Course Handbook
BEng(Hons) Robotic Engineering
MEng(Hons) Robotic Engineering
2018-2019
Dr Stephen Sigurnjak
School of Engineering

Please read this Handbook in conjunction with the University’s Student Handbook.

All course materials, including lecture notes and other additional materials related to your course and provided to you, whether electronically or in hard copy, as part of your study, are the property of (or licensed to) UCLan and MUST not be distributed, sold, published, made available to others or copied other than for your personal study use unless you have gained written permission to do so from the Dean of School. This applies to the materials in their entirety and to any part of the materials.
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2 Structure of the Course
3 Approaches to teaching and learning
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  8.1 Programme Specification(s)
1. Welcome to the course

Welcome to Robotic Engineering at UCLan. We hope to provide you with an interesting and challenging education, and to develop competences appropriate to Robotic Engineering.

Please read the handbook carefully as it is a source of information on the academic, administrative and operational aspects of your course and it is intended to explain what is required of you. Feel free to discuss any aspects with myself or any member of the course team.

Enjoy your time studying with us!

Stephen Sigurnjak – Course Leader for MEng/BEng(Hons) Robotic Engineering

1.1 Rationale, aims and learning outcomes of the course

The MEng/BEng (Hons) Robotic Engineering course aim is to develop graduates with a broad understanding of current technology and practice in Robotic engineering, covering the relevant aspects of analogue and digital electronic systems and additional specialist areas according to the option modules studied.

The course is three years (BEng) or four years (MEng) in duration, plus an extra year if an industrial placement is included.

- To provide a focused education at an academic level appropriate for the target awards: MEng/BEng(Hons) Robotic Engineering as well as the exit awards
- To meet the requirements for accreditation of the programme by the Institution of Engineering and Technology (IET).
- To provide an extended, enhanced, and industrially relevant Integrated Master’s programme of study in preparation for professional practice. (MEng only)
- To produce resourceful, competent, clear-thinking professional engineers with a range of skills and experience relevant to modern industry.
- To equip graduates of the programme with knowledge, skills, experience, and understanding which underpin a professional career in engineering.

Specifically, the Robotic Engineering courses aim to provide graduates with a broad understanding of current technology and practice in electronic engineering, covering the relevant aspects of analogue and digital electronic engineering and robotic systems, plus additional specialist areas according to the option modules studied.

The discipline of robotic engineering encompasses a wide skills base and the emphasis of this course is placed on electronic system design rather than that of individual component devices. By concentrating on the principles fundamental to system level design, the course equips graduates with the knowledge, skills and confidence to thrive in the rapidly evolving field of electronic engineering, produce designs suitable for a variety of applications and the transferrable skills to find employment in a diverse set of industrial and commercial sectors.

The full program specifications, including learning outcomes, are provided as appendices.

1.2 Course Team

Names and contact details of the key members of the team.

Academic Lead for Engineering
Martin Varley
Computing & Technology Building, room CM149
☎ 01772 893272 (ext. 3272), ✉ mrvarley@uclan.ac.uk
1.3 Expertise of staff

Each member of staff that will be teaching you has had many years’ experience of the subject, this may have been gathered via research and scholarly activities or by experience in industry. Many members of staff are actively involved in research and enterprise activities which enrich the curriculum that you will be studying.

1.4 Academic Advisor

You will be assigned an Academic Advisor who will provide additional academic support during the year. They will be the first point of call for many of the questions that you might have during the year. Your Academic Advisor will be able to help you with personal development, including developing skills in self-awareness, reflection and action planning.

1.5 Administration details

Campus Admin Services provides academic administration support for students and staff and are located in the following hubs which open from 8.45am until 5.15pm Monday to Thursday and until 4.00pm on Fridays. The hub can provide general assistance and advice regarding specific processes such as extenuating circumstances, extensions and appeals.

Allen Building
Medicine
Dentistry
telephone: 01772 895566
1.6 Communication
The University expects you to use your UCLan email address and check regularly for messages from staff. If you send us email messages from other addresses they risk being filtered out as potential spam and discarded unread.

1.7 External Examiner

The External Examiners for the ERE courses are:

Dr Osman Tokhi
Department of Automatic Control and Systems Engineering, University of Sheffield

Dr Maysam Abbod
Senior Lecturer in Intelligent Systems/Course Director for EEE programmes, Department of Electronic and Computer Engineering, Brunel University

External Examiner reports for the Engineering courses can be accessed electronically via the Engineering@UCLan Blackboard pages.

2. Structure of the course
2.1 Overall structure

Figures 1 and 2 overleaf illustrate the programme structure for BEng (Hons) and MEng (Hons) Robotic Engineering courses respectively. These courses exist as part of the Modular Credit Accumulation and Transfer Scheme (MODCATS). The award requires that a student pass 360 credits total for BEng (Hons), or 480 credits for MEng (Hons).

Each full-time year of study requires you to pass modules to the value of 120 credits. Most modules on the programmes are standard sized and worth 20 credits, although there are examples of modules worth 10, 30 and 40 credits. Students wishing to follow part-time study are counselled by a member of staff and a suitable programme of study developed

Specific credit requirements for the target awards:

**MEng (Hons) Robotic Engineering** requires 480 credits with a minimum of 360 at level 5 or above, 200 at level 6 or above, 100 at level 7 and a minimum of 360 credits studied at this University.

**MEng (Hons) Robotic Engineering with Industrial Placement** requires 480 credits with a minimum of 360 at level 5 or above, 200 at level 6 or above, 100 at level 7 and a minimum of 360 credits studied at this University, plus satisfactory completion of the Placement module MP2899.

**BEng (Hons) Robotic Engineering** requires 360 credits including a minimum of 220 at level 5 or above and a minimum of 100 at level 6.

**BEng (Hons) Robotic Engineering with Industrial Placement** requires 360 credits including a minimum of 220 at level 5 or above and a minimum of 100 at level 6, plus satisfactory completion of the Placement module MP2899.
Figure 1 BEng EE Programme Structure
Figure 2 MEng EE Programme Structure
Specific credit requirements for the exit awards:

*BEng Robotic Engineering* requires 320 credits including a minimum of 180 at level 5 or above and a minimum of 40 at level 6.

*Diploma of Higher Education in Robotic Engineering* requires 240 credits including a minimum of 100 at Level 5 or above.

*Certificate of Higher Education in Robotic Engineering* requires 120 credits including a minimum of 100 at Level 4 or above.

2.2 Modules available

Each module is a self-contained block of learning with defined aims, learning outcomes and assessment. A standard module is worth 20 credits. It equates to the learning activity expected from one sixth of a full-time undergraduate year. Modules may be developed as half or double modules with credit allocated up to a maximum of 120 credits per module.

The modules that you will be studying in your course are detailed below:

<table>
<thead>
<tr>
<th>Level 4 – Stage 1</th>
<th>Module Code</th>
<th>Module Title</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER1010</td>
<td>Engineering Analysis</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ER1630</td>
<td>Engineering Applications</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ER1730</td>
<td>Electronics and Electronic Engineering Practice</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ER1731</td>
<td>Digital Electronics and Programmable Systems</td>
<td>30</td>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level 5 – Stage 2.1 (BEng), Stage 2 (MEng)</th>
<th>Module Code</th>
<th>Module Title</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL2006</td>
<td>Data Communications (O)</td>
<td>Underlying principles of digital communications networks.</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>EL2007</td>
<td>Robotic Systems (COMP)</td>
<td>Introduction to robotic systems; sensors, actuation &amp; control.</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>EL2104</td>
<td>Instrumentation &amp; Control (COMP)</td>
<td>Theoretical underpinnings of closed loop feedback control systems; analysis, simulation &amp; design. Instrumentation systems &amp; technologies.</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>EL2205</td>
<td>Electronic Systems Applications (COMP)</td>
<td>Develop &amp; apply skills in managing execution of small &amp; group project work, in context of electronic system design.</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>EL2241</td>
<td>Electronic Systems (O)</td>
<td>Circuit analysis &amp; design with emphasis on processing &amp; conversion of analogue signals</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>EL2242</td>
<td>Digital Systems (COMP)</td>
<td>Develop digital system design skills, in dedicated hardware &amp; microcontroller based systems</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>EL2311</td>
<td>Software Development 2 (COMP)</td>
<td>Application of high-level &amp; object orientated tools &amp; techniques in engineering.</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Module Code</td>
<td>Module Title</td>
<td>Description</td>
<td>Credits</td>
<td></td>
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<tr>
<td>EL3007</td>
<td>Robotics &amp; Autonomous Systems (COMP)</td>
<td>Concepts, theories &amp; technologies required to build the next generation of</td>
<td>20</td>
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<tr>
<td></td>
<td></td>
<td>Intelligent Robotic Systems.</td>
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<tr>
<td>EL3102</td>
<td>Control Systems (COMP)</td>
<td>Further develop understanding of control engineering systems. Necessary</td>
<td>20</td>
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<tr>
<td></td>
<td></td>
<td>theoretical treatment for modern industrial applications.</td>
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<tr>
<td>EL3105</td>
<td>Computer Vision (O)</td>
<td>Theoretical basis of modern computer vision. Analytical &amp; practical skills</td>
<td>20</td>
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<tr>
<td></td>
<td></td>
<td>to design build &amp; use computer vision systems.</td>
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<tr>
<td>EL3121</td>
<td>Communication Engineering (O)</td>
<td>Analysis &amp; design skills, for modern electronic communication systems.</td>
<td>20</td>
<td></td>
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<tr>
<td>EL3147</td>
<td>Digital Signal &amp; Image Processing A (O)</td>
<td>Fundamental topics in the fields of DSP &amp; DIP: acquisition, representation</td>
<td>20</td>
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<tr>
<td></td>
<td></td>
<td>&amp; analysis methods for signals &amp; images, digital filter design, image</td>
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<td></td>
<td></td>
<td>manipulation &amp; enhancement.</td>
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<tr>
<td>EL3241</td>
<td>Operational Amplifier Systems (O)</td>
<td>Analytical, experimental &amp; design skills for practical electronic systems.</td>
<td>20</td>
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<tr>
<td></td>
<td></td>
<td>Focus on the typical analogue signal processing chain &amp; support circuits</td>
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<tr>
<td>EL3243</td>
<td>Embedded Real Time Systems (O)</td>
<td>Real-time &amp; concurrent systems methodology. Theory &amp; practice for design</td>
<td>20</td>
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<tr>
<td></td>
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<td>&amp; use of embedded real-time systems.</td>
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<tr>
<td>EL3250</td>
<td>Microcontroller Systems (COMP)</td>
<td>Design &amp; implement a microcontroller system through the acquisition of</td>
<td>20</td>
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<td></td>
<td>skills in embedded software development &amp; hardware interfacing.</td>
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<tr>
<td>EL3251</td>
<td>System on Programmable Chip (O)</td>
<td>Methods for specifying, designing &amp; deploying a digital system on</td>
<td>20</td>
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<tr>
<td></td>
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<td>programmable integrated circuits (e.g. an FPGA).</td>
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<tr>
<td>EL3300</td>
<td>Machine Intelligence (O)</td>
<td>Fundamental topics in the fields of machine intelligence &amp; machine learning</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>EL3425</td>
<td>Computer Aided Instrumentation (O)</td>
<td>Specify, select, apply &amp; develop microcomputer-based systems for data</td>
<td>20</td>
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<tr>
<td></td>
<td></td>
<td>acquisition &amp; to control test equipment.</td>
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<tr>
<td>EL3995</td>
<td>Project (C)</td>
<td>Undertake an individual project, meeting an engineering requirement,</td>
<td>30</td>
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<tr>
<td></td>
<td></td>
<td>integrating relevant technical knowledge &amp; skills.</td>
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<tr>
<td>EL3996</td>
<td>Engineering Professionalism (C)</td>
<td>Appreciation of the social &amp; environmental aspects of a career in</td>
<td>10</td>
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<td></td>
<td></td>
<td>engineering.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Module Title</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL4007</td>
<td>Advanced Robotics &amp; Intelligent System Design</td>
<td>Extend existing competencies in autonomous robotic systems. Focus on</td>
<td>20</td>
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<tr>
<td></td>
<td>(COMP)</td>
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</table>
2.3 Course requirements and Progression

Discussions about your progression through the course normally take place in February each year. It is an opportunity for you to make plans for your study over the next academic year. The course team will tell you about the various modules / combinations available and you will both agree on the most appropriate (and legal) course of study for you.

The prescribed modules for the first year of the Electronics Engineering and Robotics Engineering undergraduate courses are identical, thereby enabling students to change their course after the first year. Changes would also be possible following the second year, but these would be more restricted and dependent on the particular modules studied.

If you do not feel capable of completing your chosen course of study then advice may be given on alternative routes or exit awards. However, it is not usually prudent to make decisions about this until results are known in June. Most likely you will be advised to finish all your modules to the best of your abilities and to seek advice once results are available.

