# University of Huddersfield

# Programme Specification

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| 1 | Awarding Institution | University of Huddersfield |
| 2 | **Teaching Institution** | University of HuddersfieldFujian Normal University, China (BEng (Hons) Electronic and Communication Engineering and BEng (Hons) Electronic Engineering and Computer Systems only) |
| 3 | **School and Department** | School of Computing and EngineeringDepartment of Engineering and Technology |
| 4 | **Programme accredited by** | The Institute of Engineering and Technology (IET):  MEng: Full fulfilment of Chartered Engineer (CEng) requirements. BEng (Hons): Partial fulfilment of Chartered Engineer (CEng) requirements. |
| 5 | Mode of delivery | Full-time, Sandwich & Part-time |
| 6 | Final Award | MEng Electronic Engineering (MEng EE)MEng Electronic and Electrical Engineering (MEng EEE)BEng (Hons) Electronic Engineering (BEng EE)BEng (Hons) Electronic and Electrical Engineering (BEng EEE)BEng (Hons) Electronic and Communication Engineering (BEng ECE)BEng (Hons) Electronic Engineering and Computer Systems (BEng EECS) |
| 7 | Programme title | MEng/BEng Electronics Programme |
| 8 | UCAS code | H612 MEng EEH601 MEng EEE H610 BEng EEH600 BEng EEEH640 BEng ECEGH46 BEng EECS |
| 9 | **Subject benchmark statement** | Engineering (2019) |
| 10 | Date of Programme Specification | July 2013, February 2014, July 2015, September 2015, February 2016, September 2016, January 2017, July 2017, October 2017,November 2017, October 2018, February 2019, June 2019,September 2019, June 2020, August 2020, October 2020, May 2021, November 2021, January 2022, February 2023 |

**11 Educational aims of the Courses**

The MEng/BEng Electronics based courses are long established and designed to provide the breadth of coverage and depth of treatment necessary to satisfy the relevant professional body: The Institution of Engineering and Technology (IET) academic requirements for Chartered Engineer (CEng) status. Consequently, all these courses are accredited by the IET as satisfying the specified degree level, academic requirements for membership of the Institution and working towards Chartered Engineer status. The electronics subject area has received continuous professional body accreditation for over 40 years.

All the courses have been designed to stimulate interest from a broad spectrum of prospective students with a variety of educational backgrounds. Thus, we look for students who are motivated, inquisitive and want a challenge; interested in why and how things happen, and how things work. We help you develop problem solving skills to answer these questions.

The broad aim of all the courses is;

 To prepare graduates for employment as professional engineers working in the field of electronic engineering and allied specialism.

The main educational aims of the course are:

1. To equip students with a comprehensive understanding of the integral role of electronic engineering and allied specialism, in industry and society.
2. To enable students to develop the qualities and skills relevant to employment as an electronic and allied specialism engineer, as well as related occupations.
3. To provide a vocationally relevant degree with opportunities for students to gain significant levels of professional body recognition.
4. To equip students with knowledge and understanding of techniques, concepts and developments in the field of electronics and allied engineering specialism.
5. To enable students to have analytical and critical thinking skills.
6. To enable students to have good communications skills, including group working and formal presentations.
7. To equip students with the appropriate skills in the field of information technology and systems.
8. To encourage and support students to use knowledge, skills and reflection to inform personal and professional development in order to foster a commitment to lifelong learning.

Graduates, from these courses, will have demonstrated high levels of knowledge and skill in electronic engineering and allied specialism. Additionally, MEng graduates will have achieved a comprehensive level of knowledge and skills in engineering, technical management and finance. This will increase their potential to rise to senior positions of responsibility at an early stage, giving a quicker route to Chartered Engineer status.

The areas of focus and employment opportunities, of the individual courses, are briefly;

MEng/BEng Electronic Engineering (MEng EE, BEng EE)

* This course primarily develops the knowledge, understanding and skills associated with the design of devices, circuits and systems that can acquire, condition and process signals representing physical variables. The principles of analogue and digital electronics devices and the processing of signals/data forms a fundamental basis of all the courses, with these courses specialising in the area of Integrated Circuit (IC) development.
* Graduates have gone on to work in innovative electronic product design; IC, medical, aerospace and military system development, as well designing audio and film industry equipment.

MEng/BEng Electronic and Electrical Engineering (MEng EEE, BEng EEE)

* This course develops the knowledge, understanding and skills associated with the generation, distribution, application and the control of electrical energy. The areas of sustainable power generation, infrastructures and electric motor performance and control are investigated, in addition to the principle aspects of electronic engineering specified earlier.
* Graduates have gone on to work in electronic and electrical engineering design, development, production and management of electrical systems, including the integration of power, electronic and control systems.

BEng (Hons) Electronic and Communication Engineering (BEng ECE)

* This course develops the knowledge, understanding and skills associated with the design and development of the circuits and systems which are used to produce, transmit, receive and process signals used for information transfer in communication systems. Optical fibre, radio frequency and wireless technologies are investigated alongside optimal coding systems and protocols, and in addition to the principle aspects of electronic engineering specified earlier.
* Graduates have gone on to work in electronic and communication engineering systems design, development and production in traditional engineering, international mobile telecommunications and aerospace industries etc.

BEng (Hons) Electronic Engineering and Computer Systems (BEng EECS)

* This course develops the knowledge, understanding and skills associated with computer systems architectures, networks, clusters and grids. The design of software and hardware for embedded systems is a primary focus, in addition to the principle aspects of electronic engineering specified earlier.
* Graduates have gone on to work in electronic and computer systems engineering design, and the development and production of computer systems, such as data and integrated-service networks, mobile and satellite systems, broadcasting and military systems.

These courses are vocational and produce engineers with skills to meet the needs of the wide range of industries that use technology and are not limited to the area of the course specialism. Consequently, graduates not only become professional engineers in the areas of research, design, development and management but are also well equipped for careers in other professions.

###### 12 Intended learning outcomes

The learning outcomes for these courses have been developed in light of the Quality Assurance Agency for Higher Education subject benchmark statements and the National Qualifications Framework (NQF). They are expressed in terms of the students’ abilities at the end of Foundation (F), Intermediate (I), Honours (H) or Masters (M) level.

The phrase ‘electronic and allied engineering specialism’ is used within a number of outcomes and is intended to signify that these outcomes relate to the engineering disciplines covered within the associated MEng/BEng courses. The specific area of focus covered by a module, is indicated by one or more of the following letters ‘a - e’ following the course learning outcome code where;

a: Electronics, b: Electrical, c: Communications, d: Computing, e: all areas, as is detailed in Appendix A: Mapping of Course Outcomes to Modules.

The presentation of course learning outcomes in the University of Huddersfield programme specification documents is required to conform to the University’s standard, so the outcomes have been ordered accordingly.

