someone else's work and passing it off as your own. This includes incorporating either unattributed direct quotation(s) or substantial paraphrasing from the work of another/others. It is important to cite all sources whose work has been drawn on and reference them fully in accordance with the referencing standard used in each academic Faculty.

The most common forms of plagiarism are –

- Cut or copied and pasted materials from websites
- Copying the work of another student (past or present) including essays available through "essay bank" websites – or other data.

- Copying material from a text book or journal

When you're using other people's work or ideas it is important to engage with their work critically. You can quote, paraphrase, summarise or critically review – but you must always provide appropriate references.

Collusion

Collusion is when two or more people combine to produce a piece of work for assessment that is passed off as the work of one student alone. The work may be so alike in content, wording and structure that the similarity goes beyond what might have been coincidence. For example – where one student has copied the work of another, or where a joint effort has taken place in producing what should have been an individual effort.

Collusion should not be confused with the normal situation in which students learn from one another, sharing ideas and group work to complete assignments (where this is specifically authorised).

Plagiarism Detection

In concert with the skills and experiences of academic staff the University will utilise electronic tools such as Turnitin to detect plagiarism. Turnitin is the software currently subscribed to by the University.

At Undergraduate level the University will require that all final year projects and dissertations are submitted to Turnitin for analysis. At postgraduate level the University will require that all dissertations (or similar) are submitted to Turnitin for analysis.

Students are required, where appropriate, to make a declaration as the authenticity and originality of any submitted piece of work. This declaration also authorises the University to request and require students to provide an electronic version of any submitted assessment for checking work via Turnitin where plagiarism is suspected.

Penalties

Where an offence is admitted, or a panel decides that cheating, plagiarism or collusion has occurred, a penalty will be imposed. There is a cumulative range of penalties which will be applied to any continuous period of registration for study with the University. The severity of the penalty will vary according to the nature of the offence and the number of previous offences. Penalties range from failure of the assignment under investigation to exclusion from the University.

Full details about the University's policy on Academic Misconduct, regulations and procedures, investigation of academic misconduct or to make an appeal or a complaint are available on the [conductandappeals](#) website.

Anonymous Marking

Anonymous marking is the process undertaken to avoid the possibility of bias through the assessment and marking process. To this end, wherever possible, the identity of students should not be apparent to markers and work should only be identified by student number. Where the method of assessment does not allow anonymous marking, (e.g. dissertations, presentations, oral examinations, practical examinations), alternative methods of marking to mitigate the possible effect of bias will be explained to you.

When submitting assessments in hard copy, you are asked to use your personalised bar-coded coversheet and ensure that you record only your student number in the header or footer of your piece of work.

Course Structure for Undergraduate courses

Students will study:

Full-time: normally modules worth 120 credits each academic year

Part-time: normally modules worth no more than 80 credits each academic year.

Level 4

Semester 1		Semester 2	
C	4MA007: Engineering Mathematics		20
C	4MA008: Engineering Science		20
C	4MA017: Mechanical Engineering Principles		20
C	4MA020: Electronic Engineering		20
C	4MA021: Applied Engineering		40

Level 5

Semester 1		Semester 2	
C	5MA019: Signal Processing I		20
C	5MA021: Analogue and Digital Electronic Engineering		20
C	5MA013: Thermodynamics and Fluids		20
C	5MA023: Control Systems		20
C	5MA020: Embedded Systems		40

O	5MA016: Optional Placement Year		20
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Level 6 BEng (Hons)

Semester 1		Semester 2	
C	6MA011: ESEE – Economic, Social, Ethical & Environmental		20
C	6MA021: Signal Processing II		20
C	6MA025: Mechatronic System Design		20
C	6MA026: Control Engineering I		20
C	6MA017: Individual Research Project		40

Level 7 MEng (Hons)

Semester 1		Semester 2	
C	7MA011: Business Robotics – Sensors and Control		20
C	7MA014: Condition Monitoring		20
C	7MA016: Control Engineering II		20
C	7MA017: Business Management and Advanced Analytical Methods		20
C	7MA012: Group Research Project		40

Module Descriptions

4MA007	Engineering Mathematics
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Credit value	20
Pre-requisites	None
Co-requisites	None
Prohibited combinations	4ET005 Engineering Mathematics
Module Leader	Ruth Fairclough
Telephone	01902 321429
Email	r.fairclough@wlv.ac.uk
Staff Room Number	MI219

Module description

The aim of this module is to provide the Mathematics skills that underpin the engineering discipline and enable students to model and analyse engineering systems, generate numerical values for system parameters, manipulate data to find system responses under defined conditions, evaluate the effects on systems of changes in variables and communicate ideas and results mathematically.