If you wish to discuss your progression, or discuss a change of programme (e.g. from BEng to MEng) you should speak to your course leader or another member of the course team.

**BEng to MEng Transfer:** All students wishing to transfer from the BEng to the MEng degree are required to satisfy the course team that the course can be satisfactorily completed. The process involves an interview with a member of the course team and an average mark of 60% or above from the modules of stage 1 and stage 2.1 of the course. The entry point is determined by the module profile.

**MEng to BEng Transfer:** Transfer from MEng to BEng might be made for a number of reasons including extenuating circumstances or poor academic performance. Academic performance would be considered at an examination board. The examination board would offer counselling, during which time a student would be offered the transfer.

Students applying for transfers from other Universities are required to complete the accreditation of certificated prior learning (ACPL). The UCLan regulations do not allow APL of more than ⅔ of the modules required for an award. The latest entry point for external applicants transferring into the courses is the second year. All applicants transferring into the BEng and MEng courses must have accredited prior certified learning.
2.4 Study Time
2.4.1 Weekly timetable

Timetables are accessible online through the following link, please note check your timetable regularly

https://www.uclan.ac.uk/students/study/timetabling.php

2.4.2 Expected hours of study

20 credits is a standard module size and equals 200 notional learning hours. For a typical module you may have a 2 hour lecture, and a 1 hour tutorial/laboratory session, leaving you approximately 3 hours for self-directed study (further reading, tutorial questions, assignments, revision). This is thinking time – not coffee and biscuits time! Often you will be working in groups for practical work and you should try and arrange to meet up outside the scheduled class times. You will also need to use equipment such as computer and laboratory facilities for practical work, again sometimes outside the scheduled class times.

Explain to your students the hours of commitment required in a typical working week for both attendance and personal study, you may also need to incorporate reference to work based or placement learning requirements where relevant.

2.4.3 Attendance Requirements

You are required to attend all timetabled learning activities for each module. Notification of illness or exceptional requests for leave of absence must be made to:

Martin Varley (Academic Lead for Engineering):
☎ +44 1772 893272 | ✉ mrvrley@uclan.ac.uk

Absences due to illness must be reported to the Computing and Technology student hub:

Computing and Technology Hub:
☎ +44 1772 891994 | ✉ candthub@uclan.ac.uk

You are encouraged to seek the advice of your Personal Tutor and/or Course Leader if your personal circumstances make it difficult to meet your study obligations

3. Approaches to teaching and learning
3.1 Learning and teaching methods

The electronics and robotics engineering programmes use a number of different assessment techniques that will allow you to demonstrate your understanding of concepts and issues covered. These may be broadly categorised as ‘examination’ and ‘coursework’, but several different types are used, e.g. open-book exams, closed-book exams, laboratory reports, practical assessments in the laboratory, computer simulation and analysis, written reports etc.

Evidence of achievement, upon which assessment will be based, will be gained through a programme of practical exercises, assignments and exams. Each week you may be involved in some practical work such as a laboratory exercise, a computer-based assignment, group or individual project work etc. You will often work in groups and make group presentations but you will write up and submit work individually so that you gain credit for your contribution, not that of somebody else.
It should be emphasised that the purpose of assessment is to not only grade you, and provide information to facilitate management of the course, but also to provide feedback to you. In this way you can monitor your own progress, refine your own judgement of your abilities and regulate it accordingly.

You should keep all the returned work in a file and you may have to submit this at the end of the year for the external examiners to assess.

Individual module leaders will distribute information on the methods of assessment used, and their weighting, at the start of each module.

3.2 Study skills

The university offers a number of services to aid you in your studies, this is detailed on the following webpage:

https://www.uclan.ac.uk/students/study/study_support.php

You are also encouraged to discuss any issues that you may have with your academic advisor.

3.3 Learning resources

3.3.1 Learning Information Services (LIS)
Generic information is available in the student handbook on the services that LIS offer. In addition the School of Engineering has a specific webpage maintained by our subject librarian, this can be found at the following link:

http://www.uclan.ac.uk/students/study/library/Engineering_guide.php

3.3.2 Electronic Resources

Most of your modules will have a Blackboard eLearn site associated with it for distribution of learning material. This may include lecture notes, additional reading, web links, tutorial exercises, past exam papers and so forth.

More general information such as Programme Specifications, External Examiner’s reports and information about the Industrial Placements can be found on the Engineering blackboard pages

You can access Blackboard online through the Student Portal, please ensure that you have access to this.

3.4 Personal development planning

Personal development planning (PDP) is a reflection on learning, performance and achievement and allows you to plan for personal, educational and career development. As learning is a lifelong process the work in the PDP is not assessed. There are many similarities with work based learning and Continued Professional Development (CPD) – which is required for membership of professional societies.
4. Student Support

Within the school of engineering you will find many people will be happy to help you. For module related support, you would normally contact the module tutor in the first instance. Likewise for course enquiries your course leader will assist. Your academic advisor will also be able to provide support and direction on a number of matters. For more general enquiries the you can visit any one of the hubs. There are helpful guides available online too, just visit: http://www.uclan.ac.uk/students/

4.1 Academic Advisors

Academic Advisers provide help for students with problems and are responsible for overseeing the progress of students, their welfare, academic counselling and guidance. Your Academic Adviser is allocated when you enrol. You must see your Academic Adviser when requested and meet at least once per semester. Ensure they know you and have your current email address.

Please seek help relating to lecture material and practical classes from the module tutor in the first instance. If necessary make an appointment to seek additional support. Please remember that academic staff are busy people and may not be able to give you instant help.

Although Academic Advisers and Course Leaders will deal with most of the day-to-day questions which arise, the Head of School is always willing to see students and an appointment can be made through the Student Hub. Advice relating to administrative issues may be obtained from the Student Hub.

4.2 Students with disabilities

If you have a disability that may affect your studies, please either contact the Disability Advisory Service - disability@uclan.ac.uk - or let one of the course team know as soon as possible. With your agreement information will be passed on to the Disability Advisory Service. The University will make reasonable adjustments to accommodate your needs and to provide appropriate support for you to complete your study successfully. Where necessary, you will be asked for evidence to help identify appropriate adjustments.

The School of Engineering Disability Tutor is: Dr J. Yazdani, Email: JYazdani@uclan.ac.uk

4.3 Students’ Union One Stop Shop

The Opportunities Centre is the Union’s One Stop Shop to find employment or volunteering whilst you study. With thousands of jobs and voluntary positions advertised, agency work through the Bridge and information on over 2000 volunteer positions within the Union.

5. Assessment

5.1 Assessment Strategy

The assessment strategy for each module will be outlined within the module. The modules will be assessed either as coursework or by a combination of coursework and examinations with the weightings reflecting the course content (theory/practical). Each of the assessments that you complete will assess a series of learning outcomes defined in the modules. Note that within some modules you may complete assessments that do not carry marks, these are termed formative and are an opportunity for you to gain feedback on your progress that will help you in your summative (mark carrying) assessments.
5.2 Notification of assignments and examination arrangements
This information will be provided within the module session and on blackboard, for examinations you will be informed on your timetable.

5.3 Referencing
For most of your assignments you will be expected to do some further reading, and you are required to think and produce increasingly original work around the work of others. **Do not fall into the ‘plagiarism trap’ either deliberately or by accident.** You need to give suitable credit to those that have produced the work that you are using. You should reference any information you have refer to in your assignment using the Harvard referencing system (a guide to this system can be found on the WISER Blackboard space, accessed through the student portal). You find information on the Harvard referencing system on the internet (google ‘Harvard Referencing’).

5.4 Confidential material
In the cases where Engineering students might use confidential information you should take guidance from your module tutor on your ethical and legal responsibilities to respect confidentiality and maintain anonymity of individuals within their assignments.

5.5 Cheating, plagiarism, collusion or re-presentation
Please refer to the information included in section 6.6 of the University Student Handbook for full definitions. The University uses an online Assessment Tool called Turnitin. A pseudo-Turnitin assignment will be set up using the School space on Blackboard to allow students to check as many drafts as the system allows before their final submission to the ‘official’ Turnitin assignment. Students are required to self-submit their own assignment on Turnitin and will be given access to the Originality Reports arising from each submission. In operating Turnitin, Schools must take steps to ensure that the University’s requirement for all summative assessment to be marked anonymously is not undermined and therefore Turnitin reports should either be anonymised or considered separately from marking. Turnitin may also be used to assist with plagiarism detection and collusion, where there is suspicion about individual piece(s) of work.

6. Classification of Awards
The University publishes the principles underpinning the way in which awards and results are decided in Academic Regulations. Decisions about the overall classification of awards are made by Assessment Boards through the application of the academic and relevant course regulations.

7. Student Feedback
You can play an important part in the process of improving the quality of this course through the feedback you give.

In addition to the on-going discussion with the course team throughout the year, there are a range of mechanisms for you to feedback about your experience of teaching and learning. We aim to respond to your feedback and let you know of our plans for improvement.

The Students Union can support you in voicing your opinion, provide on-going advice and support, and encourage your involvement in all feedback opportunities. They will be
requesting that you complete the National Student Survey (during semester 2 for students in their final year of study) or the UCLan Student Survey (all other students).

The Students' Union and University work closely together to ensure that the student voice is heard in all matters of student-life. We encourage students to provide constructive feedback throughout their time at university, through course reps, surveys and any other appropriate means.

7.1 Student Staff Liaison Committee meetings (SSLCs)
Details of the Protocol for the operation of SSLCs is included in section 8.2 of the University Student Handbook.
### UNIVERSITY OF CENTRAL LANCASHIRE

**Programme Specification**

This Programme Specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided.

*Sources of information on the programme can be found in Section 17*

<table>
<thead>
<tr>
<th>1. Awarding Institution / Body</th>
<th>University of Central Lancashire</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Teaching Institution and Location of Delivery</td>
<td>University of Central Lancashire</td>
</tr>
<tr>
<td>3. University School/Centre</td>
<td>School of Engineering</td>
</tr>
<tr>
<td>4. External Accreditation</td>
<td>Institution of Engineering and Technology Accreditation to be sought following graduation of first cohort (anticipated in 2015)</td>
</tr>
<tr>
<td>5. Title of Final Award</td>
<td>MEng (Hons) Robotics Engineering MEng (Hons) Robotics Engineering with Placement</td>
</tr>
<tr>
<td>6. Modes of Attendance offered</td>
<td>Full Time; Part Time; Sandwich</td>
</tr>
<tr>
<td>7. UCAS Code</td>
<td>H671 Robotics</td>
</tr>
<tr>
<td>8. Relevant Subject Benchmarking Group(s)</td>
<td>QAA Subject Benchmarking Statement: Engineering (2015)</td>
</tr>
<tr>
<td>10. Date of production/revision of this form</td>
<td>June 2017</td>
</tr>
</tbody>
</table>
### 11. Aims of the Programme

- To provide a focused education at an academic level appropriate for:
  
  (i) The target awards:
  - MEng (Hons) Robotics Engineering
  - MEng (Hons) Robotics Engineering with Placement
  
  (ii) The exit awards:
  - BEng (Hons) Robotics Engineering
  - BEng (Hons) Robotics Engineering with Placement
  - BEng Robotics Engineering
  - BEng Robotics Engineering
  - Diploma of Higher Education.
  - Certificate of Higher Education.

- To meet the requirements for accreditation of the programme by the Institution of Engineering and Technology.

- To provide an extended, enhanced, and industrially relevant Integrated Master’s programme of study in preparation for professional practice.

- To produce resourceful, competent, clear-thinking professional engineers with a range of skills and experience relevant to modern industry.

- To equip graduates of the programme with knowledge, skills, experience, and understanding which underpin a professional career in Engineering.

Specifically, the MEng (Hons) Robotics Engineering course aims to provide graduates with a broad exposure to current technology and practice in robotic systems, covering the relevant aspects of electronic and mechanical engineering and other specialist areas according to the option modules studied.

The emphasis of the course is placed on the design of complex systems for tele-operated, semi-autonomous and autonomous robots and incorporates aspects of sensing, control theory, computational intelligence and computing. The course is designed to equip graduates with the knowledge, skills and confidence to apply themselves to the design of mechatronic systems for a variety of applications and the transferrable skills to find employment in a diverse set of industrial and commercial sectors.

An optional Industrial Placement Year (Year 3) is available, aimed at providing students with relevant and broadening industrial experience to consolidate their learning at Level 4 and Level 5, inform their academic studies at Levels 6 and 7, and enhance their subsequent early career development.
12. Learning Outcomes, Teaching, Learning and Assessment Methods

UK-SPEC, published by the Engineering Council, is the standard for accredited engineering degrees in the UK. The IET serve as an accrediting institution licensed by the Engineering Council and publish their own interpretation of UK-SPEC.

UK-SPEC presents General Learning Outcomes (GLO) categorised in a form wholly compatible with the UCLan equivalents, alongside a more detailed set of Specific Learning Outcomes (SLO). In the following sections A to D learning outcomes for the programme are grouped according to the standard UCLan format, cross-referenced (in brackets) to the corresponding SLOs from the IET interpretation of UK-SPEC.

