Course Handbook

BEng(Hons)/ MEng (Hons) Energy Engineering

2019-20

Course Leader – Dr Matt Stables

School of Engineering

COURSE SUBJECT TO CHANGE

This course is subject to formal course review and reapproval by the University during 2018/19 as part of its normal cycle of regular review (a process called Periodic Review). Course information and programme specifications are updated and reviewed as part of this process and course structure and content may be changed to enable the University to deliver a better quality of educational experience to students. This can be in response to various factors including: student feedback; annual reports from external examiners; feedback from the sector or industry advisors or as part of the regular review process by course teams.

This process may well result in changes to the structure and content of the current course as outlined in this Handbook. Any changes made as a result of the process will be immediately included in the course documentation and all students holding current offers will be provided with revised versions prior to the commencement of their programme. If you are not satisfied with the changes, you will be offered the opportunity to withdraw from the programme and, if required, reasonable support to transfer to another provider. The expected timetable for completion of this reapproval process is August 2019.

*subject to reapproval

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

Contents

1. Welcome to the course

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

1.1 Rationale, aims and learning outcomes of the course

The MEng/BEng(Hons) Energy Engineering course aim is to develop graduates with a broad understanding of current technology and practice covering the relevant aspects of energy generation and energy use as well as additional specialist areas such as sustainability and policy.

The course is three years (BEng) or four years (MEng) in duration, plus an extra year if an industrial placement is included. Satisfactory completion of an industrial placement leads to the award: BEng/MEng (Hons) EnE with Industrial Placement.

To provide students with the opportunity to develop knowledge and understanding in order to maintain and manage applications of current and developing technology, including energy engineering design and development, manufacture, construction and power generation operations. Thereby affording graduates the opportunity to fulfil the educational requirements for Chartered Engineer.

- To meet the requirements for full CEng accreditation of the programme by Engineering Council Institutions.
- To provide an extended, enhanced, and industrially relevant Integrated undergraduate 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 contemporary industry.
- To equip graduates of the programme with knowledge, skills, experience, and understanding which underpin a professional career in Engineering.

Specifically, the Energy Engineering courses aim to provide graduates with a broad understanding of current technology and practice with regards to energy, covering the relevant aspects of thermodynamics, technology, sustainability and policy plus additional specialist areas according to the modules studied.

The discipline of engineering encompasses a wide skills base and the emphasis of this course is placed on energy systems, their use and design. 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 energy engineering and develop the transferrable skills to find employment in a diverse set of industrial and commercial sectors.

In order to broaden the scope of energy related topics, the third year of both MEng and BEng has optional modules allowing the student to add specialism to their course in the fields of

Nuclear fuels, Fossil fuels, Renewable technology and energy use within buildings. For MEng students, the 4th year continues with these options allowing further deepening of the subject matter.

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.

Jonathan Francis
Computing & Technology Building, room CM23
☎ 01772 893229 (ext. 3229), ✉ jfrancis1@uclan.ac.uk

Course Leader for MEng/BEng(Hons) Energy Engineering
Matt Stables
Kirkham Building, room KM001
☎ 01772 893581 (ext. 3581), ✉ mstables1@uclan.ac.uk

Muqi Wulan
Computing & Technology Building, room CM037
☎ 01772 893247 (ext. 3247), ✉ mwulan@uclan.ac.uk

Patrick Ryan
Computing & Technology Building, room CM024
☎ 01772 893273 (ext. 3273), ✉ pryan1@uclan.ac.uk

Joel Allison
Computing & Technology Building, room CM131
☎ 01772 893251 (ext.3251), ✉ jallison@uclan.ac.uk

Phil Tranter
Computing & Technology Building, room CM128
☎ 01772 893260 (ext. 3260), ✉ ptranter@uclan.ac.uk

Javad Yazdani
Computing & Technology Building, room CM138
☎ 01772 892685 (ext. 2685), ✉ jyazdani@uclan.ac.uk

Campus Admin Services is located in the Computer and Technology Building room. Hub contact details are as follows: Telephone: 01772 891994 or 01772 891995, Email: CandThub@uclan.ac.uk

Expertise of Staff

Staff profiles for members of staff in the School of Engineering can be accessed using the link below:
http://www.uclan.ac.uk/schools/engineering/staff.php

1.3 Academic Advisor

An Academic advisor is allocated to each student in their first year. You will retain the same academic advisor for the duration of your study at UCLan. Your academic advisor is your first point of contact if you have any questions or problems while studying at UCLan.

You should meet with your Academic advisor at least once every semester, but they are also available to help with any problems you may have during the year. Feel free to see them at other times should you want to. Your Academic advisor is there to provide you with support and guidance during your course. They will be unable to do so if you do not take the time and effort to meet with them and discuss your progress.

What will your Academic advisor do?

- offer academic advice throughout the year;
- monitor your progress and attainment through the year;
- advise you on your progress and issues such as option choices;
- in some instances, your academic advisor may refer you to the course leader or module leader for clarification of detailed academic problems;
- offer personal support, referring you to relevant University support services where appropriate;
- support you in the context of any disciplinary matters.

What are you expected to do?

- make use of your academic advisor;
- make sure you know where their office is and how to contact them;
- make sure they know you and have your current email address;
- watch out for emails, notices and memos asking you to make appointments or attend meetings with them;
- turn up for meetings and/or respond to requests for information.

Write the name and contact information of your academic advisor below for future reference.

1.4 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
email: AllenHub@uclan.ac.uk

Harris Building
Lancashire Law School
Humanities and the Social Sciences
Centre for Excellence in Learning and Teaching
telephone: 01772 891996/891997
email: HarrisHub@uclan.ac.uk

Foster Building
Forensic and Applied Sciences
Pharmacy and Biomedical Sciences
Psychology
Physical Sciences
telephone: 01772 891990/891991
email: FosterHub@uclan.ac.uk

Computing and Technology Building
Art, Design and Fashion
Computing
Journalism, Media and Performance
Engineering
telephone: 01772 891994/891995
email: CandTHub@uclan.ac.uk

Greenbank Building
Sport and Wellbeing
Management
Business
telephone: 01772 891992/891993
email: GreenbankHub@uclan.ac.uk

Brook Building
Community, Health and Midwifery
Nursing
Health Sciences
Social Work, Care and Community
telephone: 01772 891992/891993
email: BrookHub@uclan.ac.uk

1.5 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.

There is a Blackboard course level space, Engineering@UCLan:

https://portal.uclan.ac.uk/webapps/blackboard/content/listContent.jsp?course_id=_21341_1&content_id=_559082_1

There you will find documentation relating to your course – for example student handbooks, support and advice regarding student placements and job hunting, along with other useful information. It is important to keep all your contact details up to date as you may be contacted by post, email, or telephone.

1.6 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. The name of this person, their position and home institution can be found below.

Anthony Johnson, CEng, MIMechE, University of Huddersfield, UK.

Peter Bradbury, CEng, MIET, MRAeS, MIEEE, FHEA, University of Salford, UK.

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

The Energy Engineering 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.

For Years 1 & 2, all modules are compulsory, however, in year 3 and year 4 (for MEng) optional modules are available to tailor the degree towards industry specifics a student may well wish to pursue as a career. Streams include Renewable Energy, the Nuclear industry, traditional Oil & Gas production and sustainable energy use within buildings.

Specific credit requirements for the target awards:

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

BEng (Hons) Energy 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.