The MEng and BEng courses provide opportunities for students to develop and demonstrate knowledge and understanding, skills, qualities and other attributes in the following areas:

**Knowledge and Understanding**

|  |  |
| --- | --- |
| KU1 | Demonstrate a sound knowledge of the mathematical principles which underpin electronic engineering and allied specialism. (F) |
| KU2 | Demonstrate a sound knowledge of the basic concepts of electronic engineering and allied specialism. (F) |
| KU3 | Demonstrate a sound understanding of the mathematical and engineering principles within electronic engineering and allied specialism, and an ability to apply those principles more widely. (I) |
| KU4 | Demonstrate an in-depth knowledge of innovations and developments in electronic engineering and allied specialism (H, M) |
| KU5 | Demonstrate a comprehensive understanding of concepts, design processes and methodologies within electronic engineering and allied specialism, and an ability to apply more widely. (M) |
| KU6 | Demonstrate an understanding of appropriate codes of practice, quality issues, professional and ethical conduct. (F, I, H, M)  |
| KU7 | Demonstrate an in-depth knowledge of the allied course specialism and associated innovations. (H) |
| KU8 | Demonstrate a thorough understanding of commercial and economic considerations. (I, H, M) |

**Skills and other Attributes**

|  |  |
| --- | --- |
| SA1 | Apply fundamental mathematical methods and engineering principles in the analysis of electronics and allied engineering problems. (F) |
| SA2 | Apply extensive mathematical methods and engineering principles to analyse complex electronic and allied engineering problems. (I, H, M) |
| SA3 | Use creativity to develop innovative engineering design solutions. (H, M) |
| SA4 | Investigate and define electronics and allied engineering problems, identifying environmental and sustainability limitations, health and safety and risk assessment issues. (F, I, H, M) |
| SA5 | Working with technical uncertainty (H, M) |
| SA6 | Apply and adapt a wide range of engineering techniques and design processes to generate innovative solutions to unfamiliar problems, taking account of commercial and industrial constraints. (M)  |
| SA7 | Identify the performance of electronic and allied systems using analytical and computer software techniques. (F, I) |
| SA8 | Critically identify and classify the performance of electronic and allied systems using analytical and computer software techniques and assess the limitations. (H, M) |

**Professional Practical Skills**

|  |  |
| --- | --- |
| PS1 | Workshop and Laboratory skills. (F, I, H, M) |
| PS2 | Be able to access, prepare, process and present information using information technology and standard software packages. (F, I, H, M) |
| PS3 | Evaluate the appropriateness of different sources of technical literature (datasheets, journal publications etc) and different approaches to solving problems. (I, H, M) |

**Transferable Skills**

|  |  |
| --- | --- |
| TS1 | Communicate effectively, both orally and in writing. (F, I, H, M)  |
| TS2 | Work effectively to given objectives and deadlines. (F, I, H, M) |
| TS3 | Take responsibility for, and reflect upon, one’s own learning abilities and personal development. (F, I, H, M) |
| TS4 | Have the ability to work effectively in a team environment. (F, I, M) |

Professional Engineering Competence Learning Outcomes

The Engineering Council’s: United Kingdom Standard for Professional Engineering Competence (UK-SPEC), which has also been adopted as the Engineering Benchmark Statement, specifies the engineering-generic learning outcomes expected for engineering courses leading to Chartered Engineer (CEng) status. Consequently, the UK-SPEC outcomes with limited re-phrasing, to provide subject emphasis, have been supplied in Appendix D. The matrix, also in Appendix D, shows how each of the modules satisfies the specific learning outcomes and thus the requirements of the Engineering Council, IET and HEFCE.

###### 13 Programme structures and requirements, levels, modules, credits and awards:

**13.1 Awards of the Programme**

**MEng** (full-time) will be awarded upon successful completion of modules which give the student 480 academic credits. These credits must include 120 at Masters - M level, 120 at Honours - H level and at least a further 120 must be at -Intermediate – I level and/or H level.

**BEng (Hons)** (full-time) requires successful completion of modules worth 360 credits: normally 120 at H level, 120 at I level and 120 at Foundation - F level; although higher level credits may be substituted at I or F levels.

**BEng** (full-time) requires successful completion of modules worth 300 credits: normally 60 at H level, 120 at I level and 120 at F level; although higher level credits may be substituted at I or F levels.

**Sandwich awards** may be made in each case on completion of the Industrial Placement module, worth 120 sandwich credits. Industrial placement normally takes place in the third year of the course.

**DipHE in Electronic Engineering** for which the minimum requirement is 240 credits of which at least 120 must be I and/or H level.

**CertHE in Electronic Engineering** for which the minimum requirement is 120 credits F level.

**13.2 BEng (Hons) Course Structures**

**BEng (Hons) Electronics Courses**

There are four CEng accredited BEng (Hons) courses in the Electronics subject area:

BEng (Hons) Electronic Engineering (BEng EE)

BEng (Hons) Electronic and Electrical Engineering (BEng EEE)

BEng (Hons) Electronic and Communication Engineering (BEng ECE)

BEng (Hons) Electronic Engineering and Computer Systems (BEng EECS)

The generic structure for these courses is presented in figure 13.1 - it can be seen that year 1 is common to all courses. Year 2 has five common modules and one option module: students selecting Communications are able to progress to year 4 of any course except BEng EEE; those selecting Electrical Power and Machine Drives may only progress to BEng EEE, as shown in figure 13.2. Year 4 consists of two to four course-compulsory modules, one/two option module/s (from a selection of the remaining year 4 modules) and the Individual Project module, which will relate to the specialism of the course title. The course-specific year 4 modules for each course are as follows:

BEng (Hons) Electronic Engineering (BEng EE)

1. Analogue Systems Integration

BEng (Hons) Electronic and Electrical Engineering (BEng EEE)

* Electrical Power and Drive Systems
* Control Systems

BEng (Hons) Electronic and Communication Engineering (BEng ECE)

1. Communication Systems
2. Digital Signal Processing Applications
3. Analogue Systems Integration

BEng (Hons) Electronic Engineering and Computer Systems (BEng EECS)

* Parallel Computer Architectures, Clusters & Grids
1. Digital Signal Processing Applications

The range of BEng (Hons) awards provided by this structure allows students to have their year 4 specialism recognised in their award title. In each case, the structure is such that the specialism is introduced within the first two years and extended by the year 4 modules, with the project providing the opportunity for in-depth, student-centred study related to the solution of an engineering problem within the specialist area.

The programme structure develops a range of technical themes. These provide a broad base to each of the courses whilst supporting the specialism of each award.

* Electronics: runs through years 1-4 with Electronics 1, Electronics 2 and the year 4 modules Digital System Integration and Analogue System Integration.
* Electrical: builds from the Electrical Principles 1 in year 1, Electrical Principles 2, Electrical Power and Machine Drives and the control element of the Signal Analysis and Control module in year 2 through to the Electrical Power and Drive Systems and the Systems Control module in year 4.
* Computer-based systems: develops Computer Programming in year 1; through Embedded Systems in year 2 to Parallel Computer Architectures, Clusters & Grids and DSP Applications in year 4.
* Communications: builds from the Communications module and the signal analysis element of the Signal Analysis and Control module in year 2 through to Communications and the associated DSP Applications module in year 4.