A. Knowledge and Understanding

A1 Demonstrate knowledge and understanding of the essential concepts and physical principles relevant to the application domain of Robotics:
   (i) applicable to instrumentation and control systems, sensors and actuators, motion control and modelling, machine learning (US1, P1)
   (ii) applicable to electronic sub-systems design, associated methodologies of programming and hardware description languages (US1, P1)

A2 Demonstrate knowledge and understanding of mathematics underpinning the Robotics discipline; system analysis, computational algorithms (US2)

A3 Appreciation of the wider commercial and economic context of engineering, applicable business and management techniques, relevant social and legal constraints (S1, S2, S4)

A4 Understanding of sustainability issues and ability to produce engineering solutions which promote sustainable development (S3)

A5 Comprehensive understanding of the scientific principles behind the Robotics discipline, the state of the art and technological trends (US1m)

A6 Extensive knowledge of the equipment, materials and processes employed in the design and production of robotic and autonomous systems (P2m)

Teaching and Learning Methods

Teaching and learning methods include traditional lectures, tutorials, laboratory work, directed self-study, and project work.

Assessment methods

Written assessment methods include examinations, laboratory-based and research-based assignments, tutorial questions, log books and formal reports.

Oral assessment methods include interviews and presentations

Practical skills are assessed using assignment work, and demonstrations.

B. Subject-specific skills

B1 Ability to apply engineering principles, general physical principles and underlying engineering science to the analysis and solution of engineering problems (US3, E1)

B2 Practical application of theory to quantitative models and computer software for the simulation and design of systems within the domain of Robotics (E2, E3)

B3 Manage costs in order to produce system designs which both meet defined requirements and are economically viable (D3)

B4 Demonstrate practical competencies in laboratory and workshop skills required for the test and measurement of robotic systems and their embedded electronic sub-systems (P1, P2)

B5 Appreciation of the wider multidisciplinary context within which engineering knowledge is applicable (P3)
**B6** Understanding of the codes of practice, standards and quality management processes applicable to the domain of Robotics, adopting these where appropriate to the design process (P6, P7)

**B7** Comprehensive understanding of relevant quantitative and numerical models and their limitations, ability to apply these models in engineering analyses and critically evaluate outcomes (US3m, E2m)

### Teaching and Learning Methods

Teaching and learning methods include traditional lectures, tutorials, laboratory work, directed self-study, and project work.

### Assessment methods

Written assessment methods include examinations, laboratory-based and research-based assignments, tutorial questions, log books and formal reports.

Oral assessment methods include interviews and presentations

Practical skills are assessed using assignment work, and demonstrations.

### C. Thinking Skills

**C1** Ability to apply systems analysis techniques to the top-level design of electronic systems, and the decomposition & synthesis of sub-systems using appropriate technologies (E4)

**C2** Ability to define a problem including understanding customer needs (D1, D2)

**C3** Demonstrate creative and innovative ability in the synthesis of solutions and generation of designs for robotic systems and processes to fulfil new and emerging needs (D4, D5, D2m)

**C4** Manage design processes and evaluate outcomes (D6)

**C5** Adopt appropriate ethical and professional standards and practices, demonstrate extensive knowledge of the commercial and economic constraints affecting the exercise of engineering judgement (S5, S1m, S2m)

**C6** Ability to solve complex and unfamiliar problems through application of a comprehensive understanding of design processes to unfamiliar situations and concepts, demonstrably managing the inherent technical uncertainty (P8, E3m, D1m)

**C7** Understanding of current practice & its limitations, ability to investigate likely future developments & emerging technologies (US2m, E1m, P1m)

**C8** Comprehension of the commercial multidisciplinary engineering context, ability to apply concepts including these outside influences effectively in engineering projects (US4m, P3m)

### Teaching and Learning Methods

Teaching and learning methods include traditional lectures, tutorials, laboratory work, directed self-study, and project work.

### Assessment methods

Written assessment methods include examinations, laboratory-based and research-based assignments, tutorial questions, log books and formal reports.

Oral assessment methods include interviews and presentations

Practical skills are assessed using assignment work, and demonstrations.

### D. Other skills relevant to employability and personal development

**D1** Effective exploitation of literature, locate and critically evaluate information from a variety of sources (P4)

**D2** Communicate in an accurate, persuasive and succinct form, via a variety of media (GLO)

**D3** Independence, self-awareness, and the intrinsic motivation to develop technical proficiencies and achieve goals without external influence (GLO)

**D4** Work effectively as part of a team (GLO)
### Personal development planning, self-directed learning and reflection for future CPD (GLO)

### Teaching and Learning Methods

Teaching and learning methods include traditional lectures, seminars, directed study, demonstrations, guided practical sessions, workshops and project work.

### Assessment methods

Written assessment methods include laboratory-based and research-based assignments, independent dissertation, log books and formal reports.

Oral assessment methods include presentations, interviews and viva-voce examinations.

Teamwork skills are assessed using assignment work contributions, peer assessment and staff observation.

### 13. Programme Structures*

<table>
<thead>
<tr>
<th>Level</th>
<th>Module Code</th>
<th>Module Title</th>
<th>Credit rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 7</td>
<td></td>
<td><strong>Compulsory Modules:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>MP4580</td>
<td>The Engineer &amp; Society</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>MP4586</td>
<td>Group Project</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>MP4999</td>
<td>Individual Project</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>EL4147</td>
<td>Digital Signal &amp; Image Processing B</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>EL4250</td>
<td>Int. Digital System Design</td>
<td>20</td>
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<td></td>
<td><strong>Option Modules:</strong></td>
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<tr>
<td></td>
<td></td>
<td>Compulsory Modules:</td>
<td></td>
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<td></td>
<td></td>
<td>Robotics &amp; Autonomous Systems</td>
<td>20</td>
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<td>Control Systems</td>
<td>20</td>
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<td>Microcontroller Systems</td>
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<td>Project</td>
<td>30</td>
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<td></td>
<td></td>
<td>Engineering Professionalism</td>
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<td></td>
<td></td>
<td>Option Modules:</td>
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<td></td>
<td>Computer Vision</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Digital Signal &amp; Image Processing A</td>
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<tr>
<td></td>
<td></td>
<td>Operational Amplifier Systems</td>
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<td></td>
<td>Embedded real-time systems</td>
<td>20</td>
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<td></td>
<td></td>
<td>System on Programmable Chip</td>
<td>20</td>
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<td></td>
<td></td>
<td>Computer Aided Instrumentation</td>
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<td></td>
<td></td>
<td>Machine Intelligence</td>
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<td></td>
<td><strong>Industrial placement:</strong></td>
<td>120</td>
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<tr>
<td></td>
<td></td>
<td>(required for sandwich award)</td>
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<tr>
<td></td>
<td></td>
<td>Industrial Placement</td>
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<td></td>
<td></td>
<td>(6 modules)</td>
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</tbody>
</table>

**MEng (Hons) Robotics Engineering**

Requires 480 credits with 120 at Stage 2 and 240 at Stage 3, including a minimum of 460 at Level 4 or above, 360 at Level 5 or above, 200 at Level 6 or above and 120 at Level 7 or above. The Project modules MP4586 & MP4999 cannot be condoned.

**BEng (Hons) Robotics Engineering**

Requires 360 credits including a minimum of 220 at Level 5 or above and 100 at Level 6, including the Project. The Project module EL3995 cannot be condoned.

**BEng Robotics Engineering**

Requires 320 credits with a minimum of 180 at Stage 2, including Level 5 or above, and 40 at Level 6. The Project module EL3995 cannot be condoned.

Satisfactory completion of the Industrial Placement leads to a degree 'with Industrial Placement'.

CertHE and DipHE are not available as sandwich awards.
15. Personal Development Planning

Various PDP-related issues are presented and discussed throughout the course, including specific sessions on aspects such as time management, preparation for assessments, review and reflection, postgraduate opportunities, etc. PDP guidance specifically for these ECE courses is provided, with relevant issues being discussed in several of the modules, most notably the practical-based modules ER1630, ER1730, EL2205 and project modules at Levels 6 and 7.

The use of an effective Personal Tutor system, with a named lecturer responsible for each of the Year 1 and Year 2, is helpful in this respect. Issues related to the Industrial Placement year (year 3) are discussed in sessions (MP2899), held during the second year of study, and during placement visits for students on Industrial Placement. Final Year students’ Personal Tutor is their individual Project Supervisor, who they will meet regularly throughout the year. There is also a named Final Year Tutor who deals with issues specific to the final year.

The University also has central PDP guidance and support, and reference to this is made in the Student Handbook.

16. Admissions criteria *
(including agreed tariffs for entry with advanced standing)
*Correct as at date of approval. For latest information, please consult the University’s website.

The University's minimum standard entry requirement for degree-level study is a 12-unit profile, made up from one of the following:
- At least two A2-level subjects
- One A2-level subject plus one single award Advanced VCE
- One double or two single award(s) Advanced VCE

Other acceptable qualifications include:
- Scottish Certificate of Education Higher Grade
- Irish Leaving Certificate Higher Grade
- International Baccalaureate
- BTEC National Certificate/Diploma
- Access to HE Diploma

Applications should be aware that the points or grade requirements for many courses must be met by A2 level qualifications. Please note, in some cases A/S points will not be taken into consideration.

Applications from individuals with non-standard qualifications or relevant work / life experience who can demonstrate the ability to cope with and benefit from degree-level studies are welcome. If you have not
studied recently you may need to undertake a Foundation Entry programme first. For details of those offered by the University please contact Enquiry Management on 01772 892400.

Specific entry requirements for MEng (Hons) Robotics Engineering are 280 points including Mathematics and Electronics or Physics at A2 level, BTEC National Diploma in Engineering or Science with grade DMM; plus at least five GCSEs at grade C or above including Maths and English. Other equivalent qualifications, including Kite Marked Access Courses, are accepted.

17. Key sources of information about the programme

<table>
<thead>
<tr>
<th>School and course webpages:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.uclan.ac.uk/schools/engineering/index.php">http://www.uclan.ac.uk/schools/engineering/index.php</a></td>
<td></td>
</tr>
<tr>
<td><a href="http://www.uclan.ac.uk/information/courses/meng_robotics.php">http://www.uclan.ac.uk/information/courses/meng_robotics.php</a></td>
<td></td>
</tr>
</tbody>
</table>

- **Factsheet for Robotics Engineering courses**
- **UCAS information**
- **External Influences:**
  - [http://www.engc.org.uk/professional-qualifications/standards/uk-spec](http://www.engc.org.uk/professional-qualifications/standards/uk-spec)
### 18. Curriculum Skills Map (Part A: levels 6 & 7)

Please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed

<table>
<thead>
<tr>
<th>Level</th>
<th>Module Code</th>
<th>Module Title</th>
<th>Core (C), Compulsory (COMP) or Option (O)</th>
<th>Programme Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
<td>Knowledge &amp; Understanding</td>
</tr>
<tr>
<td>Level 7</td>
<td>EL4250</td>
<td>Int. Digital Sys. Design</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EL4007</td>
<td>Adv. Rob’s &amp; Int. Sys. Des.</td>
<td>COMP</td>
<td></td>
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<tr>
<td></td>
<td>EL4147</td>
<td>DSIP B</td>
<td>O</td>
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<tr>
<td></td>
<td>MP4580</td>
<td>The Engineer &amp; Society</td>
<td>COMP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MP4586</td>
<td>Group Project</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MP4999</td>
<td>Individual Project</td>
<td>C</td>
<td>X</td>
</tr>
<tr>
<td>Level 6</td>
<td>EL3007</td>
<td>Robotics &amp; Auton. Sys.</td>
<td>COMP</td>
<td></td>
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<tr>
<td></td>
<td>EL3102</td>
<td>Control Systems</td>
<td>COMP</td>
<td>X</td>
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<tr>
<td></td>
<td>EL3250</td>
<td>Microcontroller Sys.</td>
<td>COMP</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>EL3251</td>
<td>Sys. on Prog. Chip</td>
<td>O</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>EL3995</td>
<td>Project</td>
<td>C</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>EL3996</td>
<td>Engineering Prof.</td>
<td>C</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>EL3300</td>
<td>Machine Intelligence</td>
<td>O</td>
<td>X</td>
</tr>
</tbody>
</table>

**Note:** The Industrial Placement module MP2899 is taken by Sandwich students and leads to an award (Honours Degree or Degree) ‘with Industrial Placement’. The specific Learning Outcomes unique to this module, and addressed within it, are:

1. Apply the basic knowledge and skills acquired during academic study at Level 4 and Level 5 in a professional engineering environment
2. Contribute independently and confidentially to team and individual engineering projects
3. Describe the position of engineering as a dimension of business activity
4. Demonstrate a mature and professional attitude to work
# MEng (Hons) Robotics Engineering Programme Specification