Specific credit requirements for the exit awards:

BEng Energy 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 Energy Engineering requires 240 credits including a minimum of 100 at Level 5 or above

Certificate of Higher Education in Energy 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 in the Programme Specification in Appendix 8.1.

Please note that the above may be subject to minor modifications to reflect improvements/developments in the course or within industry. If this is the case your current year of study will not be affected and you will be notified of the changes.

2.3 Course requirements

In order to progress between levels of your course, minimum pass grades are required. For BEng students, a minimum of 40% is required for each module to pass, for MEng students this is 50%. Unless stated otherwise, all modules are compulsory. Should there be difficulties with a particular module, special circumstances may allow one module to be compensated for, however, modules marked (c) are deemed to be core modules and therefore MUST be passed.

2.4 Module Registration Options

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 Energy Engineering and Mechanical 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.

2.5 Study Time

2.5.1 Weekly timetable

A timetable will be available once you have enrolled on the programme, through the student portal.

2.5.2 Expected hours of study

20 credits is a standard module size and equals 200 notional learning hours.

As outlined in the school handbook 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.

This translates to a total of 6 hours per 20 credit module per week. We expect that you commit 36 hours study per week (pro-rata for part-time students and/or semester-based modules), inclusive of your contact hours. So for a typical module you may have a 2 hour lecture, and a 1 hour tutorial, 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.

2.5.3 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 as follows:

Notification of illness should be made to the Campus Admin Servies:

☎ +44 1772 891994 or 01772 891995 | ✉ CandThub@uclan.ac.uk

Exceptional absence requests are made to Jonathan Francis (Academic Lead for Energy, Fire & Nuclear):

☎ +44 1772 893229 | jfrancis1@uclan.ac.uk

You are encouraged to seek the advice of your Academic advisor 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 energy 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

There are a variety of services to support students and these include
WISER http://www.uclan.ac.uk/students/study/wiser/index.php

3.3 Learning resources

3.3.1 Learning Information Services (LIS)

LIS is a centralised service operating from the Library. All queries about computer software and online resources should be made here

Email: LISCustomerSupport@uclan.ac.uk
Phone: 01772 895355

Additionally, the School of Engineering has a dedicated librarian who is available to assist with reading lists, online access and electronic learning resources.

Bob Frost rsfrost@uclan.ac.uk : 01772 892261

3.3.2 Electronic Resources

As well as the resources of the Library, information and resources specific to the course and individual modules are available through the Blackboard portal. Module tutors will use this portal to post lecture notes, workshop material as well as other material suitable for the module.

3.4 Personal Development Planning

Within your course you will develop skills outside of the core technical skills. These include personal development where you will reflect on your performance and actively engage to improve your skills.

3.5 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 been designed with employability learning integrated into it. This is not extra to your degree, but an important part of it which will help you to show future employers just how valuable your degree is. These “Employability Essentials” take you on a journey of development that will help you to write your own personal story of your time at university:

- To begin with, you will explore your identity, your likes and dislikes, the things that are important to you and what you want to get out of life.
- Later, you will investigate a range of options including jobs and work experience, postgraduate study and self- employment.

It's your future: take charge of it!

4. Student Support

Student support is provided throughout all levels of the university. Students may approach their module tutor, course leader or academic advisor, the students union,

Although Academic advisors 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 the <i> http://www.uclan.ac.uk/students/study/library/the_i.php

Advice relating to administrative issues may also be obtained from the Student Hub.

4.1 Academic Advisors

Academic advisors provide help for students with problems and are responsible for overseeing the progress of students, their welfare, academic counselling and guidance. Your Academic advisor is allocated when you enrol. You must see your Academic advisor 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 advisors 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

There is a named lead for students with disabilities within your School

Dr Javad Yazadi is the named lead for students with disabilities within the School of Engineering, should you require further advice / support.

jyazadi@uclan.ac.uk

Room CM138

Tel 01772 892685

4.3 Students' Union

The Students' Union offers thousands of volunteering opportunities ranging from representative to other leadership roles. We also advertise paid work and employ student staff on a variety of roles. You can find out more information on our website: http://www.uclansu.co.uk/

4.4 Student Professional Development

The course approach to Personal Development Planning (PDP) has been influenced by the LTSN Generic Centre Guide to Curriculum Design: Personal Development Planning. PDP activity is centred on:

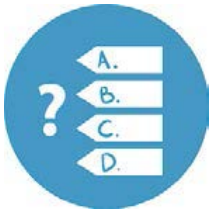
- Reflection on learning, performance, and achievement.
- Planning for personal, educational, and career development.

Students are invited to review and reflect on their academic study, extra-curricular activities and career planning. This results in an increased understanding and ownership of learning.

Since learning is a lifelong process the work in PDP is not assessed. There are many similarities to work-based learning, and Continued Professional Development (CPD) - which is required for membership of professional societies. The skills in PDP are key components of employability: – self-reflection, recording, target setting, action planning and monitoring. Local web based materials relevant to PDP are found at:
Generic: http://www.uclan.ac.uk/information/services/ldu/pdp/generic_PDP_index.php.
Employability and Skills: http://www.uclan.ac.uk/information/services/ldu/employability_and_skills.php

At Induction the student takes part in a session involving a range of self-assessment exercises. This is followed by early in Semester 1 the student being recommended to access the local web based materials, and other materials found by individual need or interest. The results of the activity or exercise are kept together in an A4 folder. A paper based system is suggested, due to concerns about the security, privacy, and long-term accessibility of records. This activity is reinforced for all first year students by encouraging communication and team working between students, and between students and staff.
Subsequently during group tutorial sessions discussion is directed towards PDP elements. Any topics found difficult, or needing further work are discussed. Alternative approaches are considered and discussed. Opportunities with Wiser (http://www.uclan.ac.uk/information/services/wiser/index.php), eLearn (http://www.uclan.ac.uk/information/services/wiser/elearn.php), offering study skill support, Flying Start for new students (http://www.uclan.ac.uk/information/services/wiser/flying_start_induction_pack.php), and Peer Mentoring (http://www.uclan.ac.uk/information/services/sas/m_and_m/mandm.php) are used.
By the end of their University studies, the student is advised to have completed and reviewed all the activities and exercises.

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

You will be notified of assessments by your module tutors. They will advise you of the requirements, the marking criteria and of the respective submission dates or exam arrangements, during one or more of the timetabled sessions. In general the examination arrangements are available from the University web site. These arrangements are not generally made by the module tutors.

Submission of coursework assignments is typically by one of two methods. Paper submissions are made to the assignment boxes located on the ground floor of Computing & Technology Building (in CM007). Each assignment must have a signed 'Assignment Submission Form' attached. Electronic submissions are made through the Blackboard site for the module, using the Turnitin software.

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 referred to in your coursework using the Harvard referencing system (a guide to this system can be found on the Engineering@UCLan course space, accessed through the student portal).

5.4 Cheating, plagiarism, collusion or re-presentation

Please refer to the information included in 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 general principles underpinning the way in which awards and results are decided in Academic Regulations Section H. Decisions about the overall classification of awards are made by Course 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.

Students are encouraged to voice their opinions, this can be done with academic advisors, course leaders or module tutors. You will also have an opportunity to feedback your experience with student surveys during the academic year.
Module tutors will periodically seek feedback for particular modules, this is an important opportunity to shape the way a modules is delivered as well as highlight aspects successful enough to be shared with others, improving overall module delivery

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. Course representatives will be elected every year either in April or September. We will be requesting volunteers for course representatives within the first few weeks of your study. 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.