Underpinning Science and Mathematics (C1):

Underpinning scientific principles are developed at year 1 in Electrical Principles 1, and to a lesser extent by support material within Electronics 1. In year 2 they are extended through Electrical Principles 2 and Signal Analysis and to a lesser extent by support material within the other technical modules. Underpinning mathematics is developed at year 1 in Mathematics. Further development is then embedded within technical modules in years 1, 2 and 4 such that mathematics is learned and applied within an engineering context.

Engineering Analysis (C2-C4):

Methods of engineering analysis are taught and applied within all the technical modules of the programme. Analysis is undertaken within teaching to support understanding and conception, to derive design equations, and to develop analytical capability in support of problem solving. Computer packages are widely used in support of this process, and students receive instruction on the use of these packages.

#### Design (C5-C6):

#### The design outcomes C5-C6 relate to design in its broadest sense: problem investigation and definition, including customer/user needs, costs, environmental, sustainability, H&S, production, maintenance and disposal aspects, and the application of creativity and innovation. The majority of the technical modules in the programme would naturally be expected to address design: and they do. But it is not practical in all these modules to seek to address design in this broad sense. The approach adopted within the course is thus to provide a core of modules which address design in the broad sense of C5-C6: Electronic Design, Manufacture & Test at year 1, Enterprise: Electronic Product Design and Manufacture at year 2, and the Individual Project at year 4. The remaining technical modules then develop technical design knowledge - probably most closely associated with engineering analysis outcomes, the application of quantitative methods and computer software in order to solve engineering problems – which are assessed by coursework which in most cases addresses a subset of the design outcomes C5-C6.

The Engineer and Society (C7-C11):

Knowledge and understanding of economic, social and environmental issues is developed primarily in the year 1 Professional Development and year 2 Enterprise: Electronic Product Design & Manufacture modules. The latter is based on electronic product design and manufacturing group project work, in the context of business, environment, finance, marketing, engineering management and design for manufacture; it is designed as an integrative module involving Problem Based Learning (PBL). Assignments in other modules and the Individual Project module contribute further to these issues. Also, but this is optional, students undertaking a placement in year 3 are required to gain an understanding of company organisation and practices.

Engineering Practice (C12-C18):

Workshop and laboratory skills are developed principally through the year 1 Electronic Design, Manufacture and Test module, which is workshop-based and designed to addresses C12 aspects, including the design, fabrication and test of electronic circuit boards. They are then reinforced through laboratory work in technical modules throughout the course in a range of technical contexts. Similarly, understanding the use of technical literature, from technical specifications through to journal papers is addressed throughout the course within laboratory, technical assignments and project work. Quality, contexts for application of engineering practice, codes of practice and legal issues are addressed primarily in the year 1 Professional Development and year 2 Enterprise: Electronic Product Design and Manufacture modules and elements of these are addressed in a range of other modules throughout the course.

 

Year 3

Year 4

EE, ECE, EECS

Option Module

NIE2226 Communications

EEE

Option Module

NIE2298 Electrical Power and Machines)

EECS

EE

ECE

All MEng/BEng Modules

EE, ECE, EECS, EEE

EEE

Year 2

Year 1

Industrial Placement

BEng(Hons) Electronic Engineering (EE)

BEng(Hons) Electronic and Electrical Engineering (EEE)

BEng(Hons) Electronic Engineering and Computer Systems (EECS)

BEng(Hons) Electronic and Communications Engineering (ECE)

**Figure 13.2 BEng Course Options and Routes**

**13.4 The MEng Programme**

The MEng/BEng Electronics Programme includes two MEng courses:

MEng Electronic Engineering (MEng/EE)

MEng Electronic and Electrical Engineering (MEng/EEE)

The MEng extended awards were originally designed according to the "Guidance Notes on Master of Engineering Courses" from the Engineering Council's Standards and Routes to Registration" (SARTOR 2-3), and were later updated in line with the United Kingdom Standard for Professional Engineering Competence (UK-SPEC). They are intended to provide a fast-track route to Chartered Engineer (CEng) for high-quality entrants: either at entry, or as demonstrated in year 2 and or year 4 of one of the BEng(Hons) courses, from which they may transfer/progress to MEng year 5. MEng graduates will be capable of achieving high academic and practical standards.

In line with UKSPEC guidance, the MEng course extend the BEng (Hons) course by providing greater depth and some degree of broadening in a particular technical subject area, and by providing the knowledge and skills needed to be able to contribute to the successful management of industry. So, in addition to gaining enhanced technical expertise, graduates will have extended knowledge, understanding and skills which provide them with a fuller awareness of commercial sensitivity, appreciation of business objectives, ability to grasp operational strategy, an understanding of the operational constraints of modern industry and practical and personal skills to be able to make contributions to projects in a team environment, all of which are pre-requisites to making a contribution to industrial success.

The generic structure for the courses is presented in figure 13.3. Years 1 to 4 are the same as for the equivalent BEng(Hons) course, except that one of the year 4 options is replaced by Project, Quality, & Production Management. Year 5 continues the broader development through financial development in the Project and Finance Management and the course specific technical modules then provide technical deepening. The Group Project tests the ability to work constructively with others in a group to plan, manage and execute a major, interdisciplinary, design-oriented project. The project requires the development of innovative design solutions which are compatible with clearly identified business/commercial objectives, and so involves the integrated application of technical, business and commercial knowledge and skills.

The course specific modules for each course are as follows:

MEng Electronic Engineering (MEng/EE)

Year 2: Communications

Year 4: Analogue Systems Integration

Year 5: Advanced Digital Design

MEng Electronics and Electrical Engineering (MEng/EEE)

Year 2: Electrical Power and Machine Drives

Year 4: Electrical Power & Drive Systems

Control Systems

Year 5: Modelling of Electromechanical Systems



The way in which the courses develop each of the five themes of UK-SPEC is discussed below. A matrix showing the programme outcomes addressed by each module, with a cross-reference to the UKSPEC outcomes is presented in Appendix A.

Underpinning Science and Mathematics (M1):

Students progressing to year 4 or 5 of an MEng course will have progressed at the 1st/2.1 level and so will have demonstrated a good understanding of, and ability to apply, the science and mathematics underpinning their disciplines. The M-level course specific technical modules and the Group Project will develop further knowledge and will require application at M-level and an awareness of developing technologies.

Engineering Analysis (M2-M4):

Students progressing to year 4 or 5 of an MEng course will have progressed at the 1st/2.1 level and so will have demonstrated a good understanding of, and ability to apply, analytical methods. The M-level course specific technical modules and the Group Project will require a deeper understanding of, and an ability to apply new methods of analysis and the application of analytical methods to new areas of technology and to unfamiliar problems.

#### Design and Innovation (M5-M6):

Students progressing to year 4 or 5 of an MEng course will have progressed at the 1st/2.1 level and so will have demonstrated a good understanding of, and ability to apply, design methods. The M-level course specific Group Project module will require a deeper understanding of such methods and the ability to apply them in unfamiliar situations, producing innovative solutions to design problems.

The Engineer and Society (M7-M11):

The year 4 Project, Quality, & Production Management module, the year 5 Project and Finance Management module and the integrated application of business, commercial and technical knowledge within the Group Project module combine to provide a quite extensive knowledge and understanding of management and business practices and their application in the context of engineering and technology, including the evaluation of commercial risk.