## 18. Curriculum Skills Map (Part B: levels 4 & 5)

Please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed

<table>
<thead>
<tr>
<th>Level</th>
<th>Module Code</th>
<th>Module Title</th>
<th>Core (C), Compulsory (COMP) or Option (O)</th>
<th>Programme Learning Outcomes</th>
<th>Other skills relevant to employment and personal development</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td>Knowledge &amp; Understanding</td>
<td>Subject-specific skills</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>A 1</td>
<td>A 2</td>
</tr>
<tr>
<td>LEVEL 5</td>
<td>EL2006</td>
<td>Data Communications</td>
<td>O</td>
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<td></td>
<td>EL2007</td>
<td>Robotic Systems</td>
<td>COMP</td>
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<tr>
<td></td>
<td>EL2104</td>
<td>Instrumentation &amp; Control</td>
<td>COMP</td>
<td></td>
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<tr>
<td></td>
<td>EL2205</td>
<td>Electronic Systems Application</td>
<td>COMP</td>
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<td>EL2241</td>
<td>Electronic Systems</td>
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<td></td>
<td>EL2242</td>
<td>Digital Systems</td>
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<td>EL2311</td>
<td>Software Development 2</td>
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<td>EL2011/3</td>
<td>SIM</td>
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<td>LEVEL 4</td>
<td>ER1010</td>
<td>Engineering Analysis</td>
<td>COMP (NEW)</td>
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<tr>
<td></td>
<td>ER1630</td>
<td>Engineering Applications</td>
<td>COMP (NEW)</td>
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<tr>
<td></td>
<td>ER1730</td>
<td>Electronics and Electronic Engineering Practice</td>
<td>COMP (NEW)</td>
<td></td>
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<tr>
<td></td>
<td>ER1731</td>
<td>Digital Electronics and Programmable Systems</td>
<td>COMP (NEW)</td>
<td></td>
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</tr>
</tbody>
</table>

**Note:** Mapping to other external frameworks, e.g. professional/statutory bodies, will be included within Student Course Course Handbooks
19. **LEARNING OUTCOMES FOR EXIT AWARDS:**

For each exit award available, list learning outcomes relating to the knowledge and understanding, subject specific skills, thinking, other skills relevant to employability and personal development that a typical student might be expected to gain as a result of successfully completing each level of a course of study.

**Learning outcomes for the award of: CertHE Electronic Engineering**

Demonstrate knowledge and understanding of the essential concepts and physical principles of the Electronic Engineering discipline:

(i) applicable to electronic component and circuit design; instrumentation and measurement; signal processing, conditioning and conversion

(ii) applicable to digital and programmable system design, associated methodologies of programming and hardware description languages

Demonstrate knowledge and understanding of mathematics underpinning the Electronic Engineering discipline; system analysis, computational algorithms

Ability to apply engineering principles, general physical principles and underlying engineering science to the analysis and solution of engineering problems

Practical application of theory to quantitative models and computer software for the simulation, design and verification of electronic systems and devices

Manage costs in order to produce system designs which both meet defined requirements and are economically viable

Demonstrate practical competencies in laboratory and workshop skills required for the test, measurement and fabrication of electronic systems and devices

Ability to define a problem including understanding customer needs

Manage design processes and evaluate outcomes

Effective exploitation of literature, locate and critically evaluate information from a variety of sources

Communicate in an accurate, persuasive and succinct form, via a variety of media

Personal development planning, self-directed learning and reflection for future CPD

**Learning outcomes for the award of: DipHE Electronic Engineering**

Demonstrate knowledge and understanding of the essential concepts and physical principles of the Electronic Engineering discipline:

(i) applicable to electronic component and circuit design; instrumentation and measurement; signal processing, conditioning and conversion

(ii) applicable to digital and programmable system design, associated methodologies of programming and hardware description languages

Demonstrate knowledge and understanding of mathematics underpinning the Electronic Engineering discipline; system analysis, computational algorithms

Appreciation of the wider commercial and economic context of engineering, applicable business and management techniques, relevant social and legal constraints

Ability to apply engineering principles, general physical principles and underlying engineering science to the analysis and solution of engineering problems

Practical application of theory to quantitative models and computer software for the simulation, design and verification of electronic systems and devices

Manage costs in order to produce system designs which both meet defined requirements and are economically viable

Demonstrate practical competencies in laboratory and workshop skills required for the test, measurement and fabrication of electronic systems and devices

Ability to apply systems analysis techniques to the top-level design of electronic systems, and the decomposition and synthesis of sub-systems using appropriate technologies

Ability to define a problem including understanding customer needs

Manage design processes and evaluate outcomes
Effective exploitation of literature, locate and critically evaluate information from a variety of sources
Communicate in an accurate, persuasive and succinct form, via a variety of media
Work effectively as part of a team
Personal development planning, self-directed learning and reflection for future CPD
Learning outcomes for the award of: BEng Robotics Engineering

Demonstrate knowledge and understanding of the essential concepts and physical principles relevant to the application domain of Robotics:

(i) applicable to instrumentation and control systems, sensors and actuators, motion control and modelling, machine learning

(ii) applicable to electronic sub-systems design, associated methodologies of programming and hardware description languages

Demonstrate knowledge and understanding of mathematics underpinning the Robotics discipline; system analysis, computational algorithms

Appreciation of the wider commercial and economic context of engineering, applicable business and management techniques, relevant social and legal constraints

Ability to apply engineering principles, general physical principles and underlying engineering science to the analysis and solution of engineering problems

Practical application of theory to quantitative models and computer software for the simulation and design of systems within the domain of Robotics

Manage costs in order to produce system designs which both meet defined requirements and are economically viable

Demonstrate practical competencies in laboratory and workshop skills required for the test and measurement of robotic systems and their embedded electronic devices

Ability to apply systems analysis techniques to the top-level design of robotic systems, and the decomposition and synthesis of sub-systems using appropriate technologies

Ability to define a problem including understanding customer needs

The ability to apply creativity in establishing innovative solutions and to ensure their fitness for purpose

Manage design processes and evaluate outcomes

Effective exploitation of literature, locate and critically evaluate information from a variety of sources

Communicate in an accurate, persuasive and succinct form, via a variety of media

Independence, self-awareness, and the intrinsic motivation to develop technical proficiencies and achieve goals without external influence

Work effectively as part of a team

Personal development planning, self-directed learning and reflection for future CPD

Learning outcomes for the award of: BEng (Hons) Robotics Engineering

Demonstrate knowledge and understanding of the essential concepts and physical principles relevant to the application domain of Robotics:

(i) applicable to instrumentation and control systems, sensors and actuators, motion control and modelling, machine learning

(ii) applicable to electronic sub-systems design, associated methodologies of programming and hardware description languages

Demonstrate knowledge and understanding of mathematics underpinning the Robotics discipline; system analysis, computational algorithms

Appreciation of the wider commercial and economic context of engineering, applicable business and management techniques, relevant social and legal constraints

Understanding of sustainability issues and ability to produce engineering solutions which promote sustainable development

Ability to apply engineering principles, general physical principles and underlying engineering science to the analysis and solution of engineering problems

Practical application of theory to quantitative models and computer software for the simulation and design of systems within the domain of Robotics

Manage costs in order to produce system designs which both meet defined requirements and are economically viable
Demonstrate practical competencies in laboratory and workshop skills required for the test and measurement of robotic systems and their embedded electronic devices
Appreciation of the wider multidisciplinary context within which engineering knowledge is applicable
Understanding of the codes of practice, standards and quality management processes applicable to the domain of Robotics, adopting these where appropriate to the design process
Ability to apply systems analysis techniques to the top-level design of robotic systems, and the decomposition and synthesis of sub-systems using appropriate technologies
Ability to define a problem including understanding customer needs
The ability to apply creativity in establishing innovative solutions and to ensure their fitness for purpose
Manage design processes and evaluate outcomes
Exercise of engineering judgement accounting for professional & ethical considerations
Ability to analyse unfamiliar problems, apply unfamiliar concepts and manage the inherent technical uncertainty
Effective exploitation of literature, locate and critically evaluate information from a variety of sources
Communicate in an accurate, persuasive and succinct form, via a variety of media
Independence, self-awareness, and the intrinsic motivation to develop technical proficiencies and achieve goals without external influence
Work effectively as part of a team
Personal development planning, self-directed learning and reflection for future CPD
This Programme Specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided.

Sources of information on the programme can be found in Section 17

<table>
<thead>
<tr>
<th>13. Awarding Institution / Body</th>
<th>University of Central Lancashire</th>
</tr>
</thead>
<tbody>
<tr>
<td>14. Teaching Institution and Location of Delivery</td>
<td>University of Central Lancashire</td>
</tr>
<tr>
<td>15. University School/Centre</td>
<td>School of Engineering</td>
</tr>
<tr>
<td>16. External Accreditation</td>
<td>Institution of Engineering and Technology (to 2017 intake)</td>
</tr>
<tr>
<td>17. Title of Final Award</td>
<td>BEng (Hons) Robotics Engineering BEng (Hons) Robotics Engineering with Placement</td>
</tr>
<tr>
<td>18. Modes of Attendance offered</td>
<td>Full Time; Part Time; Sandwich</td>
</tr>
<tr>
<td>19. UCAS Code</td>
<td>HH36 Robotics</td>
</tr>
<tr>
<td>20. Relevant Subject Benchmarking Group(s)</td>
<td>QAA Subject Benchmarking Statement: Engineering (2015)</td>
</tr>
<tr>
<td>22. Date of production/revision of this form</td>
<td>February 2017</td>
</tr>
</tbody>
</table>
## 23. Aims of the Programme

- To provide a focused education at an academic level appropriate for:
  - (i) The target awards:
    - BEng (Hons) Robotics Engineering
    - BEng (Hons) Robotics Engineering with Placement
  - (ii) The exit awards:
    - BEng Robotics Engineering
    - BEng Robotics Engineering with Placement
    - Diploma of Higher Education
    - Certificate of Higher Education

- To meet the requirements for accreditation of the programme by the Institution of Engineering and Technology.

- To produce resourceful, competent, clear-thinking professional engineers with a range of skills and experience relevant to today's engineering industry.

- To equip graduates of the programme with knowledge, skills, experience, and understanding which underpin a professional career in engineering.

Specifically, the BEng (Hons) Robotics Engineering course aims to provide graduates with a broad exposure to current technology and practice in robotic systems, covering the relevant aspects of electronic and mechanical engineering, and other specialist areas according to the option modules studied.

The emphasis of the course is placed on the design of complex systems for tele-operated, semi-autonomous and autonomous robots and incorporates aspects of sensing, control theory, computational intelligence and computing. The course is designed to equip graduates with the knowledge, skills and confidence to apply themselves to the design of mechatronic systems for a variety of applications and the transferrable skills to find employment in a diverse set of industrial and commercial sectors.

An optional Industrial Placement Year (Year 3) is available, aimed at providing students with relevant and broadening industrial experience to consolidate their learning at Level 4 and Level 5, inform their academic studies at Level 6 and enhance their subsequent early career development.
24. Learning Outcomes, Teaching, Learning and Assessment Methods

UK-SPEC, published by the Engineering Council, is the standard for accredited engineering degrees in the UK. The IET serve as an accrediting institution licensed by the Engineering Council and publish their own interpretation of UK-SPEC.

UK-SPEC presents General Learning Outcomes (GLO) categorised in a form wholly compatible with the UCLan equivalents, alongside a more detailed set of Specific Learning Outcomes (SLO). In the following sections A to D learning outcomes for the programme are grouped according to the standard UCLan format, cross-referenced (in brackets) to the corresponding SLOs from the IET interpretation of UK-SPEC.

A. Knowledge and Understanding

A1 Demonstrate knowledge and understanding of the essential concepts and physical principles relevant to the application domain of Robotics:
   (iii) applicable to instrumentation and control systems, sensors and actuators, motion control and modelling, machine learning (US1, P1)
   (iv) applicable to electronic sub-systems design, associated methodologies of programming and hardware description languages (US1, P1)

A2 Demonstrate knowledge and understanding of mathematics underpinning the Robotics discipline; system analysis, computational algorithms (US2)

A3 Appreciation of the wider commercial and economic context of engineering, applicable business and management techniques, relevant social and legal constraints (S1, S2, S4)

A4 Understanding of sustainability issues and ability to produce engineering solutions which promote sustainable development (S3)

Teaching and Learning Methods

Teaching and learning methods include traditional lectures, tutorials, laboratory work, directed self-study, and project work.

Assessment methods

Written assessment methods include examinations, laboratory-based and research-based assignments, tutorial questions, log books and formal reports.

Oral assessment methods include interviews and presentations

Practical skills are assessed using assignment work, and demonstrations.