8. Appendices

8.1 Programme Specification

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

1. Awarding Institution / Body	University of Central Lancashire.
2. Teaching Institution and Location of Delivery	University of Central Lancashire, Preston campus
3. University School/Centre	School of Engineering
4. External Accreditation	
5. Title of Final Award	MEng (Hons) Energy Engineering. MEng (Hons) Energy Engineering **with industrial placement**
6. Modes of Attendance offered	Full Time; Sandwich.
7 UCAS Code	H800 Energy Engineering.
8. Relevant Subject Benchmarking Group(s)	Engineering Council UK-SPEC. BEng and extended to include MEng.
9. Other external influences	Accreditation requirements of IMechE. Accreditation requirements of EI. QAA Academic Infrastructure Codes of Practice. Science, Technology, Engineering & Mathematics (STEM) government initiatives.
10. Date of production/revision of this form	June 2017
11. Aims of the Programme	

To provide students with the opportunity to develop knowledge and understanding in order to maintain and manage applications of current and developing technology, including energy engineering design and development, manufacture, construction and power generation operations. Thereby affording graduates the opportunity to fulfil the educational requirements for Chartered Engineer.

- To meet the requirements for full CEng accreditation of the programme by Engineering Council Institutions.
- To provide an extended, enhanced, and industrially relevant Integrated undergraduate 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 contemporary industry.
- To equip graduates of the programme with knowledge, skills, experience, and understanding which underpin a professional career in Engineering.

12. Learning Outcomes, Teaching, Learning and Assessment Methods

UK Standard for Professional Engineering Competence (UK-SPEC).

UK-SPEC is the standard for recognition of professional engineers in the UK. The standard is published by the Engineering Council on behalf of the engineering profession. UK-SPEC recommends General Learning Outcomes (GLO) and Specific Learning Outcomes (SLO) for degree courses that are consistent with the learning outcomes existing for UCLan courses. The following sections A, B, C, and D are written in the UCLan format, referring to the corresponding GLO and SLO in UK-SPEC.

A. Knowledge and Understanding

A1: Demonstrate knowledge and understanding of essential facts, concepts, theories and principles of the Energy Engineering discipline, and its underpinning science and mathematics. **(GLO: A1).**

A2: Demonstrate and apply knowledge of the wider multidisciplinary engineering context and its underlying principles. **(GLO: A2).**

A3: Identify aspects of social, environmental, ethical, economic and commercial considerations affecting the exercise of engineering judgement. **(GLO: A3).**

A4: Comprehensively explore theories, concepts, principles and methodologies in unfamiliar situations. **(GLO: A4).**

Teaching and Learning Methods

Knowledge acquisition occurs initially through tutor-led lectures (teaching) and directed study of textbooks and journal articles. This is followed up by student led learning activity using text (books and e-resources), media (software, video, technical articles) and active enquiry research methods.

The understanding of much engineering knowledge (learning) comes by application, use, and observation of effect. This is aided by tutorials, worked examples, analysis, synthesis, and Active Enquiry. Great benefit comes from this occurring in a group environment, where understanding can be developed by support from others. The tutor in these situations takes the role of a Mentor.

The Teaching and Learning strategies employed deliver opportunities for the achievement of the learning outcomes, demonstrate their attainment and recognise the range of student backgrounds. Delivery methods, activities and tasks are aligned with the learning outcomes for this programme, taking account of the learning styles and stage of the student.

Curriculum design is informed by the research, scholarship, and engineering activities of the staff, in line with the established criteria for accredited engineering degree programmes. Industrially relevant applications and examples of the material are essential to student understanding and future use. Delivery methods and curriculum design evolve in response to generic and discipline-specific developments, taking into account educational research, changes in national policy, industrial practice and the needs of employers. The context of the curriculum contains the generic social, legal, environmental and economic factors relevant to engineering, and topical factors (sustainability, and carbon footprint for example).

Assessment methods

Assessment of Knowledge is through examination of key facts using unseen papers. These include formal end of year examinations, or *phase-tests* focussing on a limited range of material during the year.

Assessment of understanding of the knowledge (and knowledge itself if appropriate) is through assignment or other coursework including group projects as a major aspect of an engineering degree qualification.

Assessment is a measure against the benchmark criteria, and forms an important part of the learning process.
The assessment of the Module Learning Outcomes through assignments and examinations are mapped to the Programme Learning Outcomes (in this section), which are directly linked to the Aims of the Programme, which in turn are in line with Accreditation, subject and other academic requirements.

B. Subject-specific skills

B1: Practical Engineering competence acquired in laboratories; workshops; industry; individual & group project work, design work; and development & use of computer software. **(GLO: B1, B2, B3).**

B2: Knowledge and understanding of scientific, mathematical, and associated engineering principles necessary to underpin activities in Energy Engineering. **(SLO: US1, US1m, US2, US2m, US3, US3m, US4m)**.

B3: Creative use of engineering principles in problem solving, design, explanation and diagnosis. **(SLO: E1, E1m, E2, E2m, E3, E3m, E4)**.

B4: Create and develop economically viable products, processes and systems to meet defined needs. **(SLO: D1, D1m, D2, D3, D4, D4m, D5, D6)**.

B5: Comprehensively, Identify and apply engineering principles and activities to promote sustainable development in an economic, social and environmental context. **(SLO: S1, S1m, S2, S2m, S3, S4, S5).**

B6: Practical application of competence in professional engineering practice. **(SLO: P1, P1m, P2, P2m, P3, P4, P5, P6, P7, P8, P8m)**.

Teaching and Learning Methods

The development of skills involves some tuition, some practice and considerable experience in using the skills in Engineering situations and relevant to engineering competencies

Skill development relates to areas specific to the Energy Engineering destinations of graduates and includes areas which are generic to engineering (such as workshop practices), those which are expected in an engineering degree (such as advanced simulation of CFD problems), and those which are programme specific (such as entrepreneurial business skills).

The course provides significant exposure to hands-on laboratory work and substantial individual project work, both at final year and developing through the course. Both design and Active Enquiry (research-led) projects are used, which develop both independence of thought and the ability to work effectively in a team.

Development of team working within the engineering design context is a strong feature of the provision. This enthuses students in their study, and creates graduates able to contribute immediately to their employment. The Placement activity is a significant aspect of the programme, both for the successful placement student and the culture of the final three years of the degree.

Assessment methods

The assessment methods include report writing, assignments, computational competencies and laboratory demonstrations.

The assessment of the Module Learning Outcomes through assignments and examinations are mapped to the Programme Learning Outcomes (in this section), which are directly linked to the Aims of the Programme, which in turn are in line with Accreditation, subject and other academic requirements.

C. Thinking Skills

C1: Apply appropriate quantitative science and engineering tools to the analysis of problems. **(GLO: C1)**.

C2: Demonstrate creative and innovative ability in the synthesis of solutions and in formulating designs. **(GLO: C2)**.

C3: Comprehend the broad picture and thus work with an appropriate level of detail. **(GLO: C3)**.

C4: Develop, monitor and update a plan, to reflect a changing operating environment. **(GLO: C4)**.