Assessment

Description		Weighting or Pass/Fail
1	Examination	50%
2	Examination	50%

4MA008	Engineering Science
---------------	----------------------------

Credit value	20
Pre-requisites	None
Co-requisites	None
Prohibited combinations	None
Module Leader	Arun Arjunan
Telephone	01902 323829
Email	A.Arjunan@wlv.ac.uk
Staff Room Number	SC115

Module description

The aim of this module is to provide a comprehensive grounding in science relevant to engineers by: providing a foundation in the scientific principles underlying the behaviour of static and dynamic mechanical systems, mechanics of materials and operational principles of electrical-electronic devices. The breadth of this course provides the underpinning knowledge that becomes the basis for further study in specialist areas of Mechanical, Aerospace, Automotive, Motorsports, Mechatronics and Electronics Engineering.

Assessment

Description		Weighting or Pass/Fail
1	Portfolio	50%
2	Examination	50%

4MA017	Mechanical Engineering Principles
---------------	--

Credit value	20
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Pre-requisites	None
Co-requisites	None
Prohibited combinations	None
Module Leader	Graham Oakes
Telephone	01902 323888
Email	G.L.Oakes@wlv.ac.uk
Staff Room Number	SC117

Module description

The aim of this module is to provide knowledge and understanding of classic mechanical engineering principles associated with thermodynamics, fluid mechanics and theory of machines enabling them to effectively describe the performance of engineering systems and to solve associated engineering problems.

Assessment

Description		Weighting or Pass/Fail
1	Coursework	50%
2	Examination	50%

4MA020	Electronic Engineering
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Credit value	20
Pre-requisites	None
Co-requisites	None
Prohibited combinations	None
Module Leader	
Telephone	
Email	
Staff Room Number	

Module description

To enable students to develop a broad understanding of the principles, techniques and applications used in electronic engineering.

Assessment

Description		Weighting or Pass/Fail
1	Examination	50%
2	Coursework	50%

4MA021	Applied Engineering
---------------	----------------------------

Credit value	40
Pre-requisites	None
Co-requisites	None
Prohibited combinations	None
Module Leader	
Telephone	
Email	
Staff Room Number	

Module description

To enable students to apply theoretical knowledge of electronic, telecommunications and manufacturing engineering.

Assessment

Description		Weighting or Pass/Fail
1	Coursework	100%

5MA019	Signal processing I
---------------	----------------------------

Credit value	20
Pre-requisites	4MA007 Engineering Mathematics
Co-requisites	None
Prohibited combinations	None
Module Leader	
Telephone	
Email	
Staff Room Number	

Module description

To provide the analytical basis of discrete time and digital signal processing. To gain knowledge and understanding of the properties of signals and systems and their relationship with system inputs and outputs. To be able to apply the techniques necessary to analyse signals in both modelled and practical systems will also be developed.

Assessment

Description		Weighting or Pass/Fail
1	Coursework	50%
2	Examination	50%

5MA021	Analogue and Digital Electronic Engineering
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Credit value	20
Pre-requisites	None
Co-requisites	None
Prohibited combinations	None
Module Leader	
Telephone	
Email	
Staff Room Number	

Module description

To enable students to analyse and design analogue and digital circuits and systems.

Assessment

Description		Weighting or Pass/Fail
1	Examination	50%
2	Coursework	50%

5MA013	Thermodynamics and Fluids
---------------	----------------------------------

Credit value	20
Pre-requisites	4MA017 Mechanical Engineering Principles
Co-requisites	None
Prohibited combinations	None
Module Leader	
Telephone	
Email	
Staff Room Number	

Module description

The aim of this module is to provide a comprehensive education in thermodynamics and fluids necessary for mechanical engineers by integrating scientific principles with applications of thermodynamics and fluids systems.