Engineering Practice (M12-M18):

Students progressing to year 4 or 5 of an MEng course will have progressed at the 1st/2.1 level and so will have demonstrated a good understanding of engineering practice and engineering components and materials. The M-level course specific, Group Project module will develop this knowledge and understanding further and is designed to test the ability to apply engineering techniques within a specified business/commercial context.

**13.5 BEng Electronic Engineering**

This unclassified award is available to students who progress to year 4 of a BEng(Hons) or MEng course who fail to satisfy the requirements for BEng(Hons), but who achieve 300 credits according to the regulations for BEng (unclassified) presented in section 18.3.

**13.6 Key Skills Themes**

The mathematics and engineering principles required to underpin these technical themes are developed through the Mathematics, Electrical Principles 1, Electrical Principles 2, and Signal Analysis and Control modules. Broadening and contextual development are addressed through the year 1 Professional Development and year 2 Enterprise: Product Design and Manufacture modules. The modules within the technical themes develop these areas further, as discussed below in relation to UKSPEC.

Transferable skills development in communication, study and group work is addressed principally within the year 1 Professional Development and the year 2 Enterprise: Electronic Product Design and Manufacture modules. CV preparation and career planning are developed within the Professional Development module and also through the Industrial Placement preparation sessions in Year 2, which also develop students’ interview and presentation skills. Personal Development Planning is encouraged and monitored through the personal tutor system, as explained in section 15.

The year 4 Individual Project provides the opportunity for students to apply the knowledge and skills that they have developed within the course to the solution of a significant engineering problem within their area of specialism. This integrative project provides the most significant assessment of a student’s overall achievement, and this is reflected in its contribution to the final award classification.

The Programme provides the opportunity for students to undertake an assessed, 48-week, industrial placement. This allows students to gain a detailed understanding of an industrial environment, to become involved in the processes of industry whilst undertaking a role which allows them to apply the knowledge and skills that they have developed within their course, and in the process to develop technical, personal and interpersonal skills that will help to prepare them for future employment. The placement year is not compulsory, but it is strongly recommended.

###### 14 Teaching, Learning and Assessment

Teaching and learning enables students to acquire the knowledge and skills required by the programme. A variety of strategies are used depending on the nature of the material being considered and also taking into account the individual learning styles of the students. Whatever the learning strategy adopted in a particular module, and the timetabled contact hours, it is expected that a 20 credit module will occupy a student for at least 200 hours.

Typically, both formal and informal lectures are used as a mechanism to provide key facts, concepts, theories and methodologies. These may be backed up by tutorial and/or practical sessions. These sessions allow students to develop their skills in the areas being considered, to receive immediate feedback on their progress and to take charge of their own learning.

In some subject areas, the key facts are less well structured and therefore dissemination through lectures is not the most appropriate teaching method. These subjects will typically be taught using studio-based sessions or small group seminars. In these sessions the learning is very much student centred with the lecturer providing direction towards a variety of learning and data resources. Subjects falling into this category include several of the design modules and the enterprise element at second year.

Use of IT resources in teaching is made across the full range of subjects. This may be in the form of online learning material, chat rooms and interactive demonstrations and examples. This type of learning environment allows students to take greater control of their own learning and allows study to take place according to the student’s own schedule. However, this type of learning is provided in addition to timetabled sessions where attendance is compulsory. Students are introduced to the University and Departmental systems for C&IT in the Professional Development and in several technical modules at year 1.

Formative assessment is seen as an important part of the learning process and may be provided in a variety of ways. Whenever possible, students will be given individual feedback on their progress prior to formal assessment. This feedback may be in the form of verbal comments on work reviewed in a tutorial, seminar or studio session or written feedback on a piece of work submitted prior to assessment. It is important to understand that formative assessment is a student driven process. Students are not required to submit work for formative assessment but must do so if they desire this feedback.

Assessment is used to determine if students have achieved the learning outcomes of individual modules and hence, the learning outcomes of the programme. A number of forms of assessment are used. These can include formal reports and log books on assignments and laboratory work, audio-visual presentations (both individually and as a member of a group), computer based tests, short tests and formal examinations. In all cases, assessment takes place under the regulations set down in the Regulations for Awards and repeated in the Students’ Handbook of Regulations.

The assessment to be used in individual modules is indicated in appendix C.

###### 15 Support for students and their learning

**15.1** Support for students undertaking this course operates at University, School and Course level as follows:

**15.2 University Level**

The University provides a range of centralised support services to students. This includes:

**15.2.1 Wellbeing Services**

There are a range of support options available through the wellbeing Service. The [wellbeing webpages](https://students.hud.ac.uk/help/wellbeing/) provide a more detailed explanation of these but support includes:

* Wellbeing and mental health support
* Welfare support
* Counselling
* Getting Back on Track with your studies
* Groups and workshops
* Self-help resources
* Support for student parents

The wellbeing Service also enables students to access a free, confidential platform called Togetherall. [Togetherall](https://togetherall.com/en-gb/) has a range of self-help options to support emotional and mental wellbeing including advice, information and guidance, groups and courses to address emotional and mental health difficulties and support forums.

The service also delivers to support to students who have experienced harassment, bullying, hate incidents or hate crimes. You can find out more information about this on their [share and support page](https://students.hud.ac.uk/help/wellbeing/share-support/). The Share and Support tool is an online form which enables you to share and seek support for incidents. You can choose to complete this anonymously or provide your details so that we can contact you and offer support.

The service also supports students with GP registration so all students have access to treatment. The University Health Centre is a GP practice that is situated on the edge of campus. If you aren’t registered with a GP then you can consider registering with the health centre. You can find information about the practice on the [Health Centre web page](https://www.universityhealthhuddersfield.co.uk/).

**15.2.2 Disability Services**

Disability Services work with students who have one or more of the following: specific learning difficulties such as dyslexia; mental health difficulties such as anxiety and depression; an autistic spectrum condition; hearing impairments; visual impairments; long term medical conditions such as diabetes or cancer and physical or mobility difficulties. Where a disability or condition may have an impact on study, the service works alongside a student to identify the impact and coordinate appropriate support or adjustments. You can find out more about Disability Services on [their website](http://www.hud.ac.uk/disability-services/).

**15.2.3 Careers and Employability Service**

The Careers and Employability service provide support to students with:

* Jobs, work experience and volunteering
* CVs, applications and interviews
* Advice on further study
* Using assessment centres and psychometric tests
* Continued advice as a graduate

More information on their services can be found on [their website](https://students.hud.ac.uk/opportunities/careers/).

**15.2.4 The Student Finance Office**

The Student Finance Office services include:

* Information and guidance regarding possible sources of funding for all courses in the University.
* Budgeting advice to discuss a variety of options and strategies in order to manage on a budget.
* Facilities for the billing and payment of income to be collected by the University.
* Debt advice via personal and confidential sessions is available from trained staff along with mediation and resolution.