Teaching and Learning Methods

The exercise and development of *thinking skills* are achieved through active learning processes. Problem solving is the key to many engineering activities, and progresses in complexity and demand through the course. Staff interests and research often form the background to developments in active learning.

Implementation of this is seen through the use of workshops, drawing/CAD facilities, dedicated software, laboratories, rapid/additive manufacture techniques, bureau manufacturing, student presentations, external visitors, and field/industry based activity. These learning processes compliment the more conventional seminars, tutorials and case study approaches found in HE.

There is extensive group, and later team, working as a natural part of the working (and learning) environment in engineering.

Assessment methods

Assessment of thinking skills is by reports on practical investigations and tests, a 'design and make' project, case studies, formal examinations, workbooks and drawings in early stages of the course provision.

In later stages, formal reports with reflection on practical activities; design and manufacture processes and results; generating and analysing CAD, CIM, and other simulation models; computer software based analysis and calculations; and evaluation of prototypes are included. The independent final Project and group project based assessments demonstrate capability in skills related to individual specialised knowledge, understanding and practical aspects. Unseen examinations are appropriate for assessment of some intellectual skills under time constrained conditions.

Intellectual skills related to practical activity are developed through the experience of the activity in an appropriate context. These include the Engineering workshops and laboratory equipment, practical manufacture of prototypes during modules, the final Project, Creation and Evaluation, and level 7 Innovation in Problem Solving. Workbooks and guidance manuals are used widely in earlier years. The optional Placement provides additional opportunities for the students choosing to take it.

D. Other skills relevant to employability and personal development

D1: Developed transferable skills that will be of value in a wide range of situations, including Problem solving; Communication; and Working with others. **(GLO: D1).**

D2: Effective use of general IT [information technology] facilities and information retrieval skills. **(GLO: D2).**

D3: Planning self-learning and improving performance, as the foundation for lifelong learning/CPD [continuing professional development]. **(GLO: D3)**.

D4: Monitor and adjust a personal programme of work on an ongoing basis, and to learn independently. **(GLO: D4)**.

Teaching and Learning Methods

The Induction for the course starts the Personal Development Planning (PDP) programme, which is seen to continue after graduation as Continuing Professional Development (CPD).

Communication, team working, engineering problem solving and design, reflective use of available software, planning, critical evaluation, verification of results, confidence in outcomes, inter-personal skills, emotional intelligence, and goal setting all feature and are emphasised at various points through the programme. The University Personal Tutor system is a useful vehicle for discussion of these aspects of personal development. However, much is learnt in the day to day interactions with staff, industry visitors, and other students.

Assessment methods

Written communication skills are developed and assessed through the context for the assessment. Examples include the requirements for a formal report, laboratory report, business or technical justification, reflective practice, critical evaluation in a commentary, or statement of confidence in a decision made in complex and unpredictable situations. Group based activity requires reflection on the performance of the individual within that context. Team based activities require an assessment of the team formation and contribution to the outcome.

Effective use of the internet and web based infrastructure, including remote working are essential to engineers. These skills develop naturally out of the learning environment, which is facilitated by engineers with ongoing extensive industry experience. The easy transition of engineering graduates from related areas of study into key professional engineering positions and careers is attributed to the emphasis on the *real engineering* context.

13. Programme Structures*

Level	Module Code	Module Title	Credit rating
Level 7	MP4580	Engineer and society	20
	MP4586(C)	Group (energy) project	30
	MP4999(C)	Project	30
	MP4801(C)	Advanced energy systems design	20
	MP4708(O)	Renewable energy technology	20
	MP4713(O)	Wind power generation & control	20
Level 6	MP3999(C)	Project	40
	MP3731	Engineering design	20
	EL3102	Control Systems	20
	SC3007(C)	Advanced mathematical and simulation methods	20
	MP3801(C)	Energy and power generation systems	20
Level 5	MP2899(O)	Industrial Placement	120
Level 5	SC2153(C)	Further engineering mathematics and simulation	20
	EL2104(C)	Instrumentation & control	20
	EL2711	Electromagnetic systems	20
	MP2576(C)	Thermo-fluids with CFD	20
	MP2721	Operations Management A	20

14. Awards and Credits*

A minimum of 480 credits must be studied at this University on this programme.

MEng (Hons) Energy Engineering
Requires a minimum of 480 credits with 120 at Stage 2 and 240 at Stage 3, including a minimum of 480 at Level 4 or above, 360 at Level 5 or above, 240 at Level 6 or above and 120 at Level 7 or above.

MEng (Hons) Energy Engineering with Industrial Placement
Requires a minimum of 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 and satisfactory completion of module MP2899

BEng (Hons) Energy Engineering
Requires a minimum of 360 credits with 240 at Stage 2, including a minimum of 320 at Level 4 or above, 220 at Level 5 or above and 100 at Level 6 or above.

BEng Energy Engineering
Requires a minimum of 320 credits with 200 at Stage 2, including a minimum of 280 at Level 4 or above, 180 at Level 5 or above and 60 at Level 6 or above. The Project module MP3999 cannot be compensated.

For an award to be **'with Industrial Placement'** the module MP2899 must be satisfactorily completed.

Dip HE Energy Engineering
Requires a minimum of 240 credits with 120 at Stage 2, including a minimum of 200 at Level 4 or above, and 100 at Level 5 or above.

	MP2784(C)	Mechanics, Kinematics, and Materials	20	
Level 4	ER1010	Engineering Analysis	30	**Cert HE Energy Engineering** Requires 120 credits at Level 4 or above.
	ER1020	Engineering Design	30	
	ER1030	Engineering Science	30	
	ER1630	Engineering Applications	30	

All modules are compulsory (COMP) unless otherwise indicated.
Modules marked (C) are Core; and (O) are Optional.

15. Personal Development Planning

The course approach to Personal Development Planning (PDP) has been influenced by the LTSN Generic Centre Guide to Curriculum Design: Personal Development Planning. PDP activity is centred on:

- Reflection on learning, performance, and achievement.
- Planning for personal, educational, and career development.

Students are invited to review and reflect on their academic study, extra-curricular activities and career planning. This results in an increased understanding and ownership of learning.

Since learning is a lifelong process the work in PDP is not assessed. There are many similarities to work-based learning, and Continued Professional Development (CPD) - which is required for membership of professional societies. The skills in PDP are key components of employability: – self-reflection, recording, target setting, action planning and monitoring.

At Induction the student takes part in a session involving a range of self-assessment exercises. This is followed by early in Semester 1 the student being recommended to access the local web based materials, and other materials found by individual need or interest. The results of the activity or exercise are kept together in an A4 folder. A paper based system is suggested, due to concerns about the security, privacy, and long-term accessibility of records.

This activity is reinforced for all first year students by encouraging communication and team working between students, and between students and staff.

Subsequently during group tutorial sessions discussion is directed towards PDP elements. Topics found difficult, or needing further work are discussed (i) through Academic advisor sessions and (ii) through the professional development aspects of ER1060.

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.*

(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

.

Specific entry requirements for MEng (Hons) Energy Engineering may vary from year to year but are currently 280 points (old tariff) including Mathematics or Science or Technology at A2 level and at least five GCSEs at Grade C or above including Maths and English. Other equivalent qualifications are accepted. Applications from individuals with non-standard qualifications, relevant work or life experience and who can demonstrate the ability to cope with and benefit from degree-level studies are considered.