Assessment

Description		Weighting or Pass/Fail
1	Coursework	40%
2	Examination	60%

5MA023	Control Systems I
---------------	--------------------------

Credit value	20
Pre-requisites	4MA007 Engineering Mathematics
Co-requisites	None
Prohibited combinations	None
Module Leader	
Telephone	
Email	
Staff Room Number	

Module description

Control systems influence every facet of engineering and are used to control the performance of devices according to some cost function or external demand (e.g. controlling the temperature of a furnace, maintaining the stability of a phase locked loop in a telecommunications receiver or controlling a suspension system of a car). This module introduces classical control techniques for Linear-Time-Invariant (LTI) systems, the theory of which forms the basis of all other control techniques. LTI systems can be used to approximate a wide range of Electronic, Mechanical and Mechatronic systems and so this module will be relevant to later design based modules in your course. Much of initial theory will also allow other modules to provide a simplified approach to circuit analysis, filter design, signal processing. The module begins with a simple methodology which allows you to model a complex system (such as suspension system or electronic circuit) by gluing together simpler representations of its parts (i.e. spring, damper and masses). The module then introduces the Laplace Transform, which allows us to take our model and predict quantitative results about the system (i.e. the settling time of the suspension system) **without** the need to manipulate differential equations. The module then provides alternative means by which the system can be controlled to produce other system responses and the design of digital control systems. The module is illustrated with practical and industrial examples throughout.

Assessment

Description		Weighting or Pass/Fail
1	Coursework	30%
2	Examination	70%

5MA020	Embedded Systems Design
---------------	--------------------------------

Credit value	20
Pre-requisites	4MA007 Engineering Mathematics
Co-requisites	None
Prohibited combinations	None
Module Leader	
Telephone	
Email	
Staff Room Number	

Module description

This module provides the necessary content to design and build modern embedded systems. It includes an overview of computer architectures, in general and micro-controllers, in particular. It provides an introduction to the form of C to safely program embedded systems and programming tool necessary for hardware-software co-design. The assessment of the module is entirely by coursework. The coursework consist of a shorter real-time programming assignment, a design document for a real-time embedded system and the final documentation and demonstration of implemented system.

Assessment

Description		Weighting or Pass/Fail
1	Portfolio	100%

5MA016	Industrial Placement
---------------	-----------------------------

Credit value	20
Pre-requisites	Achieved criteria for progression to level 6
Co-requisites	None
Prohibited combinations	None
Module Leader	
Telephone	
Email	
Staff Room Number	

Module description

To introduce students to the concept of life long learning and professional competence. To facilitate an appreciation of contemporary working practises and encourage students to seek practical solutions to real life industrial problems.

Assessment

Description		Weighting or Pass/Fail
1	Workplan	10%
2	Portfolio	90%

6MA011	Economic, Social, Ethical and Environmental
---------------	--

Credit value	20
Pre-requisites	Achieved criteria for progression to level 6
Co-requisites	None
Prohibited combinations	None
Module Leader	
Telephone	
Email	
Staff Room Number	

Module description

Professional and employability skills. *Communication*: considering problems from a differing point of view, considering all sides of potential conflict situations, understanding legal stand points & precedents, resolving conflict situations, management techniques & strategies, commercial implications to decisions or lack of decisions, considerations to social factors. *Working in a team*: creating ideas; decision making; conflict resolution; project management; giving and receiving feedback; accepting responsibility. *Professional awareness*: environmental, sustainability, economic and ethical awareness. Intellectual skills; Information *skills*: identifying information needs; finding, evaluating and applying information. *Investigation skills*: developing a strategy; sources of information; managing investigation processes; confidentiality; reporting findings. *Professional awareness*: Considering the role of accrediting / professional bodies within the world and engineering generally.

Assessment

Description	Weighting or Pass/Fail
1 Coursework	100%

6MA021	Signal Processing II
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Credit value	20
Pre-requisites	5MA019 Signal Processing I
Co-requisites	None
Prohibited combinations	None
Module Leader	
Telephone	
Email	
Staff Room Number	

Module description

To develop the student's understanding of the characteristics and limitations of digital signal processing, including an introduction to speech and image processing. To be able to design a range of filters and to analyse filter performance using a commercial signal processing software package.