Further information can be found on the [student finance website](http://www.hud.ac.uk/students/finance)

**15.2.5 Computing Services**

Computing Services provide induction and ongoing support for all students. More information on the range of computing services can be found on [their website](https://students.hud.ac.uk/studies/it/).

**15.2.6 Library** **Services**

Library Services provide induction and ongoing support for all students. More information on the range of library services can be found on [their website](https://library.hud.ac.uk/).

**15.3 School Level**

* + 1. The School of Computing and Engineering provides additional student support using a variety of approaches:
* All students undertake an induction programme at the start of their studies.
* All students have a Personal Academic Tutor (PAT), with whom they should discuss academic difficulties. The PAT will refer tutees to central help facilities as appropriate.
* A Guidance Team supports students with a wide range of Learning and Academic skills development. ([**Student Support - University of Huddersfield**)](https://students.hud.ac.uk/unilife/sce/studentsupport/), through seminars, workshops and 1-1 appointments.
* A central computer-based attendance-monitoring scheme is operated and students with poor attendance are contacted and advised.

**15.3.2**

* The School has a specialised placement unit offering extensive support to students undertaking placements within their course. This includes CV reviews, interview practice, placement searching and guidance on all aspects of the application process.

**15.4 Course Level**

* Year tutors are available to provide guidance on academic progress.
* Module tutors are available to help with academic problems both inside and outside timetabled hours.
* Supporting documentation is provided, either online or printed in the form of student handbooks, module handbooks, programme specifications and module specifications.
* All modules and year groups are supported on the Virtual-Learning Environment (VLE).

###### 16 Criteria for admission

The recruitment and admissions process endeavours to ensure a good match between the abilities and aptitudes of the applicants and the demands of the programme. The aim is to facilitate widening participation whilst ensuring that students can reasonably expect to succeed on their chosen course.

Course entry requirements are as given on the University web site: <http://www.hud.ac.uk/courses>

###### 17 Methods for evaluating and improving the quality and standards of teaching and learning

**Quality and Standards**

* The University’s Teaching and Learning Committee has ultimate responsibility for quality and standards of teaching and learning in the University.
* The School Board, via the School Teaching and Learning Committee has responsibility for implementing university policy through school-defined procedures.
* Periodic subject reviews take place on a rolling quinquennial programme and focus intern alia on the arrangements for quality management and enhancement, teaching, learning and assessment, C&IT strategies, the articulation and assurances of standards, external examiner reports and evaluation and links with professional bodies, employers and other external organisations.

**Monitoring, Development and Evaluation**

* The Course Committee is responsible for the monitoring and development of the course or programme, taking account of feedback from staff, students and external examiners. Feedback is sought as follows:
* from students through annual course and module evaluation questionnaires, termly student panel

 meetings and input from student members of the Course Committee;

* from external examiners through annual reports, course assessment board minutes, assessment

moderation reports and informal verbal communication during the year.

* The annual evaluation of the course/programme is the responsibility of the School Board. The Course Committee prepares an annual evaluation report comprising reporting and evaluation, informed by feedback from staff, students and external examiners and by statistical data.

**Validation of Courses, Modules and Changes**

* Course validation takes place under the University's Quality Assurance Procedures for Taught Programmes.
* Amendments to course/programme and module documents are validated by the School Accreditation and Validation Panel.

**Teaching and Learning**

* The School Teaching and Learning Panel, a sub-committee of the School Teaching and Learning Committee, is tasked with implementing the University's teaching and learning strategy and with fostering innovation in teaching and learning and the dissemination of good practice.
* A process for the peer observation of teaching is in place with the object of enhancing teaching practice and sharing ideas between staff.

###### 18 Regulation of assessment

The assessment regulations are as detailed in the University of Huddersfield Regulations for Awards, relevant sections of which are repeated in the Students' Handbook of Regulations. These regulations are not repeated here, since the University periodically changes the regulations.

Details of student regulations can be found in:

[www.hud.ac.uk/registry/regulationsandpolicies/studentregs/](https://www.hud.ac.uk/registry/regulationsandpolicies/studentregs/)

**Course Specific Regulations**

All courses are accredited by the professional body, The Institute of Engineering and Technology (IET), as meeting relevant academic requirements for Chartered Engineer status. As a condition of accreditation, the following regulation, in addition to that currently found in the University of Huddersfield Regulations for Awards, must also be satisfied:

* Where a module comprises two or more modes of assessment, all assessment components of weighting greater than 30%, are required to gain a minimum grade of no more than 10% below the pass mark.
	+ For F-Level, I-Level and H-Level modules the threshold will be 30%.
	+ For M-Level modules the threshold will be 40%.

The following course regulation, which is a requirement of Professional body accreditation, will be applicable for student entry from academic year 2022-2023.

* A maximum of 20 credits in a Bachelor’s or Integrated Master’s degree can be condoned (termed Compensation by the Engineering Council).
	+ If a module is available for Condonement, an opportunity will be given to undertake the appropriate referral assessment/s – if however the respective module is not subsequently assessed as an overall pass, then the condoned pass credits will be awarded, with no further module condonement available in subsequent levels of the course.

**Course Specific Regulations for Integrated Master’s Award**

Course Specific Progression Requirements

* Year 2 to Year 3/4
* normally, a minimum average mark for the year of 60% or above.
* Year 4 to Year 5
* normally, a minimum average mark for the year of 60% or above,
* the Individual Project module to be passed at the first attempt.
* Year 4 students who are unable to progress to Year 5 or elect not to continue will be eligible for a Bachelor’s degree with honours award, as detailed in the University of Huddersfield Regulations for Awards.

Applicable for student entry from academic year 2020-2021.

* The Integrated Master’s Degrees (second cycle award) receive classification awards, using the same system for the Bachelor’s degree (first cycle), namely First Class, Upper Second Class, Lower Second Class, or Third Class.

Master’s Award Classification Calculation

* On completion of a Master’s course the classification will be determined by the weighted numerical year credit average, as follows:

M-level:    weighting of 3 - 120 credit average

H-Level:   weighting of 2 - ‘best’ 100 credit average

I-Level:     weighting of 1 - ‘best’ 100 credit average

**BEng Electronic Engineering Course Specific Regulations**

A BEng(unclassified) may be awarded as a fallback to students registered on a BEng(Hons) course who successfully complete 300 academic credits, with at least 60 credits at H-level, normally including 40 credits from the Individual Project, plus a further 120 credits at either I or H level, and a further 120 credits at either F or I level. The standard University of Huddersfield Regulations for Awards will apply to this non accredited award.

###### 19 Indicators of quality and standards

**Course Validation.**

BEng(Hons) Electronics based courses at the University have been accredited by the professional body – The Institution of Engineering and Technology (IET) for 40 years. The most recent reaccreditation approval, received from the IET was in March 2021, with the next event scheduled in 2026.

The MEng courses (EE and EEE) are ‘Accredited by the Institution of Engineering and Technology on behalf of the Engineering Council for the purposes of fully meeting the academic requirement for registration as a Chartered Engineer.’

The BEng (Hons) courses (EE, EEE, ECE and EECS) are ‘Partial CEng Accreditation Accredited by the Institution of Engineering and Technology on behalf of the Engineering Council for the purposes of fully meeting the academic requirement for registration as an Incorporated Engineer and partly meeting the academic requirement for registration as a Chartered Engineer.’