IELTS 6.0 (with no component below 5.5) or equivalent taken within two years of your course commencement date.

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

17. Key sources of information about the programme

http://www.uclan.ac.uk/schools/computing_engineering_physical/engineering_courses.php

http://www.uclan.ac.uk/information/courses/index.php

http://www.qaa.ac.uk/Publications/InformationAndGuidance/Documents/Engineering10.pdf

http://www.engc.org.uk/professional-qualifications/standards/uk-spec

http://www.heacademy.ac.uk/resources/detail/resource_database/id56_guide_to_curriculum_design_pdp

18. Curriculum Skills Map

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

Level	Module Code	Module Title	Core (C), Compulsory (COMP) or Option (O)	Programme Learning Outcomes																
				Knowledge and understanding				Subject-specific Skills							Thinking Skills			Other skills relevant to employability and personal development		
				A1	A2	A3	A4	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	D1	D2	D3	D4
Level 7	MP4580	Engineer and Society	COMP		✓	✓										✓		✓		✓	
	MP4586	Group (energy) Project	CORE		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓			
	MP4999	Project	CORE		✓		✓	✓	✓	✓					✓		✓		✓	✓	✓
	MP4801	Advanced Energy Systems Design	CORE	✓			✓		✓	✓		✓		✓							
	MP4708	Renewable Energy technology	O	✓			✓	✓	✓	✓				✓							
	MP4713	Wind Power Generation and Control	O	✓			✓	✓	✓	✓				✓							
LEVEL 6	MP3801	Energy generation and power systems	CORE	✓	✓	✓			✓		✓	✓	✓		✓			✓			
	MP3999	Project (C)	CORE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	EL3102	Control Systems	COMP	✓	✓	✓	✓		✓		✓				✓			✓			
	MP3701	Engineering design	COMP		✓			✓		✓		✓	✓	✓		✓	✓		✓		✓
	SC3007	Advanced mathematical and simulation methods	CORE	✓	✓	✓	✓	✓	✓	✓				✓			✓				
LEVEL 5	MP2899	Industrial Placement	O		✓	✓		✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	
	SC2153	Further mathematics and simulation	CORE																		
	MP2576	Thermo-fluids with CFD	CORE	✓				✓	✓	✓	✓		✓	✓	✓				✓	✓	
	EL2711	Electronic systems	COMP				✓					✓				✓	✓				✓
	MP2784	Mechanics, Kinematics, and Materials	CORE	✓				✓	✓	✓	✓		✓	✓							
	MP2721	Operations Management A	COMP	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓				✓	
	EL2711	Electromagnetic systems	COMP	✓	✓	✓	✓				✓				✓		✓	✓			✓
LEVEL 4	ER1010	Engineering Analysis	COMP	✓	✓		✓	✓	✓	✓			✓	✓	✓	✓					
	ER1020	Engineering Design	COMP					✓		✓	✓				✓						
	ER1630	Engineering Applications	COMP		✓	✓		✓					✓			✓		✓	✓	✓	
	ER1030	Engineering Science	COMP	✓			✓	✓	✓	✓			✓	✓	✓			✓			

Note: *Mapping to other external frameworks, e.g. professional/statutory bodies, will be included within Student Course Handbooks*

19. LEARNING OUTCOMES FOR EXIT AWARDS:

BEng (Hons) Energy Engineering

The award of BEng(Hons) Energy Engineering is based on meeting the following learning outcomes (UK Spec outcomes in bold parentheses):

A1:, Utilize a sound theoretical approach to enable the introduction and exploitation of new and advancing technology and other relevant developments, and related underpinning science and mathematics. **(GLO: A1).**

A2: Compare and contrast the wider multidisciplinary engineering context and underlying principles. **(GLO: A2).**

A3: Describe and discuss the social, environmental, ethical, economic and commercial considerations that affect the exercise of engineering judgement. **(GLO: A3).**

A4: Learn new theories, concepts, methods etc in unfamiliar situations. **(GLO: A4).**

B1: Practical Engineering competence acquired in laboratories; workshops; industry; individual & group project work, design work; and development & use of computer software. **(GLO: B1, B2, B3).**

B2: Application of scientific, mathematical, and associated engineering principles necessary to underpin activities in Energy Engineering. **(SLO: US1, US1m, US2, US2m, US3, US3m, US4m)**.

B3: Creative use of engineering principles in problem solving, design, explanation and diagnosis relevant to Energy Engineering. **(SLO: E1, E1m, E2, E2m, E3, E3m, E4)**.

B4: Create and develop economically viable products, processes and systems to meet defined needs. **(SLO: D1, D1m, D2, D3, D4, D4m, D5, D6)**.

B5: Specify and develop energy engineering activities to promote sustainable development in an economic, social and environmental context. **(SLO: S1, S1m, S2, S2m, S3, S4, S5).**

B6: Apply competence across professional engineering practice. **(SLO: P1, P1m, P2, P2m, P3, P4, P5, P6, P7, P8, P8m)**.

C1: Apply appropriate quantitative science and engineering tools to the analysis of problems. **(GLO: C1)**.

C2: Demonstrate creative and innovative ability in the synthesis of solutions and in formulating designs. **(GLO: C2)**.

C3: Design and deliver engineering solutions with an appropriate level of detail. **(GLO: C3)**.

C4: Develop, monitor and update a plan, to reflect a changing operating environment. **(GLO: C4)**.

D1: Apply transferable skills that will be of value in a wide range of situations, including Problem solving; Communication; and Working with others. **(GLO: D1).**

D2: Effective use of general IT [information technology] facilities and information retrieval skills. **(GLO: D2).**

D3: Plan self-learning and improve performance, as the foundation for lifelong learning/CPD [continuing professional development]. **(GLO: D3)**.

D4: Monitor and adjust a personal programme of work on an ongoing basis, and to learn independently. **(GLO: D4)**.

BEng Energy Engineering

The learning outcomes for BEng Energy Engineering are the same as for the bachelor with honours degree in Energy Engineering and the award of BEng Energy Engineering is based on meeting most of the learning outcomes listed above.

Industrial Placement

The learning outcomes for an award of MEng (Hons) Energy Engineering with industrial placement are the same as for MEng (Hons) Energy Engineering but in addition the module MP2899 must be passed. The learning outcomes for an award of BEng (Hons) Energy Engineering with industrial placement are the same as for BEng (Hons) Energy Engineering but in addition the module MP2899 must be passed. The learning outcomes for an award of BEng Energy Engineering with industrial placement are the same as for BEng Energy Engineering but in addition the module MP2899 must be passed.

Diploma in Higher Education

The learning outcomes for the Diploma in Higher Education gained through this programme are as follows and the award is based on meeting many of the learning outcomes listed:

A1*: Utilize a sound theoretical approach to the analysis of underpinning science and mathematics.

A2*: Compare and contrast the wider multidisciplinary engineering context and underlying principles.
A3*: Learn new theories, concepts, methods etc in unfamiliar situations.
B1*: Practical Engineering competence acquired in laboratories; workshops; project work, design work; and development & use of computer software.
B2*: Application of scientific, mathematical, and associated engineering principles necessary to underpin activities in Energy Engineering.
B3*: Creative use of engineering principles in problem solving, design, explanation and diagnosis relevant to Energy Engineering.
B4*: Specify and develop energy engineering activities that align with sustainable development.
B5*: Apply competence across professional engineering practice.
C1*: Apply appropriate quantitative science and engineering tools to the analysis of problems. .
C2*: Demonstrate creative and innovative ability in the synthesis of solutions and in formulating designs. .
C3*: Design and deliver engineering solutions with an appropriate level of detail. .
D1*: Apply transferable skills that will be of value in a wide range of situations, including Problem solving; Communication; and Working with others**.**
D2*: Effective use of general IT [information technology] facilities and information retrieval skills. **.**
D3*: Plan self-learning and improve performance, as the foundation for lifelong learning/CPD [continuing professional development].