Assessment

Description	Weighting or Pass/Fail
1 Coursework	50%

2	Examination	50%
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6MA025	Mechatronic System Design
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Credit value	20
Pre-requisites	5MA020 Embedded Systems Design
Co-requisites	None
Prohibited combinations	None
Module Leader	
Telephone	
Email	
Staff Room Number	

Module description

The module provides the necessary background and practice for modern mechatronic design. The assessment is entirely by coursework and takes the form of a feasibility study in which you are to design and implement a mechatronic solution to a given problem. The module also requires that you provide a specification and validation tests for your design. The work contained within the module will require you not only to use knowledge obtained in earlier courses, but it will also require you to demonstrate a significant amount of engineering creativity.

Assessment

Description		Weighting or Pass/Fail
1	Coursework	30%
2	Examination	70%

6MA026	Control Engineering I
---------------	------------------------------

Credit value	20
Pre-requisites	5MA023 Control Systems
Co-requisites	None
Prohibited combinations	None
Module Leader	
Telephone	
Email	
Staff Room Number	

Module description

You will develop skills in the analysis and synthesis of systems that contain mechanical and electrical/electronic components, and which use embedded microcontrollers as the main controlling elements.

Assessment

Description		Weighting or Pass/Fail
1	Coursework	30%
2	Examination	70%

6MA017	Individual Innovation Project
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Credit value	40
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Pre-requisites	5MA018 Road Engine Component Innovative Production Design Group Project
Co-requisites	None
Prohibited combinations	None
Module Leader	
Telephone	
Email	
Staff Room Number	

Module description

This module aims to develop the students' ability to use current technologies and techniques to apply solutions to current mechanical engineering problems, as well as developing research methods and project management skills along with presentation and data interpretation techniques. The students are expected to define a problem, research, and conclude a solution, thus utilising material taught while developing independent research skills that enable a dynamic work plan to be generated and followed; producing results from which conclusions can be drawn and presented.

Assessment

Description		Weighting or Pass/Fail
1	Interim Report	20%
2	Report Composite	80%

7MA011	Robotics: Sensors and Control
---------------	--------------------------------------

Credit value	20
Pre-requisites	5MA006 - Applied Instrumentation and Control
Co-requisites	None
Prohibited combinations	None
Module Leader	
Telephone	
Email	
Staff Room Number	

Module description

To enable students to analyse and synthesise robotic systems through a study of sensors, processing of sensor data, mechanisms, and control engineering. The students are exposed to the design, analyse and simulation of robotic systems, autonomous vehicles and other complex electro-mechanical devices. This module also extends to the control of robotic systems using modern microprocessor technology.

Assessment

Description		Weighting or Pass/Fail
1	Coursework	50%
2	Examination	50%

7MA014	Condition Monitoring
---------------	-----------------------------

Credit value	20
Pre-requisites	6MA021 Signal Processing II
Co-requisites	None
Prohibited combinations	None
Module Leader	
Telephone	
Email	
Staff Room Number	

Module description

To be able to select and apply condition monitoring techniques and analysis methods. To be able to specify appropriate transducers and select location, orientation and mounting methods with reference to disturbing influences including: vibration, oil/debris analysis, noise, acoustic emission and associated signal analysis techniques.

Assessment

Description		Weighting or Pass/Fail
1	Coursework	50%
2	Examination	50%

7MA016	Control Engineering II
---------------	-------------------------------

Credit value	20
Pre-requisites	6MA026 Control Engineering I, or equivalent
Co-requisites	None
Prohibited combinations	None
Module Leader	
Telephone	
Email	
Staff Room Number	

Module description

To enable you to apply transfer function identification methods to a broad range of systems from within and outside the engineering field. To enable you to analyse and synthesise control systems which may contain non-linear elements. To apply state-space methods to control system analysis and synthesis.

Assessment

Description		Weighting or Pass/Fail
1	Coursework	30%
2	Examination	70%

7MA017	Business Management and Advanced Analytical Methods
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Credit value	20
Pre-requisites	6MA017 Individual Research Project
Co-requisites	None
Prohibited combinations	None
Module Leader	
Telephone	
Email	
Staff Room Number	

Module description

Work on a research project linked directly to an active research area within the host Department. Apply and enhance the skills developed during the level 6 Individual Project, 6ET011. To produce an M-level research project communicated, written and verbal form, to subject specialists and subject non-specialists.