Please note: This 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. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the study module guide and course handbook. The accuracy of the information contained in this document is reviewed by the University and may be checked by the Quality Assurance Agency for Higher Education.

**Key sources of information about the course can be found in:**

[www.hud.ac.uk](http://www.hud.ac.uk) - University website

http://compeng.hud.ac.uk/external/course-finder/subject-eleceng.php

 - Contains information about the BEng/MEng courses and facilities at the

 University of Huddersfield

http://compeng.hud.ac.uk/internal-student/documents/index.php - The School of Computing and Engineering intranet contains Year Handbooks and Module Specifications.

**APPENDIX A: MAPPING OF COURSE OUTCOMES TO MODULES**

 Key:

 Comp: Compulsory module: none condonable, C: Core Module, Opt: optional module

 ü = satisfies the Learning Outcome, (specific subject area covered by the LO: - a: Electronics, b: Electrical, c: Communications, d: Computing, e: all areas)

**Year 1**

 Courses: MEng Electronic and Electrical Engineering,

 MEng Electronic Engineering,

 BEng Electronic and Electrical Engineering,

 BEng Electronic Engineering,

 BEng Electronic and Communication Engineering,

 BEng Electronic Engineering and Computer Systems,

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  Learning Outcomes Year 1 (Foundation) | NFE2104 Electronic Design, Manufacture & Test | NFE2105 Mathematics  | NFE2156 Professional Development | NFE2158 Electrical Principles 1 | NFE2159 Electronics 1 | CFS2155 Computer Programming |
| C | C | C | C | C | C |
| KU1 |  |  e |   |  a, b, c |  a, c |   |
| KU2 |  a, b, c |   |   |  a, b, c |  a, c |  d |
| KU6 |  a, b, c |   |   e |   |   |   |
| SA1 |  a, b, c |   |   |  a, b, c |  a, c |  d |
| SA4 |  |   |  |   |   |   |
| SA7 |  a, b, c |  e |   |   | a, c |  d |
| PS1 |  |   |  |   |   |   |
| PS2 |  |   |  |   |   |   |
| TS1 |  |  |  |   |   |   |
| TS2 |  |   |  |  |   |   |
| TS3 |   |   |  |   |   |   |
| TS4 |   |   |  |   |   |   |

**Year 2**

Courses: MEng Electronic Engineering,

 BEng Electronic Engineering,

 BEng Electronic and Communication Engineering,

 BEng Electronic Engineering and Computer Systems,

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Learning Outcomes Year 2 (Intermediate) | NIE2208 Enterprise: Electronic Product Design & Manufacture | NIE2299 Electrical Principles 2 | NIE2203 Electronics 2 | NIE2206 Embedded Systems | NIE2204 Signal Analysis and Control | NIE2226 Communications |
| Comp | C | C | C | C | C |
| KU3 |   | a,b,c | a | a,d | a,b,c,d | a,c |
| KU6 |  |   |   |  |  |   |
| KU8 |  |   |   |   |   |   |
| SA4 | e | a,b,c |   |   |   |   |
| PS1 |   |  |  |  |  |  |
| PS2 |   |   |  |  |  |  |
| PS3 |  |  |  |  |  |  |
| TS1 |  |   |  |  |  |  |
| TS2 |  |  |  |  |  |  |
| TS3 |  |  |  |   |   |   |
| TS4 |  |   |   |   |   |   |

Courses: MEng/BEng Electronic and Electrical Engineering

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Learning Outcomes Year 2 (Intermediate) | NIE2208 Enterprise: Electronic Product Design & Manufacture | NIE2299 Electrical Principles 2 | NIE2203 Electronics 2 | NIE2206 Embedded Systems | NIE2204 Signal Analysis and Control | NIE2294 Electrical Power and Machines |
| Comp | C | C | C | C | C |
| KU3 |   | a,b,c | a | a,d | a,b,c,d | b |
| KU6 |  |   |   |  |  |  |
| KU8 |  |   |   |   |   |   |
| SA4 | e | a,b,c |   |   |   | b |
| PS1 |   |  |  |  |  |  |
| PS2 |   |   |  |  |  |   |
| PS3 |  |  |  |  |  |  |
| TS1 |  |   |  |  |  |  |
| TS2 |  |  |  |  |  |  |
| TS3 |  |  |  |   |   |  |
| TS4 |  |   |   |   |   |   |

**Year 4**

MEng Electronic Engineering

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Learning Outcomes Year 4 (Honours) | NHP2400 Final Year Project | NHE2483 Digital Systems Integration | NHE2482 Analogue Systems Integration | NHM2402 Project, Quality, & Production Management | NHE2484 Communications | NHE2487 Control Systems | NHE2530 Parallel Computer Architectures, Clusters & Grids |
| Comp | C | C | C | O | O | O |
| KU4 | a | a | a |   | c | a | d |
| KU6 |  |  |  |  |  |  |  |
| KU7 | a | a | a |   | c | a | d |
| KU8 |  |  |  |   |  |  |  |
| SA2 | a | a | a |   | c | a | d |
| SA3 |  |  |  |   |  |  |  |
| SA4 | a |  | a |   e |  | a | d |
| SA5 |  |  |  |  |  |  |  |
| SA8 |  | a | a |   | c | a | d |
| PS1 |  |  |  |   |  |  |  |
| PS2 |  |  |  |   |  |  |  |
| PS3 |  |  |  |   |  |  |  |
| TS1 |  |  |  |   |  |  |  |
| TS2 |  |  |  |   |  |  |  |
| TS3 |  |   |   |   |  |   |   |

MEng Electronic and Electrical Engineering

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Learning Outcomes Year 4 (Honours) | NHP2400 Final Year Project | NHE2483 Digital Systems Integration | NHE2487 Control Systems | NHE2486 Electrical Power and Machines | NHM2402Project, Quality, & Production Management |
| Comp | C | C | C | C |
| KU4 | b | a | a |  |   |
| KU6 |  |  |  |  |  |
| KU7 | b | a | a | b |   |
| KU8 |  |  |  |  |   |
| SA2 | b | a | a | b |   |
| SA3 |  |  |  |  |   |
| SA4 | b |  | a | b |   e |
| SA5 |  |  |  |  |  |
| SA8 |  | a | a |  |   |
| PS1 |  |  |  |  |   |
| PS2 |  |  |  |  |   |
| PS3 |  |  |  |  |   |
| TS1 |  |  |  |  |   |
| TS2 |  |  |  |   |   |
| TS3 |  |   |   |   |   |