<u>Certificate in Higher Education</u>
The learning outcomes for the Certificate in Higher Education gained through this programme are as follows and the award is based on meeting some of the learning outcomes listed:

A1*: Utilize a sound theoretical approach to the analysis of underpinning science and mathematics.
A2*: Describe the wider multidisciplinary engineering context and underlying principles.
A3*: Learn new theories, concepts, methods etc in unfamiliar situations.
B1*: Practical Engineering competence acquired in laboratories; workshops; design work; and use of computer software.
B2*: Application of scientific, mathematical, and associated engineering principles necessary to underpin activities in Energy Engineering.
B3*: Use of engineering principles in problem solving, design, explanation and diagnosis relevant to Energy Engineering.
B4:** Demonstrate a degree of competence across professional engineering practice.
C1*: Apply appropriate quantitative science and engineering tools to the analysis of problems. .
C2*: Sythesize learning to develop solutions and/or formulate designs. .
C3*: Design and deliver engineering solutions with an appropriate level of detail. .
D1*: Apply transferable skills that will be of value in a wide range of situations, including Problem solving; Communication; and Working with others**.**
D2*: Effective use of general IT [information technology] facilities and information retrieval skills. **.**
D3*: Plan self-learning and improve performance, as the foundation for lifelong learning/CPD [continuing professional development].

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

7. Awarding Institution / Body	University of Central Lancashire
8. Teaching Institution and Location of Delivery	University of Central Lancashire, Preston Campus
9. University School/Centre	Computing, Engineering and Physical Sciences.
10. External Accreditation	
11. Title of Final Award	BEng (Hons) Energy Engineering BEng (Hons) Energy Engineering with industrial placement
12. Modes of Attendance offered	Full Time; Sandwich.
7 UCAS Code	H801 Engineering.
8. Relevant Subject Benchmarking Group(s)	Engineering Council UK-SPEC
13. Other external influences	Accreditation requirements of IMechE Accreditation requirements of EI
14. Date of production/revision of this form	June 2017

15. Aims of the Programme

To provide students with the opportunity to develop knowledge and understanding in order to maintain and manage applications of current and developing technology, including energy engineering design and development, manufacture, construction and power generation operations. Thereby affording graduates the opportunity to fulfil the educational requirements for Incorporated Engineer and to partially fulfil the educational requirements for CEng..

- To meet the requirements for partial CEng (IEng) accreditation of the programme by Engineering Council Institutions.
- To provide an extended, enhanced, and industrially relevant Bachelors 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 contemporary industry.
- To equip graduates of the programme with knowledge, skills, experience, and understanding which underpin a technical career in Engineering.

16. Learning Outcomes, Teaching, Learning and Assessment Methods

UK Standard for Professional Engineering Competence (UK-SPEC).
UK-SPEC is the standard for recognition of professional engineers in the UK. The standard is published by the Engineering Council on behalf of the engineering profession. UK-SPEC recommends General Learning Outcomes (GLO) and Specific Learning Outcomes (SLO) for degree courses that are consistent with the learning outcomes existing for UCLan courses. The following sections A, B, C, and D are written in the UCLan format, referring to the corresponding GLO and SLO in UK-SPEC.

A. Knowledge and Understanding

A1:, Utilize a sound theoretical approach to enable the introduction and exploitation of new and advancing technology and other relevant developments, and related underpinning science and mathematics. **(GLO: A1).**

A2: Compare and contrast the wider multidisciplinary engineering context and underlying principles. **(GLO: A2).**

A3: Describe and discuss the social, environmental, ethical, economic and commercial considerations that affect the exercise of engineering judgement. **(GLO: A3).**

A4: Learn new theories, concepts, methods etc in unfamiliar situations. **(GLO: A4).**

Teaching and Learning Methods

Knowledge acquisition occurs initially through tutor-led lectures (teaching) and directed study of textbooks and journal articles. This is followed up by student led learning activity using text (books and e-resources), media (software, video, technical articles) and Active Enquiry research methods.

The understanding of much engineering knowledge (learning) comes by application, use, and observation of effect. This is aided by tutorials, worked examples, analysis, synthesis, and Active Enquiry. Great benefit comes from this occurring in a group environment, where understanding can be developed by support from others. The tutor in these situations takes the role of a Mentor.

The Teaching and Learning strategies employed deliver opportunities for the achievement of the learning outcomes, demonstrate their attainment and recognise the range of student backgrounds. Delivery methods, activities and tasks are aligned with the learning outcomes for this programme, taking account of the learning styles and stage of the student.

Curriculum design is informed by the research, scholarship, and engineering activities of the staff, in line with the established criteria for accredited engineering degree programmes. Industrially relevant applications and examples of the material are essential to student understanding and future use. Delivery methods and curriculum design evolve in response to generic and discipline-specific developments, taking into account educational research, changes in national policy, industrial practice and the needs of employers. The context of the curriculum contains the generic social, legal, environmental and economic factors relevant to engineering, and topical factors (sustainability, and carbon footprint for example).

Assessment methods

Assessment of Knowledge is through examination of key facts using unseen papers. These include formal end of year examinations, or *phase-tests* focussing on a limited range of material during the year.

Assessment of understanding of the knowledge (and knowledge itself if appropriate) is through assignment or other coursework including group projects as a major aspect of an engineering degree qualification.

Assessment is a measure against the benchmark criteria, and forms an important part of the learning process.

B. Subject-specific skills

B1: Practical Engineering competence acquired in laboratories; workshops; industry; individual & group project work, design work; and development & use of computer software. **(GLO: B1, B2, B3).**
B2: Application of scientific, mathematical, and associated engineering principles necessary to underpin activities in Energy Engineering. **(SLO: US1, US1m, US2, US2m, US3, US3m, US4m)**.
B3: Creative use of engineering principles in problem solving, design, explanation and diagnosis relevant to Energy Engineering. **(SLO: E1, E1m, E2, E2m, E3, E3m, E4)**.
B4: Create and develop economically viable products, processes and systems to meet defined needs. **(SLO: D1, D1m, D2, D3, D4, D4m, D5, D6)**.
B5: Specify and develop energy engineering activities to promote sustainable development in an economic, social and environmental context. **(SLO: S1, S1m, S2, S2m, S3, S4, S5).**
B6: Apply competence across professional engineering practice. **(SLO: P1, P1m, P2, P2m, P3, P4, P5, P6, P7, P8, P8m)**.

Teaching and Learning Methods

The development of skills involves some tuition, some practice and considerable experience in using the skills in Engineering situations and relevant to engineering competencies

Skill development relates to areas specific to the Energy Engineering destinations of graduates and includes areas which are generic to engineering (such as workshop practices), those which are expected in an engineering degree (such as advanced simulation of CFD problems), and those which are programme specific (such as entrepreneurial business skills).