B. Subject-specific skills

B1 Ability to apply engineering principles, general physical principles and underlying engineering science to the analysis and solution of engineering problems (US3, E1)

B2 Practical application of theory to quantitative models and computer software for the simulation and design of systems within the domain of Robotics (E2, E3)

B3 Manage costs in order to produce system designs which both meet defined requirements and are economically viable (D3)

B4 Demonstrate practical competencies in laboratory and workshop skills required for the test and measurement of robotic systems and their embedded electronic devices. (P1, P2)

B5 Appreciation of the wider multidisciplinary context within which engineering knowledge is applicable (P3)

B6 Understanding of the codes of practice, standards and quality management processes applicable to the domain of Robotics, adopting these where appropriate to the design process (P6, P7)

Teaching and Learning Methods
Teaching and learning methods include traditional lectures, tutorials, laboratory work, directed self-study, and project work.

Assessment methods

Written assessment methods include examinations, laboratory-based and research-based assignments, tutorial questions, log books and formal reports.

Oral assessment methods include interviews and presentations

Practical skills are assessed using assignment work, and demonstrations.

C. Thinking Skills

C1 Ability to apply systems analysis techniques to the top-level design of robotic systems, and the decomposition and synthesis of sub-systems using appropriate technologies (E4)
C2 Ability to define a problem including understanding customer needs (D1, D2)
C3 The ability to apply creativity in establishing innovative solutions and to ensure their fitness for purpose (D4, D5)
C4 Manage design processes and evaluate outcomes (D6)
C5 Exercise of engineering judgement accounting for professional & ethical considerations (S5)
C6 Ability to analyse unfamiliar problems, apply unfamiliar concepts and manage the inherent technical uncertainty (P8)

Teaching and Learning Methods

Teaching and learning methods include traditional lectures, tutorials, laboratory work, directed self-study, and project work.

Assessment methods

Written assessment methods include examinations, laboratory-based and research-based assignments, tutorial questions, log books and formal reports.

Oral assessment methods include interviews and presentations

Practical skills are assessed using assignment work, and demonstrations.

D. Other skills relevant to employability and personal development

D1 Effective exploitation of literature, locate and critically evaluate information from a variety of sources (P4)
D2 Communicate in an accurate, persuasive and succinct form, via a variety of media (GLO)
D3 Independence, self-awareness, and the intrinsic motivation to develop technical proficiencies and achieve goals without external influence (GLO)
D4 Work effectively as part of a team (GLO)
D5 Personal development planning, self-directed learning and reflection for future CPD (GLO)

Teaching and Learning Methods

Teaching and learning methods include traditional lectures, seminars, directed study, demonstrations, guided practical sessions, workshops and project work.

Assessment methods

Written assessment methods include laboratory-based and research-based assignments, independent dissertation, log books and formal reports.

Oral assessment methods include presentations, interviews and viva-voce examinations.

Teamwork skills are assessed using assignment work contributions, peer assessment and staff observation.
13. Programme Structures*
All awards conform to standard University module minimum requirements or greater. For full-time students, Stage 1 of the course normally includes 6 modules and corresponds to Year 1, whilst Stage 2 normally includes 12 modules and corresponds to Year 2 and the Final Year (plus the optional Industrial Placement Year if taken) and the Final Year.

Part-time students may study the equivalent of a full-time year over two or more years.

One module of elective is allowed at Stage 2, or alternatively students may choose to study an extra module from the options in place of the elective.

Each Stage of the course includes a number of compulsory modules which students must study in order to be eligible for the particular award. Students choose further modules, according to their interests and aspirations, from the optional modules. Some modules specify pre-requisites and/or co-requisites: full details are available in the Module Descriptors and the Student Handbook.

<table>
<thead>
<tr>
<th>Level</th>
<th>Module Code</th>
<th>Module Title</th>
<th>Credit rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 6</td>
<td>EL3007</td>
<td>Robotics &amp; Autonomous Systems</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>EL3102</td>
<td>Control Systems</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>EL3250</td>
<td>Microcontroller Systems</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>EL3995</td>
<td>Project</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>EL3996</td>
<td>Engineering Professionalism</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>EL3105</td>
<td>Computer Vision</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>EL3121</td>
<td>Communication Engineering</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>EL3147</td>
<td>Digital Signal &amp; Image Processing A</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>EL3241</td>
<td>Operational Amplifier Systems</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>EL3243</td>
<td>Embedded Real-Time Systems</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>EL3251</td>
<td>System on Programmable Chip</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>EL3300</td>
<td>Machine Intelligence</td>
<td>20</td>
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<tr>
<td></td>
<td>EL3425</td>
<td>Computer Aided Instrumentation</td>
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</tr>
<tr>
<td>Level 5</td>
<td>MP2899</td>
<td>Industrial placement: (required for sandwich award)</td>
<td>120</td>
</tr>
</tbody>
</table>

14. Awards and Credits*

<table>
<thead>
<tr>
<th>Award</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEng (Hons) Robotics Engineering</td>
<td>Requires 360 credits including a minimum of 220 at Level 5 or above, and a minimum of 100 at Level 6, including the Project. The Project module cannot be condoned.</td>
</tr>
<tr>
<td>BEng Robotics Engineering</td>
<td>Requires a minimum of 320 credits with 180 at Stage 2, including Level 5 or above, and a minimum of 40 at Level 6. The Project module cannot be condoned.</td>
</tr>
<tr>
<td>Satisfactory completion of the Industrial Placement leads to a degree ‘with Industrial Placement’. CertHE and DipHE are not available as sandwich awards.</td>
<td></td>
</tr>
</tbody>
</table>
### Level 5

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Module Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL2007</td>
<td>Robotic Systems</td>
<td>20</td>
</tr>
<tr>
<td>EL2010</td>
<td>Instrumentation &amp; Control</td>
<td>20</td>
</tr>
<tr>
<td>EL2205</td>
<td>Electronic System Applications</td>
<td>20</td>
</tr>
<tr>
<td>EL2242</td>
<td>Digital Systems</td>
<td>20</td>
</tr>
<tr>
<td>EL2311</td>
<td>Software Development 2</td>
<td>20</td>
</tr>
<tr>
<td>EL2006</td>
<td>Data Communications</td>
<td>20</td>
</tr>
<tr>
<td>EL2241</td>
<td>Electronic Systems</td>
<td>20</td>
</tr>
<tr>
<td>EL2011</td>
<td>Student Initiated Module</td>
<td>10</td>
</tr>
<tr>
<td>EL2013</td>
<td>Student Initiated Module</td>
<td>20</td>
</tr>
<tr>
<td>Elective</td>
<td>(level 1 or above)</td>
<td>20</td>
</tr>
</tbody>
</table>

#### Compulsory Modules:
- Robotic Systems
- Instrumentation & Control
- Electronic System Applications
- Digital Systems
- Software Development 2

#### Option Modules:
- Data Communications
- Electronic Systems
- Student Initiated Module
- Student Initiated Module (level 1 or above)

### Diploma of Higher Education in Electronic Engineering
Requires 240 credits including a minimum of 220 credits at Level 4 or above and at least 100 credits at level 5 or above.

### Level 4

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Module Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER1010</td>
<td>Engineering Analysis</td>
<td>30</td>
</tr>
<tr>
<td>ER1630</td>
<td>Engineering Applications</td>
<td>30</td>
</tr>
<tr>
<td>ER1730</td>
<td>Electronics and Electronic Engineering Practice</td>
<td>30</td>
</tr>
<tr>
<td>ER1731</td>
<td>Digital Electronics and Programmable Systems</td>
<td>30</td>
</tr>
</tbody>
</table>

#### Compulsory Modules:
- Engineering Analysis
- Engineering Applications
- Electronics and Electronic Engineering Practice
- Digital Electronics and Programmable Systems

#### Certificate of Higher Education in Electronic Engineering
Requires 120 credits at Level 4 or above.

### 15. Personal Development Planning

Various PDP-related issues are presented and discussed throughout the course, including specific sessions on aspects such as time management, preparation for assessments, review and reflection, postgraduate opportunities, etc. PDP guidance specifically for these ECE courses is provided, with relevant issues being discussed in several of the modules, most notably the practical-based modules ER1630, ER1730, EL2205 and the final year project module. The use of an effective Personal Tutor system, with a named lecturer responsible for each of the Year 1 and Year 2, is helpful in this respect. Issues related to the Industrial Placement year (Year 3) are discussed in sessions (MP2899), held during the second year of study, and during placement visits for students on Industrial Placement. Final Year students’ Personal Tutor is their individual Project Supervisor, who they will meet regularly throughout the year. There is also a named Final Year Tutor who deals with issues specific to the final year.

The University also has central PDP guidance and support, and reference to this is made in the Student Handbook.

### 16. Admissions criteria *

*Correct as at date of approval. For latest information, please consult the University's website.

The University's minimum standard entry requirement for degree-level study is a 12-unit profile, made up from one of the following:

- At least two A2-level subjects
- One A2-level subject plus one single award Advanced VCE
- One double or two single award(s) Advanced VCE

Other acceptable qualifications include:

- Scottish Certificate of Education Higher Grade
- Irish Leaving Certificate Higher Grade
- International Baccalaureate
- BTEC National Certificate/Diploma
- Access to HE Diploma

Applicants should be aware that the points or grade requirements for many courses must be met by A2 level qualifications. Please note, in some cases A/S points will not be taken into consideration.
Applications from individuals with non-standard qualifications or relevant work / life experience who can demonstrate the ability to cope with and benefit from degree-level studies are welcome. If you have not studied recently you may need to undertake a Foundation Entry programme first. For details of those offered by the University please contact Enquiry Management on 01772 892400.

Specific entry requirements for BEng (Hons) Robotics Engineering are 240 points including Mathematics or Science or Technology at A2 level, BTEC National Diploma in Engineering or Science with grade MMM; plus at least five GCSEs at grade C or above including Maths and English. Other equivalent qualifications, including Kite Marked Access Courses, are accepted.

17. Key sources of information about the programme

<table>
<thead>
<tr>
<th>School and course webpages:</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="http://www.uclan.ac.uk/schools/engineering/index.php">http://www.uclan.ac.uk/schools/engineering/index.php</a></td>
</tr>
<tr>
<td><a href="http://www.uclan.ac.uk/information/courses/beng_robotics.php">http://www.uclan.ac.uk/information/courses/beng_robotics.php</a></td>
</tr>
</tbody>
</table>

| - Factsheet for Robotics Engineering courses |
| - UCAS information |
| - External Influences: |
| http://www.theiet.org/academics/accreditation/policy-guidance/synopsis_handbook.cfm |
| http://www.engc.org.uk/professional-qualifications/standards/uk-spec |
### 18. Curriculum Skills Map (Part A: Level 6)

Please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed

<table>
<thead>
<tr>
<th>Level</th>
<th>Module Code</th>
<th>Module Title</th>
<th>Core (C), Compulsory (COMP) or Option (O)</th>
<th>Programme Learning Outcomes</th>
<th>Other skills relevant to employment and personal development</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>A1</td>
<td>A2</td>
<td>A3</td>
</tr>
<tr>
<td>LEVEL 6</td>
<td>EL3007</td>
<td>Robotics &amp; Autonomous Systems</td>
<td>COMP</td>
<td>X</td>
<td>X</td>
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<tr>
<td>LEVEL 6</td>
<td>EL3107</td>
<td>Control Systems</td>
<td>COMP</td>
<td>X</td>
<td>X</td>
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<td>LEVEL 6</td>
<td>EL3105</td>
<td>Computer Vision</td>
<td>O</td>
<td>X</td>
<td>X</td>
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<tr>
<td>LEVEL 6</td>
<td>EL3121</td>
<td>Communication Engineering</td>
<td>O</td>
<td>X</td>
<td>X</td>
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<tr>
<td>LEVEL 6</td>
<td>EL3147</td>
<td>Digital Signal &amp; Image Processing A</td>
<td>O</td>
<td>X</td>
<td>X</td>
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<tr>
<td>LEVEL 6</td>
<td>EL3241</td>
<td>Operational Amplifier Systems</td>
<td>O</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>LEVEL 6</td>
<td>EL3243</td>
<td>Embedded Real-Time Systems</td>
<td>O</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>LEVEL 6</td>
<td>EL3250</td>
<td>Microcontroller Systems</td>
<td>COMP</td>
<td>X</td>
<td>X</td>
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<td>LEVEL 6</td>
<td>EL3251</td>
<td>System on Programmable Chip</td>
<td>O</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>LEVEL 6</td>
<td>EL3300</td>
<td>Machine Intelligence</td>
<td>O</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>LEVEL 6</td>
<td>EL3425</td>
<td>Computer Aided Instrumentation</td>
<td>O</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>LEVEL 6</td>
<td>EL3995</td>
<td>Project</td>
<td>C</td>
<td>X</td>
<td>X</td>
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<td>LEVEL 6</td>
<td>EL3996</td>
<td>Engineering Professionalism</td>
<td>C</td>
<td>X</td>
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</tr>
</tbody>
</table>

**NOTE:** The Industrial Placement module MP2899 is taken by Sandwich students and leads to an award (Honours Degree or Degree) ‘with Industrial Placement’. The specific Learning Outcomes unique to this module, and addressed within it, are:

1. Apply the basic knowledge and skills acquired during academic study at Level 4 and Level 5 in a professional engineering environment
2. Contribute independently and confidentially to team and individual engineering projects
3. Describe the position of engineering as a dimension of business activity
4. Demonstrate a mature and professional attitude to work
## 18. Curriculum Skills Map (Part B: Levels 4 & 5)

Please tick in the relevant boxes where individual Programme Learning Outcomes are being assessed

<table>
<thead>
<tr>
<th>Level</th>
<th>Module Code</th>
<th>Module Title</th>
<th>Core (C), Compulsory (COMP) or Option (O)</th>
<th>Programme Learning Outcomes</th>
</tr>
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<tbody>
<tr>
<td></td>
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<td></td>
<td>Knowledge &amp; Understanding</td>
<td>Subject-specific skills</td>
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<tr>
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<td>A2</td>
</tr>
<tr>
<td><strong>LEVEL 5</strong></td>
<td></td>
<td></td>
<td>A1</td>
<td>A2</td>
</tr>
<tr>
<td>EL2006</td>
<td>Data Communications</td>
<td>O</td>
<td>✗</td>
<td>✗</td>
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<tr>
<td>EL2007</td>
<td>Robotic Systems</td>
<td>COMP</td>
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<td>EL2104</td>
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<td>COMP</td>
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<tr>
<td>EL2205</td>
<td>Electronic Systems Applications</td>
<td>COMP</td>
<td>✗</td>
<td>✗</td>
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<td>EL2241</td>
<td>Electronic Systems</td>
<td>O</td>
<td>✗</td>
<td>✗</td>
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<tr>
<td>EL2242</td>
<td>Digital Systems</td>
<td>COMP</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>EL2311</td>
<td>Software Development 2</td>
<td>COMP</td>
<td>✗</td>
<td>✗</td>
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<td>EL2011/3</td>
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<td>O</td>
<td>✗</td>
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<td><strong>LEVEL 4</strong></td>
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<td>A2</td>
</tr>
<tr>
<td>ER1010</td>
<td>Engineering Analysis</td>
<td>COMP (NEW)</td>
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<td>✗</td>
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<tr>
<td>ER1630</td>
<td>Engineering Applications</td>
<td>COMP (NEW)</td>
<td>✗</td>
<td>✗</td>
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<tr>
<td>ER1730</td>
<td>Electronics and Electronic Engineering Practice</td>
<td>COMP (NEW)</td>
<td>✗</td>
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<tr>
<td>ER1731</td>
<td>Digital Electronics and Programmable Systems</td>
<td>COMP (NEW)</td>
<td>✗</td>
<td>✗</td>
</tr>
</tbody>
</table>

**Note:** Mapping to other external frameworks, e.g. professional/statutory bodies, will be included within Student Course Handbooks.
19. LEARNING OUTCOMES FOR EXIT AWARDS:

For each exit award available, list learning outcomes relating to the knowledge and understanding, subject specific skills, thinking, other skills relevant to employability and personal development that a typical student might be expected to gain as a result of successfully completing each level of a course of study.

Learning outcomes for the award of: CertHE Electronic Engineering

Demonstrate knowledge and understanding of the essential concepts and physical principles of the Electronic Engineering discipline:
(iii) applicable to electronic component and circuit design; instrumentation and measurement; signal processing, conditioning and conversion
(iv) applicable to digital and programmable system design, associated methodologies of programming and hardware description languages
Demonstrate knowledge and understanding of mathematics underpinning the Electronic Engineering discipline; system analysis, computational algorithms
Ability to apply engineering principles, general physical principles and underlying engineering science to the analysis and solution of engineering problems
Practical application of theory to quantitative models and computer software for the simulation, design and verification of electronic systems and devices
Manage costs in order to produce system designs which both meet defined requirements and are economically viable
Demonstrate practical competencies in laboratory and workshop skills required for the test, measurement and fabrication of electronic systems and devices
Ability to define a problem including understanding customer needs
Manage design processes and evaluate outcomes
Effective exploitation of literature, locate and critically evaluate information from a variety of sources
Communicate in an accurate, persuasive and succinct form, via a variety of media
Personal development planning, self-directed learning and reflection for future CPD

Learning outcomes for the award of: DipHE Electronic Engineering

Demonstrate knowledge and understanding of the essential concepts and physical principles of the Electronic Engineering discipline:
(iii) applicable to electronic component and circuit design; instrumentation and measurement; signal processing, conditioning and conversion
(iv) applicable to digital and programmable system design, associated methodologies of programming and hardware description languages
Demonstrate knowledge and understanding of mathematics underpinning the Electronic Engineering discipline; system analysis, computational algorithms
Appreciation of the wider commercial and economic context of engineering, applicable business and management techniques, relevant social and legal constraints
Ability to apply engineering principles, general physical principles and underlying engineering science to the analysis and solution of engineering problems
Practical application of theory to quantitative models and computer software for the simulation, design and verification of electronic systems and devices
Manage costs in order to produce system designs which both meet defined requirements and are economically viable
Demonstrate practical competencies in laboratory and workshop skills required for the test, measurement and fabrication of electronic systems and devices
Ability to apply systems analysis techniques to the top-level design of electronic systems, and the decomposition and synthesis of sub-systems using appropriate technologies
Ability to define a problem including understanding customer needs
Manage design processes and evaluate outcomes
Effective exploitation of literature, locate and critically evaluate information from a variety of sources
Communicate in an accurate, persuasive and succinct form, via a variety of media
Work effectively as part of a team
Personal development planning, self-directed learning and reflection for future CPD
Learning outcomes for the award of: BEng Robotics Engineering

Demonstrate knowledge and understanding of the essential concepts and physical principles relevant to the application domain of Robotics:

(iii) applicable to instrumentation and control systems, sensors and actuators, motion control and modelling, machine learning

(iv) applicable to electronic sub-systems design, associated methodologies of programming and hardware description languages

Demonstrate knowledge and understanding of mathematics underpinning the Robotics discipline; system analysis, computational algorithms

Appreciation of the wider commercial and economic context of engineering, applicable business and management techniques, relevant social and legal constraints

Ability to apply engineering principles, general physical principles and underlying engineering science to the analysis and solution of engineering problems

Practical application of theory to quantitative models and computer software for the simulation and design of systems within the domain of Robotics

Manage costs in order to produce system designs which both meet defined requirements and are economically viable

Demonstrate practical competencies in laboratory and workshop skills required for the test and measurement of robotic systems and their embedded electronic devices

Ability to apply systems analysis techniques to the top-level design of robotic systems, and the decomposition and synthesis of sub-systems using appropriate technologies

Ability to define a problem including understanding customer needs

The ability to apply creativity in establishing innovative solutions and to ensure their fitness for purpose

Manage design processes and evaluate outcomes

Effective exploitation of literature, locate and critically evaluate information from a variety of sources

Communicate in an accurate, persuasive and succinct form, via a variety of media

Independence, self-awareness, and the intrinsic motivation to develop technical proficiencies and achieve goals without external influence

Work effectively as part of a team

Personal development planning, self-directed learning and reflection for future CPD
# Programme Specification

<table>
<thead>
<tr>
<th>1. Awarding Institution / Body</th>
<th>University of Central Lancashire</th>
</tr>
</thead>
</table>
| 2. Teaching Institution and Location of Delivery | University of Central Lancashire
  Preston campus |
| 3. University School | School of Engineering |
| 4. External Accreditation | N/A |
| 5. Title of Final Award | MEng (Hons) / BEng (Hons) / BSc (Hons) Engineering (Foundation Entry) (non-award bearing programme: initial stage of 5-year (MEng) or 4-year (BEng / BSc) degree course) |
| 6. Modes of Attendance offered | Full-time / Part-Time
  
  Note that part-time attendance mode is not guaranteed to be one day per week. |
| 7. UCAS Code | TBD |
  
  Note that the QAA SBSs mainly focus on Bachelor’s degree with honours level and Master’s level, and so are informative rather than directly applicable to this Foundation Year Entry course. |
| 9. Other external influences | Engineering Council UK-SPEC
  QAA |
| 10. Date of production/revision of this form | 4 May 2016 |
| 11. Aims of the Programme | To equip the student with a broad range of subject-specific and transferable skills that will enable progression to a range of undergraduate honours programmes (BSc / BEng / MEng) within the School of Engineering, most of which lead to awards with Professional Accreditation. |
• To enable the student to gain confidence as an independent learner and the ability to reflect on their own range of skills and knowledge.

• To encourage the student to identify and pursue further learning opportunities and/or employment.

• To encourage the student to develop an awareness of the role of the engineer, and other related professions, in industry.

12. Learning Outcomes and Teaching, Learning and Assessment Methods

A. Knowledge and Understanding
On successful completion of the programme the students will be able to:
A1. Demonstrate the skills necessary to undertake undergraduate degree level study in areas covered by the School of Engineering, including basic ICT skills and mathematics.
A2. Explain and apply the basic principles relevant to a range of areas covered in courses within the School of Engineering.
A3. Discuss the external factors impacting various areas covered in courses within the School of Engineering.

Teaching and Learning Methods
A range of teaching and learning methods will be used such as lectures, tutorials, workshops, discussions, feedback sessions, practical sessions, design exercises and simulations, including use of ICT and online materials (via elearn / Blackboard).

Assessment Methods
A range of assessment methods will be used such as portfolios, examinations, practical exercises and team-work exercises. Formative assessment will include peer/self-evaluation and on-line evaluation.

B. Subject-Specific Skills
On successful completion of the programme the students will be able to:
B1. Demonstrate a logical approach to problem solving, design and analysis.
B2. Communicate effectively through written, graphical and oral presentations.
B3. Demonstrate basic competence in academic research methods including use of ICT and electronic resources.

Teaching and Learning Methods
A range of teaching and learning methods will be used such as lectures, tutorials, workshops, discussions, feedback sessions, practical sessions, design exercises and simulations, including use of ICT and online materials (via elearn / Blackboard).

Assessment Methods
A range of assessment methods will be used such as portfolios, examinations, practical exercises and team-work exercises. Formative assessment will include presentations, peer/self-evaluation and on-line evaluation.

C. Thinking Skills
On successful completion of the programme the students will be able to:
C1. Demonstrate effective decision-making in the context of understanding and solving problems related to areas covered in courses within the School of Engineering.
C2. Recognise and apply appropriate techniques to develop solutions to real-world problems.
C3. Reflect on their own understanding and begin to develop critical judgements.

Teaching and Learning Methods
A range of teaching and learning methods will be used such as lectures, tutorials, workshops, discussions, feedback sessions, practical sessions, design exercises and simulations, including use of ICT and online materials (via elearn / Blackboard).

### Assessment Methods

A range of assessment methods will be used such as portfolios, examinations, practical exercises and team-work exercises. Formative assessment will include presentations, peer/self-evaluation and on-line evaluation.

### D. Other skills relevant to employability and personal development

On successful completion of the programme the students will be able to:

D1. Work independently and manage time effectively.
D2. Demonstrate effective communication using reports and presentations.
D3. Demonstrate effective ICT skills.

### Teaching and Learning Methods

A range of teaching and learning methods will be used such as lectures, tutorials, workshops, discussions and feedback sessions, including use of ICT and online materials (via elearn / Blackboard).

### Assessment Methods

A range of assessment methods will be used such as portfolios and team-work exercises. Formative assessment will include presentations, peer/self-evaluation and on-line evaluation.

### 13. Programme Structure

<table>
<thead>
<tr>
<th>Level</th>
<th>Module Code</th>
<th>Module Title</th>
<th>Credit rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>ERC001</td>
<td>Study Skills</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>ERC002</td>
<td>Basic Mathematics</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>ERC003</td>
<td>Information and Communications Technology</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>ERC004</td>
<td>Practical Skills</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>ERC005</td>
<td>Design Studies</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>ERC006</td>
<td>Analytical Studies</td>
<td>20</td>
</tr>
</tbody>
</table>

### 14. Awards and Credits

BSc (Hons) / BEng (Hons) / MEng (Hons) Engineering (Foundation Entry)
Requires completion of 120 credits at Level 3.

Successful completion of the six Foundation Year Entry modules at the appropriate performance level (see below) leads to progression to Year 1 of appropriate undergraduate programmes within the School of Engineering.