Assessment

Description		Weighting or Pass/Fail
1		
2		

7MA012	Group Research Project
---------------	-------------------------------

Credit value	40
Pre-requisites	6MA017 Individual Innovation Project
Co-requisites	None
Prohibited combinations	None
Module Leader	
Telephone	
Email	
Staff Room Number	

Module description

To allow the student to develop research skills and gain an appreciation of a subject area of the students own choosing. The thesis allows the student study an area of interest in significant depth and to allow the student to demonstrate a good and clear understanding of what has been learnt through a variety of means - a conference paper, presentation and a substantial dissertation.

Assessment

Description		Weighting or Pass/Fail
1	Portfolio	20%
2	Project	80%

University Academic Calendar

[University Academic Calendar.](#)

Timetables

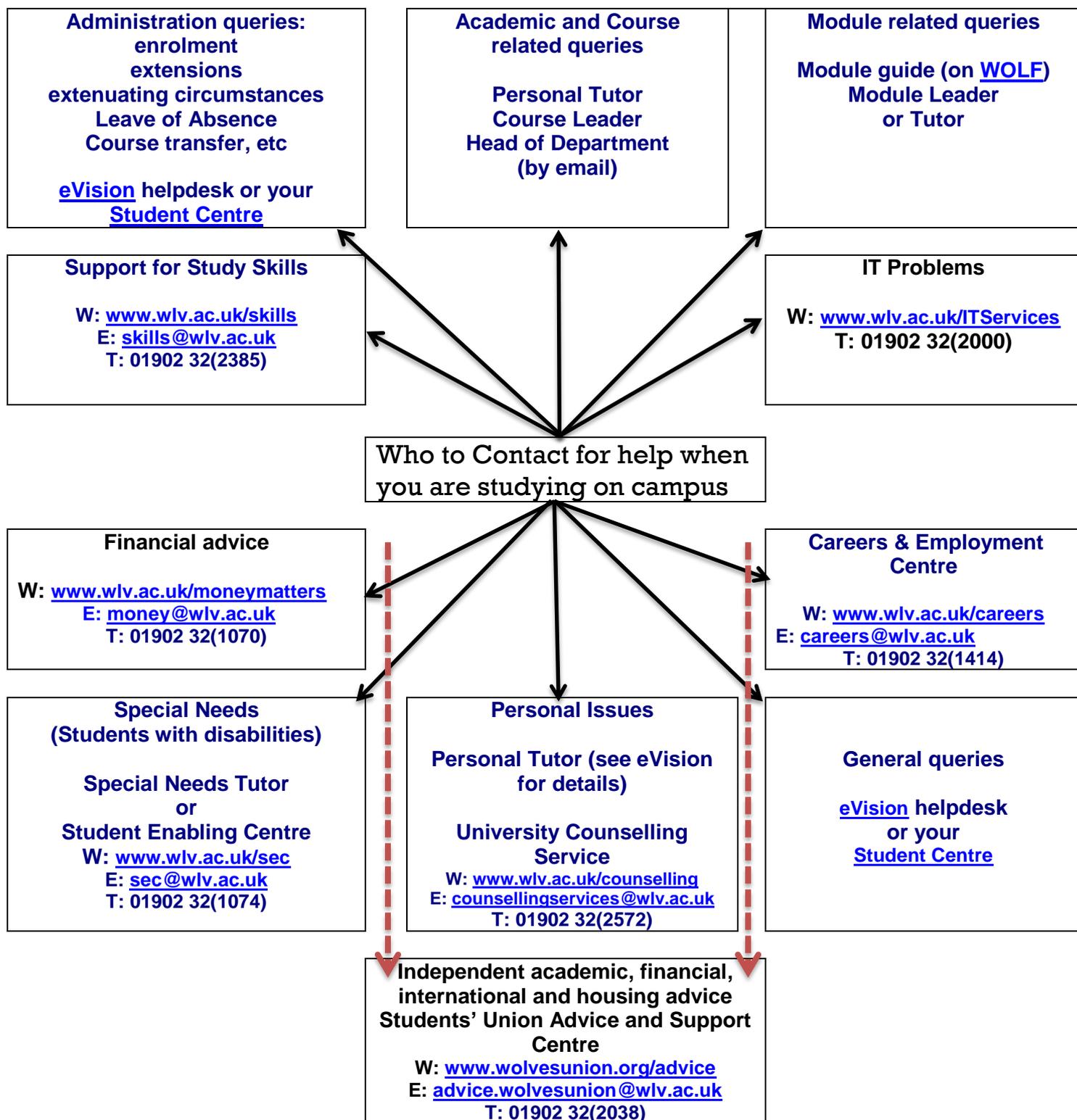
Timetabling information is available to you through the following:

- 1) Using the teaching timetable where you can search for and view all modules online at www.wlv.ac.uk/timetable .
- 2) Once you have completed your module registration, a more personalised timetable showing only those modules which you are studying will be available for you to view through your e:Vision page.
- 3) For more general information about timetabling and teaching rooms use the Central Timetabling Unit webpages at www.wlv.ac.uk/ctu.

Where to get help with your course

Student Support

If you encounter any issues (personal or academic) the following diagram directs you to the appropriate department or staff member.



Extensions, Extenuating Circumstances and Leave of Absence

The University wants all students to do their best. You are expected to take responsibility for your own learning and we know students perform best if they participate in all activities associated with their modules.

Very occasionally something may happen suddenly which is beyond your control and this will prevent you from attending an examination (or other test) or completing an assessment by the due date. Common reasons for needing additional help are poor health or a death in the family – although other reasons may apply.

Extensions - for some assessments there may be the option to apply for a short term (maximum 7 days) extension if you are experiencing difficulties in completing your work on time. You should apply for the extension via your [e:Vision](#) account on or before your assessment date and provide supporting evidence to your [Student Centre](#). On receipt of the evidence your claim will be assessed and you will be notified by e-mail if your extension has been approved and your revised submission date. Further details can be found [here](#).

Extenuating Circumstances – claims for extenuating circumstances are also submitted via your e: Vision account on or before your assessment date and again evidence to support your claim must be provided to your [Student Centre](#). Claims for Extenuating Circumstances tend to be for more serious matters and if your claim is accepted then it enables you to take the assessment at the next available opportunity without penalty. If you have any queries regarding either of these processes then please log a call on the [e:Vision](#) helpdesk.

Leave of Absence - in more extreme cases of potential prolonged absence you might consider a temporary leave of absence. Students may temporarily suspend their studies a semester at a time (and up to a maximum of four semesters). You can apply for a Leave of Absence via [e:Vision](#) but we would strongly recommend that you get advice from your Personal Tutor, your [Student Centre](#) or the [Students' Union](#), particularly regarding the financial implications, before taking this step.

Health & Safety issues

Students will have to comply with Health and Safety Regulations advised by the appropriate Associate Dean. Students may only enter workshops and laboratories under instruction and will comply with the instructions provided by the member of staff. Failure to do so could result in you not being allowed to complete your course

Wearing Personal Protection Equipment (PPE) is mandatory in all engineering workshops and laboratories.

In addition students will be expected to undertake a Health and Safety examination; passing this examination is a mandatory requirement for entering the engineering workshops and laboratories.

Health and Wellbeing whilst using your computer

As a student you will be using a computer for the majority of your study. The guidelines below are to promote good health and wellbeing in relation to your computer use.

Set-up and space

Ensure you have a comfortable working area where you can have adequate space for your keyboard, mouse, monitor or laptop/mobile device and that you are in a comfortable seated position. Try to prevent eye strain by ensuring you have good lighting, adjusting your monitor to prevent glare and by cleaning your monitor regularly. If you are using a laptop for any extended length of time try to use an external mouse to prevent continued use of a laptop mouse pad which can cause strain injuries.

Taking a break

You should take regular breaks away from the screen. One to two minutes away every thirty minutes can be most effective, with regular longer breaks every couple of hours. Physically moving away from the screen and working area will also allow for important stretching and increasing circulation as well as reducing eye strain from looking at the screen.

Progression for Further Study

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.

Alumni

We're proud of your success. Be proud of your connection with us.

Once you complete your studies you will continue to be part of the University of Wolverhampton academic community as one of our ever growing alumni community. The WLV Alumni Association is a university-wide association bringing together Wolverhampton graduates.

For further information on Graduation and Alumni please visit our [Alumni](#) website.

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