Development of team working within the engineering design context is a strong feature of the provision. The Placement activity is a significant aspect of the programme, both for the successful placement student and the culture of the final three years of the degree.

Assessment methods

The assessment methods include report writing, assignments, computational competencies and laboratory demonstrations.

C. Thinking Skills

C1: Apply appropriate quantitative science and engineering tools to the analysis of problems. **(GLO: C1)**.
C2: Demonstrate creative and innovative ability in the synthesis of solutions and in formulating designs. **(GLO: C2)**.
C3: Design and deliver engineering solutions with an appropriate level of detail. **(GLO: C3)**.
C4: Develop, monitor and update a plan, to reflect a changing operating environment. **(GLO: C4)**.

Teaching and Learning Methods

The exercise and development of 'Thinking Skills' are achieved through active learning processes. Problem solving is the key to many engineering activities, and progresses in complexity and demand through the course. Staff interests and research often form the background to developments in active learning.

Implementation of this is seen through the use of workshops, drawing/CAD facilities, dedicated software, laboratories, rapid / additive manufacture techniques, bureau manufacturing, student presentations, external visitors, and field/industry based activity. These learning processes compliment the more conventional seminars, tutorials and case study approaches found in HE.

There is extensive group, and later team, working as a natural part of the working (and learning) environment in engineering.

Assessment methods

Assessment of thinking skills is by reports on practical investigations and tests, a 'design and make' project, case studies, formal examinations, workbooks and drawings in early stages of the course provision.

In later stages, formal reports with reflection on practical activities; design and manufacture processes and results; generating and analysing CAD, CIM, and other simulation models; computer software based analysis and calculations; and evaluation of prototypes are included. The independent final Project and group project based assessments demonstrate capability in skills related to individual specialised knowledge, understanding and practical aspects. Unseen examinations are appropriate for assessment of some intellectual skills under time constrained conditions.

Intellectual skills related to practical skills are tested through the experience of the activity in an appropriate context. These include the Engineering workshops and laboratory equipment, practical manufacture of prototypes during modules, the final Project, Creation and Evaluation, and level 7 Innovation in Problem Solving. Workbooks and guidance manuals are used widely in earlier years. The optional Placement provides additional opportunities for the students choosing to take it.

D. Other skills relevant to employability and personal development

D1: Apply transferable skills that will be of value in a wide range of situations, including Problem solving; Communication; and Working with others. **(GLO: D1).**

D2: Effective use of general IT [information technology] facilities and information retrieval skills. **(GLO: D2).**

D3: Plan self-learning and improve performance, as the foundation for lifelong learning/CPD [continuing professional development]. **(GLO: D3)**.

D4: Monitor and adjust a personal programme of work on an ongoing basis, and to learn independently. **(GLO: D4)**.

Teaching and Learning Methods

The Induction for the course starts the Personal Development Planning (PDP) programme, which is seen to continue after graduation as Continuing Professional Development (CPD).

Communication, team working, engineering problem solving and design, reflective use of available software, planning, critical evaluation, verification of results, confidence in outcomes, inter-personal skills, emotional intelligence, and goal setting all feature and are emphasised at various points through the programme. The University Personal Tutor system is a useful vehicle for discussion of these aspects of personal development. However, much is learnt in the day to day interactions with staff, industry visitors, and other students.

Assessment methods

Written communication skills are developed and assessed through the context for the assessment. Examples include the requirements for a formal report, laboratory report, business or technical justification, reflective practice, critical evaluation in a commentary, or statement of confidence in a decision made in complex and unpredictable situations. Group based activity requires reflection on the performance of the individual within that context. Team based activities require an assessment of the team formation and contribution to the outcome.

13. Programme Structures*				14. Awards and Credits*
Level	**Module Code**	**Module Title**	**Credit rating**	
Level 6	MP3999(C)	Project	40	**BEng (Hons) Energy Engineering** Requires a minimum of 360 credits with 240 at Stage 2, including a minimum of 320 at Level 4 or above, 220 at Level 5 or above and 100 at Level 6 or above. **BEng Energy Engineering** Requires a minimum of 320 credits with 200 at Stage 2, including a minimum of 280 at Level 4 or above, 180 at Level 5 or above and 60 at Level 6 or above.
	MP3731	Operations Management B	20	
	EL3102	Control Systems	20	
	SC3007	Advanced mathematical and simulation methods	20	
	MP3801(C)	Energy & Power generation systems	20	
Level 5	MP2899(O)	Industrial Placement	120	For an award to be **'with Industrial Placement'** the module MP2899 must be satisfactorily completed.
	SC2153(C)	Further engineering mathematics and simulation	20	**Dip HE Energy Engineering** Requires a minimum of 240 credits with 120 at Stage 2, including a minimum of 200 at Level 4 or above, and 100 at Level 5 or above.
	EL2104	Instrumentation & control	20	
	EL2711	Electromagnetic systems	20	
	MP2576(C)	Thermofluids with CFD	20	
	MP2721	Operations Management A	20	
	MP2784(C)	Mechanics, Kinematics, and Materials	20	
Level 4	ER1010	Engineering Analysis	30	**Cert HE Energy Engineering** Requires 120 credits at Level 4 or above
	ER1020	Engineering Design	**30**	
	ER1030	Engineering Science	30	
	ER1630	Engineering Applications	30	

All modules are compulsory (COMP) unless otherwise indicated.
Modules marked (C) are Core; and (O) are Optional.

15. Personal Development Planning

The course approach to Personal Development Planning (PDP) has been influenced by the LTSN Generic Centre Guide to Curriculum Design: Personal Development Planning. PDP activity is centred on:

- Reflection on learning, performance, and achievement.
- Planning for personal, educational, and career development.

Students are invited to review and reflect on their academic study, extra-curricular activities and career planning. This results in an increased understanding and ownership of learning.

Since learning is a lifelong process the work in PDP is not assessed. There are many similarities to work-based learning, and Continued Professional Development (CPD) - which is required for membership of professional societies. The skills in PDP are key components of employability: – self-reflection, recording, target setting, action planning and monitoring.

At Induction the student takes part in a session involving a range of self-assessment exercises. This is followed by early in Semester 1 the student being recommended to access the local web based materials, and other materials found by individual need or interest. The results of the activity or exercise are kept together in an A4 folder. A paper based system is suggested, due to concerns about the security, privacy, and long-term accessibility of records.

This activity is reinforced for all first year students by encouraging communication and team working between students, and between students and staff.
Subsequently during group tutorial sessions discussion is directed towards PDP elements. Topics found difficult, or needing further work are discussed (i) through Academic advisor sessions and (ii) through the professional development aspects of ER1060.

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

.
Specific entry requirements for BEng (Hons) Energy Engineering may vary from year to year but are currently 240 points (old tariff) including Mathematics or Science or Technology at A2 level and at least five GCSEs at Grade C or above including Maths and English. Other equivalent qualifications are accepted. Applications from individuals with non-standard qualifications, relevant work or life experience and who can demonstrate the ability to cope with and benefit from degree-level studies are considered.