An average mark of 60% or above is required for progression to MEng (Hons) courses.
MEng (Hons) Aerospace Engineering
MEng (Hons) Computer Aided Engineering
MEng (Hons) Civil Engineering
MEng (Hons) Electronic Engineering
MEng (Hons) Energy Engineering
MEng (Hons) Fire Engineering
MEng (Hons) Mechanical Engineering
MEng (Hons) Motor Sports Engineering
MEng (Hons) Oil and Gas Safety Engineering
MEng (Hons) Robotics Engineering

MEng (Hons) Robotics Engineering Programme Specification
An average mark of 50% or above is required for progression to
BEng (Hons) Aerospace Engineering
BEng (Hons) Computer Aided Engineering
BEng (Hons) Civil Engineering
BEng (Hons) Electronic Engineering
BEng (Hons) Energy Engineering
BEng (Hons) Fire Engineering
BEng (Hons) Mechanical Engineering
BEng (Hons) Mechanical Maintenance Engineering
BEng (Hons) Motor Sports Engineering
BEng (Hons) Oil and Gas Safety Engineering
BEng (Hons) Robotics Engineering
BEng (Hons) Building Services and Sustainable Engineering

An average mark of 40% or above is required for progression to
BSc (Hons) Building Surveying
BSc (Hons) Construction Project Management
BSc (Hons) Facilities Management
BSc (Hons) Quantity Surveying
BSc (Hons) Fire and Leadership Studies
BSc (Hons) Fire Safety and Risk Management

Details of the delivery and focus of some of the modules would depend on the specific programme the student is registered for. Progression to School of Engineering programmes other than the programme for which the student is registered may be subject to interview.

15. Personal Development Planning

PDP-related learning is presented informally at induction and is supported in all six modules in various respects. Students will be expected to develop a portfolio of their work throughout the year (coursework, reports, completed example sheets etc.), and discuss aspects of their personal and professional development with members of the course team including their Academic Advisor.

16. Admissions Criteria

Standard entrants will require 200 points at A-level (from two A-level passes), or 160 points (MPP) at BTEC, or equivalent. GCSE-level Mathematics and English at grade C or above are required. There are no other mandatory formal educational or specialist knowledge requirements for admission to this Foundation Year Entry programme.

Non-standard entrants will be considered on an individual basis, normally through interview, and are expected to be able to demonstrate personal reflection on their career to-date and show a strong desire and ability to study. They may be asked to produce a piece of written work to help assess their ability to benefit from the programme.

International applicants will have to demonstrate that they will benefit from the course and that they have a good grasp of the English language: English should be at the standard IELTS level required (or equivalent) by the University for admission to a Foundation Year
Entry course at level 3, i.e. an overall IELTS score of 6.0 or higher with no subscore below 5.5.

### 17. Key sources of information about the programme

- UCLan web pages and prospectus.
- UCAS website
- Other UCLan marketing activities, e.g. Open Days etc.
### 18. Curriculum Skills Map

<table>
<thead>
<tr>
<th>Level</th>
<th>Module Code</th>
<th>Module Title</th>
<th>Core (C), Compulsory (Comp)</th>
<th>Knowledge and Understanding</th>
<th>Subject-Specific Skills</th>
<th>Thinking Skills</th>
<th>Other skills relevant to employability and personal development</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A1</td>
<td>A2</td>
<td>A3</td>
<td>B1</td>
<td>B2</td>
<td>B3</td>
</tr>
<tr>
<td>Level 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ERC001</td>
<td>Study Skills</td>
<td>Comp</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ERC002</td>
<td>Basic Mathematics</td>
<td>Comp</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ERC003</td>
<td>ICT</td>
<td>Comp</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ERC004</td>
<td>Practical Skills</td>
<td>Comp</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ERC005</td>
<td>Design Studies</td>
<td>Comp</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>ERC006</td>
<td>Analytical Studies</td>
<td>Comp</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Please read this Handbook in conjunction with your Course Handbook.

All course materials, including lecture notes and other additional materials related to your course and provided to you, whether electronically or in hard copy, as part of your study, are the property of (or licensed to) UCLan and MUST not be distributed, sold, published, made available to others or copied other than for your personal study use unless you have gained written permission to do so from the Dean/Head of School. This applies to the materials in their entirety and to any part of the materials.

This Handbook is produced centrally and locked for editing. Partner institutions only are given permission to contextualise the Handbook.
UCLan Mission statement
We create positive change in our students, staff, business partners and wider communities, enabling them to develop their full potential by providing excellent higher education, innovation and research.

UCLan Values
• The pursuit of excellence in all that we do.
• Equality of opportunity for all, supporting the rights and freedoms of our diverse community.
• The advancement and protection of knowledge, freedom of speech and enquiry.
• Supporting the health, safety and wellbeing of all.

Student Charter
The Student Charter has been developed by the University and the Students’ Union so that students gain the maximum from their UCLan experience. It is a two-way commitment or 'contract' between the University and each individual student. It acts as a means of establishing in black and white what students can expect from the University and the Union in terms of support, and in return what we expect from our students. Read the full Student Charter

Supporting Diversity at UCLan
UCLan recognises and values individual difference and has a public duty to promote equality and remove discrimination on various grounds including race, gender, disability, religion or belief, sexual orientation and age. During your time at UCLan we expect you to be able to
• experience "an integrated community based on mutual respect and tolerance where all staff and students can feel safe, valued and supported."
• contribute to creating a positive environment where discriminatory practices and discrimination no longer happen.

Please review the UCLan Equality and Diversity Policy for further information.
Contents page

1. Welcome and Introduction to the University
2. Learning Resources
3. Preparing for your career
4. Student support
5. Students' Union
6. Rationale, aims and learning outcomes of the course
7. Assessment
8. Student Voice
1. Welcome and Introduction to the University

The University of Central Lancashire (UCLan) welcomes you and hopes that you will enjoy studying at UCLan and that you will find your course both interesting and rewarding. This Handbook provides you with generic University level information and the Course Handbook provides specific information about your programme of study.

1.1 Communication

The University expects you to use your UCLan email address and check regularly for messages from staff. If you send us email messages from other addresses they risk being filtered out as potential spam and discarded as unread.

1.2 External Examiner

The University has appointed an External Examiner to your course who helps to ensure that the standards of your course are comparable to those provided at other higher education institutions in the UK. External Examiner reports will be made available to you electronically. The School will also send a sample of student coursework to the external examiner(s) for external moderation purposes, once it has been marked and internally moderated by the course tutors. The sample will include work awarded the highest and lowest marks and awarded marks in the middle range. Details of the External Examiner associated with your course can be found in your Course Handbook.

1.3 Expected hours of study

The normal amount of work involved in achieving a successful outcome to your studies is to study for 10 hours per each credit you need to achieve – this includes attendance at UCLan and time spent in private study. Please note however that this may vary depending on your particular course and programme of study. You should therefore check your Course Handbook or contact a member of staff within the relevant School.

1.4 Attendance Requirements

Student attendance at timetabled learning activities of courses and modules is required. Notification of illness or exceptional requests for leave of absence must be made as detailed in the Course Handbook. Individual modules and/or courses may incorporate a specific attendance requirement as part of the assessment criteria for successful completion of a module.

Students with continuous unauthorised absence may be deemed to have withdrawn from the course. The date of withdrawal will be recorded as the last day of attendance. You may request a review of this decision if you have grounds in line with the Academic Appeals Procedure. Tuition fees will be charged in accordance with Appendix 2 of our Tuition Fee Policy.

You must swipe in using your student card. Each time you are asked to enter your details on the Student Attendance Monitoring system (SAM) you must remember that the University has a responsibility to keep information up to date. You must only enter your own details on the system as to enter any other names would result in inaccurate records and be dishonest. Any student who is found to make false entries, such as scanning but not attending, can be disciplined under the Regulations for the Conduct of Students.
1.5 Data Protection
All of the personal information obtained from you and other sources in connection with your studies at the University will be held securely and will be used by the University both during your course and after you leave the University for a variety of purposes. These purposes are all explained during the enrolment process at the commencement of your studies. If you would like a more detailed explanation of the University’s policy on the use and disclosure of personal information, please see the University’s Data Protection Policy and Privacy Notice or contact the Information Governance Officer, Office of the University Secretary and Legal Officer, University of Central Lancashire, Preston, PR1 2HE or email DPFOIA@uclan.ac.uk.

2. Learning resources

2.1 Learning Information Services (LIS)
Extensive resources are available to support your studies provided by LIS – library and IT staff. Take advantage of the free training sessions designed to enable you to gain all the skills you need for your research and study.

You can find the link to the Library Opening Hours here: http://www.uclan.ac.uk/students/study/library/opening_hours.php

2.2 Electronic Resources
LIS provide access to a range of electronic resources – e-journals and databases, e-books, images and texts.

3. Preparing for your career
Your future is important to us, so to make sure that you achieve your full potential whilst at university and beyond, your course has employability learning integrated into it. This is not extra to your degree, but an important part of it.

Your course will take you on a journey of development that will help you to map your personal story of your time at university.

You will be encouraged to record your learning journey so that you can demonstrate all the work-related skills you have developed, both before and during your time at UCLan. This will help you to show future employers just how valuable your degree is and the employability skills you have acquired.

- You will be given the opportunity to explore your identity, your strengths and areas for development, your values and what you want to get out of life.
- You will be able to investigate a range of options, including jobs and work experience, postgraduate study and self-employment.
- We will support you to enable you to successfully tackle the recruitment process and to develop your enterprise skills.

UCLan Careers offers a range of support for you including:-

- One to one career and employability advice and guidance appointments.
• Advice on finding graduate jobs, including how to improve your CV with work placements, internships, voluntary opportunities and part-time employment.
• Workshops, seminars, and events to enhance your learning and develop your skills.
• Employer presentations and events, to give you the chance to network with potential employers and find out from them what they are looking for.

The UCLan careers portal careerEDGE contains all the information and resources you will need to help navigate your way to a successful career, including access to hundreds of graduate vacancies, placements and part-time jobs.

We are based in the entrance to Foster building and are open from 09:00-17:00, Monday to Thursday, 9:00-16:00 on Fridays. Come to see us to arrange your guidance appointment, have your CV and cover letter checked, get help in applying for a job or just to find out more about our full range of services. It’s your future: take charge of it!

UCLan Careers | Foster Building | University of Central Lancashire, Preston PR1 2HE
01772 895858
careers@uclan.ac.uk
www.uclan.ac.uk/careers

4. Student support, guidance and conduct

4.1 Student Support
“Got a Problem to Sort? Come to us for Support”.

The <i> is your first point of call for all enquiries, help and advice. We provide guidance to all UCLan students whatever the query may be. We offer advice on:

• Bank and Confirmation of Study Letters
• Council Tax Exemption Certificates
• International Student Support
• Library Services and Support
• Printing and Printer Credit
• Student Financial Support
• UCLan Cards
• UCLan Financial Bursary (1st year students only)
• Student Support and Wellbeing (including Disability)

and much more.

We are based on the ground floor of the UCLan Library and open 7 days a week most of the year. Our friendly and approachable team will do their best to ensure your query is answered. Come and have a chat with us if you have a query on any aspect of student life and study.
http://www.uclan.ac.uk/students/study/library/the_i.php

If you are struggling financially or have financial concerns which may prevent you from continuing on your course, you are advised to seek advice from the University’s Finance Support Team, based in the <i>, or in the Advice and Representation Centre at the Students’ Union.
If you are finding the course challenging or cannot complete independent study and assessments on time you should consult your Academic Advisor.

4.2 Students with disabilities
You are strongly encouraged to declare your disability on your application form when you apply to study at UCLan. If you have declared this Disability Services will be in contact with you to advise you about reasonable adjustments which may be appropriate in the circumstances. You can also tell any member of staff at the University, who will ask you to sign a disability disclosure form, to let the Disability Service know that you have a disability and agree to share this information with them. Disability Services will then get in touch with you to discuss your available options. Following this you will be assigned a Disability Adviser whom you can contact should you need any further help or assistance.

https://www.uclan.ac.uk/students/health/disability_services.php

4.3 Assessment arrangements for students with a disability
Arrangements are made for students who have a disability/specific learning difficulty for which valid supporting evidence can be made available. Contact your Disability Adviser for advice and information, disability@uclan.ac.uk

4.4 Health and Safety
As a student of the University you share responsibility for the safety of yourself and for that of others around you. You must understand and follow all the regulations and safety codes necessary for a safe campus environment. Please help to keep it safe by reporting any incidents, accidents or potentially unsafe situations to a member of staff as soon as possible.

Safety assessments have been undertaken for each module of your course and you will be advised of all applicable safety codes and any specific safety issues during the induction to your course and modules. You must ensure that you understand and apply all necessary safety codes. These form an essential element of your personal development and contribute to the safety of others.

4.5 Conduct
You will be expected to abide by the Regulations for the Conduct of Students in the University. UCLan expects you to behave in a respectful manner towards all members of the University at all times demonstrated by using appropriate language in class, switching mobile phones / other devices off prior to attending classes, and also in your use of any social networking sites.

If your behaviour is considered to be unacceptable, any member of staff is able to issue an informal oral warning and the University will support staff by invoking formal procedures where necessary. You can read more about UCLan expectations in the Regulations for the Conduct of Students.
5. Students’ Union

The Students’ Union is the representative body for all UCLan students. The organisation exists separately from the University and is led by the elected officers of the Student Affairs Committee (SAC) as well as representatives on the Students’ Council. The Students’ Union building is located at the heart of the Preston campus, and is the hub for all student activities.