IELTS 6.0 (with no component below 5.5) or equivalent taken within two years of your course commencement date

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

17. Key sources of information about the programme

- http://www.uclan.ac.uk/schools/computing_engineering_physical/engineering_courses.php
- http://www.uclan.ac.uk/information/courses/index.php
- http://www.qaa.ac.uk/Publications/InformationAndGuidance/Documents/Engineering10.pdf
- http://www.engc.org.uk/professional-qualifications/standards/uk-spec
- http://www.heacademy.ac.uk/resources/detail/resource_database/id56_guide_to_curriculum_design_pdp

18. Curriculum Skills Map

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

Level	Module Code	Module Title	Core (C), Compulsory (COMP) or Option (O)	Programme Learning Outcomes															
				Knowledge and understanding				Subject-specific Skills						Thinking Skills				Other skills relevant to employability and personal development	
				A1	A2	A3	A4	B1	B2	B3	B4	B5	B6	C1	C2	C3	C4	D1	D2	D3	D4
e.g. LEVEL 6	EL3102	Control systems	COMP	✓			✓		✓			✓	✓								
	MP3999	Project	CORE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	MP3732	Operations management B	COMP	✓					✓	✓	✓	✓		✓	✓	✓				✓	✓
	SC3007	Advanced mathematical and simulation methods	COMP	✓			✓	✓	✓			✓	✓	✓			✓	✓			
	MP3801	Energy generation systems	CORE	✓	✓	✓	✓			✓		✓						✓	✓		
LEVEL 5	MP2899	Industrial Placement	O		✓	✓		✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	
	EL2104	Instrumentation & control	COMP	✓			✓														
	MP2576	Thermo-fluids with CFD	CORE	✓				✓	✓	✓	✓		✓	✓	✓				✓	✓	
	EL2711	Electromagnetic systems for energy engineers	COMP	✓			✓		✓			✓	✓	✓			✓	✓			
	MP2784	Mechanics, Kinematics, and Materials	COMP	✓				✓	✓	✓	✓		✓	✓							
	MP2721	Operations management A	COMP		✓	✓	✓	✓	✓		✓	✓		✓	✓	✓	✓			✓	✓
	SC2153	Further engineering mathematics and simulation	CORE	✓			✓		✓			✓	✓	✓			✓	✓			
LEVEL 4	ER1010	Engineering Analysis	COMP	✓	✓		✓	✓	✓	✓			✓	✓	✓	✓					
	ER1630	Engineering Applications	COMP		✓	✓		✓					✓			✓		✓	✓	✓	
	ER1030	Engineering Science	COMP	✓			✓	✓	✓	✓			✓	✓	✓			✓			
	ER1020	Engineering Design	COMP					✓		✓	✓				✓						

Note: *Mapping to other external frameworks, e.g. professional/statutory bodies, will be included within Student Course Handbooks*

Section 19 Learning outcomes for exit awards

BEng Energy Engineering

The learning outcomes for BEng Energy Engineering are the same as for the bachelor with honours degree in Energy Engineering and the award of BEng Energy Engineering is based on meeting most of the learning outcomes listed in Section 12.

Industrial Placement

The learning outcomes for an award of BEng (Hons) Energy Engineering with industrial placement are the same as for BEng (Hons) Energy Engineering but in addition the module MP2899 must be passed. The learning outcomes for an award of BEng Energy Engineering with industrial placement are the same as for BEng Energy Engineering but in addition the module MP2899 must be passed.

Diploma in Higher Education

The learning outcomes for the Diploma in Higher Education gained through this programme are as follows and the award is based on meeting many of the learning outcomes listed:

A1*: Utilize a sound theoretical approach to the analysis of underpinning science and mathematics.
A2*: Compare and contrast the wider multidisciplinary engineering context and underlying principles.
A3*: Learn new theories, concepts, methods etc in unfamiliar situations.
B1*: Practical Engineering competence acquired in laboratories; workshops; project work, design work; and development & use of computer software.
B2*: Application of scientific, mathematical, and associated engineering principles necessary to underpin activities in Energy Engineering.
B3*: Creative use of engineering principles in problem solving, design, explanation and diagnosis relevant to Energy Engineering.
B4*: Specify and develop energy engineering activities that align with sustainable development.
B5*: Apply competence across professional engineering practice.
C1*: Apply appropriate quantitative science and engineering tools to the analysis of problems. .
C2*: Demonstrate creative and innovative ability in the synthesis of solutions and in formulating designs. .
C3*: Design and deliver engineering solutions with an appropriate level of detail. .
D1*: Apply transferable skills that will be of value in a wide range of situations, including Problem solving; Communication; and Working with others**.**
D2*: Effective use of general IT [information technology] facilities and information retrieval skills. **.**
D3*: Plan self-learning and improve performance, as the foundation for lifelong learning/CPD [continuing professional development].

Certificate in Higher Education

The learning outcomes for the Certificate in Higher Education gained through this programme are as follows and the award is based on meeting some of the learning outcomes listed:

A1*: Utilize a sound theoretical approach to the analysis of underpinning science and mathematics.
A2*: Describe the wider multidisciplinary engineering context and underlying principles.
A3*: Learn new theories, concepts, methods etc in unfamiliar situations.
B1*: Practical Engineering competence acquired in laboratories; workshops; design work; and use of computer software.
B2*: Application of scientific, mathematical, and associated engineering principles necessary to underpin activities in Energy Engineering.
B3*: Use of engineering principles in problem solving, design, explanation and diagnosis relevant to Energy Engineering.
B4:** Demonstrate a degree of competence across professional engineering practice.
C1*: Apply appropriate quantitative science and engineering tools to the analysis of problems. .
C2*: Sythesize learning to develop solutions and/or formulate designs. .
C3*: Design and deliver engineering solutions with an appropriate level of detail. .
D1*: Apply transferable skills that will be of value in a wide range of situations, including Problem solving; Communication; and Working with others**.**
D2*: Effective use of general IT [information technology] facilities and information retrieval skills. **.**
D3*: Plan self-learning and improve performance, as the foundation for lifelong learning/CPD [continuing professional development].

UNIVERSITY OF CENTRAL LANCASHIRE

Programme Specification

1. Awarding Institution / Body	University of Central Lancashire
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
8. Relevant Subject Benchmarking Group(s)	QAA Subject Benchmarking Statements: Engineering (2015), and Construction, Property & Surveying (2008). *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				**14. Awards and Credits**
Level	**Module Code**	**Module Title**	**Credit rating**	
3	ERC001	Study Skills	20	**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**
	ERC002	Basic Mathematics	20	
	ERC003	Information and Communications Technology	20	
	ERC004	Practical Skills	20	
	ERC005	Design Studies	20	
	ERC006	Analytical Studies	20	

				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** **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															
Level	**Module Code**	**Module Title**	**Core (C), Compulsory (Comp)**	**Knowledge and Understanding**			**Subject-Specific Skills**			**Thinking Skills**			**Other skills relevant to employability and personal development**		
				A1	**A2**	**A3**	**B1**	**B2**	**B3**	**C1**	**C2**	**C3**	**D1**	**D2**	**D3**
Level 3	**ERC001**	**Study Skills**	Comp	X	X	X	X	X	X			X	X	X	X
	ERC002	**Basic Mathematics**	Comp	X	X	X	X	X		X	X	X	X		
	ERC003	**ICT**	Comp	X	X		X	X	X	X	X	X	X	X	X
	ERC004	**Practical Skills**	Comp	X	X	X	X	X	X	X	X	X	X	X	X
	ERC005	**Design Studies**	Comp	X	X	X	X	X	X	X	X	X	X	X	X
	ERC006	**Analytical Studies**	Comp	X	X	X	X	X	X	X	X	X	X	X	X