Representation and campaigning for students’ rights is at the core of what the Students’ Union does and is encompassed by its tag line of Making Life Better for Students. Should you wish to make a change to any aspect of your student experience, whether it be academically related or not, then the Students’ Union is where your voice can be heard, actions taken, or campaigns launched.

Your Students’ Union is also the home to a fantastic range of student-led societies, sports teams and multitudes of volunteering opportunities. You can also receive help in finding part-time work whilst you study. Not sure where to go? Pop into the Opportunities Centre on the ground floor of the Students’ Union building and someone will point you in the right direction.

We hope your time at University is trouble free, but should you come into difficulties around anything from academic appeals, to issues with housing, benefits or debt, then the Student Union’s dedicated staff team in the Advice and Representation Centre are on hand to help and offer impartial advice.

More information on all these things, as well as details about all the Student Union’s (not-for-profit) commercial services, including its student supermarket (Essentials) and student-bar (Source) can be found at www.uclansu.co.uk

6. Rationale, aims and learning outcomes of the course

6.1 You will find information specific to your chosen course of study in your Course Handbook, in the form of a ‘programme specification’. As defined by the QAA (Quality Assurance Agency) - the regulatory body responsible for overseeing quality compliance in the Higher Education Sector - a programme specification is a concise description of the intended learning outcomes of an HE programme. It is the means by which the outcomes are achieved and demonstrated. In general, modules or other units of study have stated outcomes, often set out in handbooks provided by institutions to inform student choice. These intended learning outcomes relate directly to the curriculum, study and assessment methods and criteria used to assess performance. Programme specifications can show how modules can be combined into whole qualifications. However, a programme specification is not simply an aggregation of module outcomes; it relates to the learning and attributes developed by the programme as a whole and which, in general, are typically in HE more than the sum of the parts.

6.2 Sometimes certain aspects of courses may be subject to change. Applicants are encouraged to check information on our relevant course pages from time to time, particularly before submitting any application for their academic year of study. Material changes about a
course will be notified to you in material produced after the change is made and at the time you are made any offer of a place of study for that course. For details about changes to course information after you have accepted any offer, please see our Additional Information and Conditions of Offer

7. Assessment
Please note that all modules will be assessed. You are expected to attempt all required assessments for each module for which you are registered, and to do so at the times scheduled unless authorised extensions, special arrangements for disability, or extenuating circumstances have been expressly agreed by the University to allow you to defer your assessment.

7.1 Dealing with difficulties in meeting assessment deadlines
Assignments must be submitted no later than the time and date on your assignment instructions / brief. If you anticipate that you will have difficulty in meeting assessment deadlines or you have missed or are likely to miss in-semester tests you must report this at the earliest possible opportunity. An academic staff member, such as your Academic Advisor or Module or Course Leader, will be able to provide advice to you on how to do this. Extenuating Circumstances are defined as unforeseen, unpreventable circumstances that significantly disrupt student performance in assessment. Where students have a temporary unexpected circumstance that means that they are unable to complete a particular assignment on time the student may apply for an extension of up to ten working days.

7.2 Extensions
Authorisation of the late submission of work requires written permission. Your School is authorised to give permission for one extension period of between 1 and 10 working days where appropriate evidence of good reason has been accepted and where submission within this timescale would be reasonable taking into account your circumstances. Requests for extensions should be made prior to the submission date as extensions cannot be given Retrospectively (Academic Regulations).

You should complete and submit an extension request form, with any supporting evidence, to your CAS Hub. Further information is available on the Student Portal at: https://www.uclan.ac.uk/students/study/examinations_and_awards/extensions.php

We aim to let you know if the extension has been granted within 1 working day of the receipt of the request.

If you are unable to submit work within 10 working days after the submission date due to verifiable extenuating circumstances, you may submit a case for consideration in accordance with the University’s Policies and Procedures on Extenuating Circumstances (Academic Regulations and Assessment Handbook).

7.3 Extenuating circumstances
Some students face significant events in their personal life that occur after their course has started, which have a greater impact on their studies than can be solved by the use of an extension. If this applies to you, the University is ready
to support you, with both your course and your personal wellbeing, through a process called Extenuating Circumstances (see Academic Regulations and Assessment Handbook).

You can apply for Extenuating Circumstances online via myUCLan. You must apply no later than 3 days after any examination or assessment submission date. Do not wait until you receive your assessment results to submit a claim. It is in your own interests to submit the claim as soon as possible.

You will be expected to re-submit claims for extenuating circumstances for each semester in which they apply. All evidence provided relating to extenuating circumstances will be treated in a sensitive and confidential manner. Supporting evidence will not be kept for longer than is necessary and will be destroyed shortly after the end of the current academic year. Further information about the submission process

In determining assessment recommendations, Assessment Boards will consider properly submitted claims from students who believe their performance has been adversely affected by extenuating circumstances. N.B. Assessment Boards are not permitted to alter individual assessment marks to take account of extenuating circumstances (Academic Regulations and Assessment Handbook).

7.4 Late submissions
If you submit work late without authorisation, a universal penalty will be applied in relation to your work:

- If you submit work within 5 working days following the published submission date you will obtain the minimum pass mark for that element of assessment.
- Work submitted later than 5 working days after the published submission date will be awarded a mark of 0% for that element of assessment.
- Unauthorised late submission at resubmission will automatically be awarded a mark of 0% for that element of assessment.

You may apply to appeal this decision in accordance with the University’s Academic Regulations.

7.5 Feedback Following Assessments
UCLan is committed to giving you clear, legible and informative feedback for all your assessments (Academic Regulations). You are expected to review and reflect on your feedback and learn from each experience to improve your performance as you progress though the course.

For courses (except distance learning):
You will be provided with generic feedback for in-module formative and summative elements of assessment which contribute to a module within 15 working days of the scheduled submission or examination date. Generic feedback on end of module assessment and dissertations will be made available within 15 days of publication of results. Generic feedback may be oral, written, posted on a website or other.

For distance learning courses:
You will be provided with generic feedback for in-module formative and summative elements of assessment which contribute to a module within 20 working days of the scheduled
submission or examination date. Generic feedback on end of module assessment and dissertations will be made available within 20 days of publication of results. Generic feedback may be oral, written, posted on a website or other.

7.6 Unfair Means to Enhance Performance

The University regards any use of unfair means in an attempt to enhance performance or to influence the standard of award obtained as a serious academic and/or disciplinary offence. Such offences can include, without limitation, cheating, plagiarism, collusion and re-presentation ('unfair means'). You are required to sign a declaration indicating that individual work submitted for assessment is your own and will be able to view your Originality Report following e-submission of assessed work.

If you attempt to influence the standard of the award you obtain through cheating, plagiarism or collusion, it will be considered as a serious academic and disciplinary offence as described within the Academic Regulations and the Assessment Handbook.

- Cheating is any deliberate attempt to deceive and covers a range of offences described in the Assessment Handbook.
- Plagiarism describes copying from the works of another person without suitably attributing the published or unpublished works of others. This means that all quotes, ideas, opinions, music and images should be acknowledged and referenced within your assignments.
- Collusion is an attempt to deceive the examiners by disguising the true authorship of an assignment by copying, or imitating in close detail another student’s work - this includes with the other student’s consent and also when 2 or more students divide the elements of an assignment amongst themselves and copy one another’s answers. It does not include the normal situation in which you learn from your peers and share ideas, as this generates the knowledge and understanding necessary for each individual to independently undertake an assignment; nor should it be confused with group work on an assignment which is specifically authorised in the assignment brief.
- Re-presentation is an attempt to gain credit twice for the same piece of work.

The process of investigation and penalties which will be applied can be reviewed in the Assessment Handbook. If an allegation is found to be proven then the appropriate penalty will be implemented as set out below:

In the case of a single offence of unfair means in an undergraduate or postgraduate assessment:
- the appropriate penalty will be 0% for the element of assessment, and an overall fail for the module (whether or not the resulting numeric average mark is above or below the minimum pass mark). The affected element of the assessment must be resubmitted to the required standard. The mark for the module following resubmission will be restricted to the minimum pass mark. Where unfair means is detected for the first time on a reassessment for an already failed module, no further reassessment for the module will be permitted, and the appropriate fail grade will be awarded.
In the event of a repeat offence of unfair means (irrespective of whether the repeat offence involves the same form of unfair means) on the same or any other module within the course:

- the appropriate penalty will be 0% for the module with no opportunity for re-assessment. This penalty does not preclude you being able to retake the module in a subsequent year.

The penalties will apply if you transfer from one UCLan course to another during your period of study and module credits gained on the former course are transferred to the current course.

Contact the Students’ Union Advice and Representation Centre by emailing: suadvice@uclan.ac.uk for support and guidance.

7.7 Appeals against assessment board decisions
If you consider that you have a reason to appeal against an assessment board decision, please bear in mind that your reasons must fall within the grounds specified in the University Academic Regulations: Section I. You cannot appeal simply because you disagree with the mark given. The specified grounds for appeal are:

1. that an Assessment Board has given insufficient weight to extenuating circumstances;
2. that the student’s academic performance has been adversely affected by extenuating circumstances which the student has, for good reason, been unable to make known to the Assessment Board;
3. that there has been a material administrative error at a stage of the examining process, or that some material irregularities have occurred;
   that the assessment procedure and/or examinations have not been conducted in accordance with the approved regulations (this fourth ground will not be relevant to an appeal against a decision relating to an interruption or discontinuance of study. Such an appeal should be based on one or more of the three grounds above.

If you want to appeal, then you must do so within 14 days of your results being published. The onus is on you to find out your results and submit your appeal on time. Contact the Students’ Union Advice and Representation Centre by emailing: suadvice@uclan.ac.uk for support and guidance.

8. Student voice

You can play an important part in the process of improving the quality of your course through the feedback you give. In addition to the ongoing discussion with the course team throughout the year, there are a range of mechanisms for you to feed back about your experience of teaching and learning which are outlined below. Where appropriate, we aim to respond to your feedback and let you know of our plans for improvement.

The Students Union can support you in voicing your opinion, provide on-going advice and support and encourage your involvement in all feedback opportunities. They will be requesting that you complete the National Student Survey (during semester 2 for students in their final year of study) or the UCLan Student Survey (all other students).
The Students’ Union and University work closely together to ensure that the student voice is heard in all matters of student-life. We encourage students to provide constructive feedback throughout their time at university, through course reps, surveys and any other appropriate means.

The Union’s Student Affairs Committee (SAC), members of Students’ Council and School Presidents each have particular representative responsibilities and are involved with decision making committees at levels as high as the University Board. Therefore it is very important students engage with the democratic processes of the Students’ Union and elect the students they see as most able to represent them.

8.1 Course Representatives and School Presidents
A course representative is a student who represents their fellow students’ views and opinions to the course team, school, university and students’ union. Course representatives work proactively and diplomatically to improve the academic and non-academic experiences of students.

The role of a course representative is extremely beneficial to both students on your course and the University. It enables students to have ownership of their student experience, to voice their opinions and to share positive practice with the course team, primarily at the Student Staff Liaison Committee Meetings (see below).

Course representatives will be elected every year either in April or September. Alongside receiving recognition, support and respect, being a course representative is a great opportunity to enhance your employability skills. If you are interested in becoming a course representative and wish to find out more about the role visit the Students’ Union website or by emailing: coursereps@uclan.ac.uk.

School Presidents are annually elected representatives who voice the opinions of students within each school. They communicate and engage with students in their school to gain feedback and work in partnership with senior management to create positive change. They are also trained to support and signpost course representatives where needed. If you wish to find out who your School President is or more about the role visit the Students’ Union website or email: coursereps@uclan.ac.uk.

8.2 Student Staff Liaison Committee Meetings (SSLC)
The purpose of a SSLC meeting is to improve courses, to have an open discussion and respect each other’s views, to share good practice where identified, to provide opportunity for students to feedback to staff about their course and student experience, to regularly review the course to improve its development, and to jointly work together to action plan against issues raised.

There will normally be one meeting per semester which will last no more than 2 hours. Your School President will Chair the meetings with an academic co-Chair, using guidelines and will provide a record of the meeting with any decisions and / or responses made and / or actions taken as a result of the discussions held. A standard agenda and action grid template will be
used. Course representatives will gather feedback from students and communicate this to the 
School President in advance of the meetings.

8.3 Complaints
The University recognises that there may be occasions when you have cause for complaint 
about the service you have received. When this happens, the University’s Student Complaints 
Procedure is intended to provide an accessible, fair and straightforward system which ensures 
an effective, prompt and appropriate response. Click on this link for more information 
University’s Student Complaints Procedure

If you are a student registered for a University award at a partner college, who is dissatisfied 
with the provision at the college, you should pursue your complaint in accordance with the 
college’s complaints procedure in the first instance. In the event of continuing dissatisfaction 
when you have completed the college’s procedure, you will be entitled to submit your 
complaint to UCLan under stage 3 of the procedure.