BEng Electronic Engineering

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Learning Outcomes Year 4 (Honours) | NHP2400 Final Year Project | NHE2483 Digital Systems Integration | NHE2482 Analogue Systems Integration | NHM2402 Project, Quality, & Production Management | NHE2484 Communications | NHE2487 Control Systems | NHE2530 Parallel Computer Architectures, Clusters & Grids |
| Comp | C | C | O | O | O | O |
| KU4 | a | a | a |   | c | a | d |
| KU6 |  |  |  |  |  |  |  |
| KU7 | a | a | a |   | c | a | d |
| KU8 |  |  |  |   |  |  |  |
| SA2 | a | a | a |   | c | a | d |
| SA3 |  |  |  |   |  |  |  |
| SA4 | a |  | a |   e |  | a | d |
| SA5 |  |  |  |  |  |  |  |
| SA8 |  | a | a |   | c | a | d |
| PS1 |  |  |  |   |  |  |  |
| PS2 |  |  |  |   |  |  |  |
| PS3 |  |  |  |   |  |  |  |
| TS1 |  |  |  |   |  |  |  |
| TS2 |  |  |  |   |  |  |  |
| TS3 |  |   |   |   |  |   |   |

BEng Electronic and Electrical Engineering

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Learning Outcomes Year 2 (Honours) | NHP2400 Final Year Project | NHE2483 Digital Systems Integration | NHE2487 Control Systems | NHE2486 Electrical Power and Machines | NHM2402 Project, Quality, & Production Management | NHE2482 Analogue Systems Integration |
| Comp | C | C | C | O | O  |
| KU4 | b | a | a |   |   | a |
| KU6 |  |  |  |  |  |  |
| KU7 | b | a | a | b |   | a |
| KU8 |  |  |  |  |   |  |
| SA2 | b | a |  | b |   |  |
| SA3 |  |  | a |  |   | a |
| SA4 | a |  |  | b |   e |  |
| SA5 |  |  | a |  |  | a |
| SA8 |  | a |  |  |   |  |
| PS1 |  |  |  |  |   |  |
| PS2 |  |  |  |  |   |  |
| PS3 |  |  |  |  |   |  |
| TS1 |  |  |  |  |   |  |
| TS2 |  |  |   |   |   |   |
| TS3 |  |   |   |   |   |   |

BEng Electronic and Communication Engineering

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Learning Outcomes Year 2 (Honours) | NHP2400 Final Year Project | NHE2483 Digital Systems Integration | NHE2482 Analogue Systems Integration | NHE2484 Communications | NHE2404 DSP Applications |
| Comp | C | C | C | C |
| KU4 | c | a | a | c | a,d |
| KU6 |  |  |  |  |  |
| KU7 | c | a | a | c | a,d |
| KU8 |  |  |  |  |  |
| SA2 | c | a | a | c | a,d |
| SA3 |  |  |  |  |  |
| SA4 | c |  | a |  |  |
| SA5 |  |  |  |  |  |
| SA8 |  | a | a | c | a,d |
| PS1 |  |  |  |  |  |
| PS2 |  |  |  |  |  |
| PS3 |  |  |  |  |  |
| TS1 |  |  |  |  |  |
| TS2 |  |  |  |  |  |
| TS3 |  |   |   |  |   |

BEng Electronic Engineering and Computer Systems

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Learning Outcomes Year 2 (Honours) | NHP2400 Final Year Project | NHE2483 Digital Systems Integration | NHE2530 Parallel Computer Architectures, Clusters & Grids | NHE2404 DSP Applications | NHE2487 Control Systems | NHE2482 Analogue Systems Integration |
| Comp | C | C | C | O | O |
| KU4 | d | a | d | a,d | a | a |
| KU6 |  |  |  |  |  |  |
| KU7 | d | a | d | a,d | a | a |
| KU8 |  |  |  |  |  |  |
| SA2 | d | a | d | a,d | a | a |
| SA3 |  |  |  |  |  |  |
| SA4 | d |  | d |  | a | a |
| SA5 |  |  |  |  |  |  |
| SA8 |  | a | d | a,d | a | a |
| PS1 |  |  |  |  |  |  |
| PS2 |  |  |  |  |  |  |
| PS3 |  |  |  |  |  |  |
| TS1 |  |  |  |  |  |  |
| TS2 |  |  |  |  |  |  |
| TS3 |  |   |   |   |   |   |

##### Year 5

MEng Electronic Engineering

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Learning Outcomes Year 5 (Masters) | NMM3510 Group Project  | NMM3518 Project and Finance Management | NME3510 Parallel Computer Architectures Cluster and Cloud Computing | NME3522 Virtual Instrumentation | NME3523 Signal Analysis & Processing | NME 3585 Advanced Digital Design |
| Comp | C | C | C | C | C |
| KU4 |  e |   |  a,d |  a,b,c |  e | a |
| KU5 |  |   |   |   |   |  |
| KU6 |  e |   |  a,d |  a,b,c |  e | a |
| KU8 |   |   |  |  |  |  |
| SA2 |  e |   |  |  a,b,c |  e | a |
| SA3 |   |   |   |   |   |  |
| SA4 |  e  |   |   |  |  e |  |
| SA5 |   |   |   |   |   |  |
| SA6 |  |  |  |  |  |  |
| SA8 |  e |   |  a,d |  a,b,c |  e |  a |
| PS1 |   |   |  |  |  |  |
| PS2 |   |   |   |   |   |  |
| PS3 |   |   |   |   |   |  |
| TS1 |   |  |   |   |   |  |
| TS2 |   |   |   |   |   |  |
| TS3 |   |   |   |   |  |   |

#####

MEng Electronic and Electrical Engineering

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Learning Outcomes Year 5 (Masters) | NMM3510 Group Project  | NMM3518 Project and Finance Management | NME3545 Computers in Control | NME3522 Virtual Instrumentation | NME3539 Process Measurement & Control | NME3521 Modelling Electromechanical Systems |
| Comp | C | C | C | C | C |
| KU4 |  e |   |  a,d |  a,b,c |  e |  e |
| KU6 |  |   |   |   |   |   |
| KU7 |  e |   |  a,d |  a,b,c |  e |  e |
| KU8 |   |   |  |  |  |  |
| SA2 |  e |   |  e |  a,b,c |  e |  e |
| SA3 |   |   |   |   |   |   |
| SA4 |   |   |   |  |   |  |
| SA5 |   |   |   |   |   |  |
| SA6 |  |  |  |  |  |  |
| SA8 |  e |   |  a,d |  a,b,c |  e |  |
| PS1 |   |   |  |  |  |  |
| PS2 |   |   |   |   |   |   |
| PS3 |   |   |   |   |   |   |
| TS1 |   |  |   |   |   |   |
| TS2 |   |   |   |   |   |   |
| TS3 |   |   |  |  |  |  |

#####  APPENDIX B: COURSE STRUCTURES

 

 

 

 





**Appendix C**

**Assessment Schedule**

Outline assessment schedule showing the nature and timing of summative assessments for all modules contributing to the course, including optional modules and identifying the very last submission point for the whole course:

# Year 1

#  Courses: MEng Electronic and Electrical Engineering

#  MEng Electronic Engineering

#  BEng Electronic and Electrical Engineering

#  BEng Electronic Engineering

#  BEng Electronic and Communication Engineering

#  BEng Electronic Engineering and Computer Systems

| **Term** | **Module Code** | **Assessment Task** | **Week number** | **Last Submission of course ()** |
| --- | --- | --- | --- | --- |
| Term 1 | NFE2105 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NFE2105 | 2. In-Class Test (38%) | Week 6 |  |
| Term 1 | NFE2105 | 3. In-Class Test (38%) | Week 12 |  |
| Term 1 | NFE2156 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NFE2156 | 2. EnABLE (26%) | Weeks 2-6 |  |
| Term 1 | NFE2156 | 3. Written Assignment (50%) | Week 12 |  |
| Term 1 | NFE2158 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NFE2158 | 2. EnABLE (26%) | Weeks 7-11 |  |
| Term 1 | NFE2158 | 3. In-Class Test (50%) | Week 12 |  |
| Term 2 | CFS2155 | 1. In-Class Test (40%) | Week 12 |  |
| Term 2 | CFS2155 | 2. Written Assignment (60%) |  |  |
| Term 2 | NFE2104 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NFE2104 | 2. EnABLE (26%) | Weeks 7-11 |  |
| Term 2 | NFE2104 | 3. Project Work (50%) | Week 12 |  |
| Term 2 | NFE2159 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NFE2159 | 2. EnABLE (26%) | Weeks 2-6 |  |
| Term 2 | NFE2159 | 3. In-Class Test (50%) | Week 12 |  |

# Year 2

#  Courses: MEng Electronic Engineering

#  BEng Electronic Engineering

#  BEng Electronic and Communication Engineering

#  BEng Electronic Engineering and Computer Systems

| **Term** | **Module Code** | **Assessment Task** | **Week number** | **Last Submission of course ()** |
| --- | --- | --- | --- | --- |
| Term 1 | NIE2204 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NIE2204 | 2. In-Class Test (38%) | Week 6 |  |
| Term 1 | NIE2204 | 3. In-Class Test (38%) | Week 12 |  |
| Term 1 | NIE2208 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NIE2208 | 2. EnABLE (26%) |  |  |
| Term 1 | NIE2208 | 3. Written Assignment (50%) | Week 12 |  |
| Term 1 | NIE2299 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NIE2299 | 2. EnABLE (26%) |  |  |
| Term 1 | NIE2299 | 3. In-Class Test (50%) | Week 12 |  |
| Term 2 | NIE2203 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NIE2203 | 2. EnABLE (26%) |  |  |
| Term 2 | NIE2203 | 3. In-Class Test (50%) | Week 12 |  |
| Term 2 | NIE2206 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NIE2206 | 2. EnABLE (26%) |  |  |
| Term 2 | NIE2206 | 3. In-Class Test (26%) | Week 12 |  |
| Term 2 | NIE2206 | 4. Written Assignment (24%) | Week 12 |  |
| Term 2 | NIE2226 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NIE2226 | 2. Written Assignment (26%) |  |  |
| Term 2 | NIE2226 | 3. In-Class Test (50%) | Week 12 |  |

# Year 2

#  Courses: MEng Electronic and Electrical Engineering

#  BEng Electronic and Electrical Engineering

| **Term** | **Module Code** | **Assessment Task** | **Week number** | **Last Submission of course ()** |
| --- | --- | --- | --- | --- |
| Term 1 | NIE2204 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NIE2204 | 2. In-Class Test (38%) | Week 6 |  |
| Term 1 | NIE2204 | 3. In-Class Test (38%) | Week 12 |  |
| Term 1 | NIE2208 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NIE2208 | 2. EnABLE (26%) |  |  |
| Term 1 | NIE2208 | 3. Written Assignment (50%) | Week 12 |  |
| Term 1 | NIE2299 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NIE2299 | 2. EnABLE (26%) |  |  |
| Term 1 | NIE2299 | 3. In-Class Test (50%) | Week 12 |  |
| Term 2 | NIE2203 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NIE2203 | 2. EnABLE (26%) |  |  |
| Term 2 | NIE2203 | 3. In-Class Test (50%) | Week 12 |  |
| Term 2 | NIE2206 | 1. SAIL (24%) | Weeks 1 -11 |  |
| Term 2 | NIE2206 | 2. EnABLE (26%) |  |  |
| Term 2 | NIE2206 | 3. In-Class Test (26%) | Week 12 |  |
| Term 2 | NIE2206 | 4. Written Assignment (24%) | Week 12 |  |
| Term 2 | NIE2294 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NIE2294 | 2. Written Assignment (26%) |  |  |
| Term 2 | NIE2294 | 3. In-Class Test (50%) | Week 12 |  |

# Year 4

#  Courses: MEng Electronic Engineering

| **Term** | **Module Code** | **Assessment Task** | **Week number** | **Last Submission of course ()** |
| --- | --- | --- | --- | --- |
| Term 1 | NHE2482 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NHE2482 | 2. Written Assignment (26%) |  |  |
| Term 1 | NHE2482 | 3. In-Class Test (50%) | Week 12 |  |
| Term 1 | NHE2487 (OPT) | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NHE2487 (OPT) | 2. Written Assignment (26%) |  |  |
| Term 1 | NHE2487 (OPT) | 3. In-Class Test (50%) | Week 12 |  |
| Term 1 | NHM2420 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NHM2420 | 2. Project Work (33%) |  |  |
| Term 1 | NHM2420 | 3. In-Class Test (43%) | Week 12 |  |
| Term 2 | NHE2483 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NHE2483 | 2. Written Assignment (26%) |  |  |
| Term 2 | NHE2483 | 3. In-Class Test (50%) | Week 12 |  |
| Term 2 | NHE2484 (OPT) | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NHE2484 (OPT) | 2. Written Assignment (26%) |  |  |
| Term 2 | NHE2484 (OPT) | 3. In-Class Test (50%) | Week 12 |  |
| Term 2 | NHE2530 (OPT) | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NHE2530 (OPT) | 2. Written Assignment (26%) |  |  |
| Term 2 | NHE2530 (OPT) | 3. In-Class Test (50%) | Week 12 |  |
| Year | NHP2400 | 1. Written Assignment (10%) | Week 5 |  |
| Year | NHP2400 | 2. Written Assignment (20%) | Week 13 |  |
| Year | NHP2400 | 3. Oral Assessment (20%) | Week 23 |  |
| Year | NHP2400 | 4. Written Assignment (50%) | Week 12 |  |

# Year 4

#  Courses: MEng Electronic and Electrical Engineering

| **Term** | **Module Code** | **Assessment Task** | **Week number** | **Last Submission of course ()** |
| --- | --- | --- | --- | --- |
| Term 1 | NHE2487 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NHE2487 | 2. Written Assignment (26%) |  |  |
| Term 1 | NHE2487 | 3. In-Class Test (50%) | Week 12 |  |
| Term 1 | NHM2420 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NHM2420 | 2. Project Work (33%) |  |  |
| Term 1 | NHM2420 | 3. In-Class Test (43%) | Week 12 |  |
| Term 2 | NHE2483 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NHE2483 | 2. Written Assignment (26%) |  |  |
| Term 2 | NHE2483 | 3. In-Class Test (50%) | Week 12 |  |
| Term 2 | NHE2486 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NHE2486 | 2. Written Assignment (13%) | Week 8 |  |
| Term 2 | NHE2486 | 3. Written Assignment (13%) | Week 11 |  |
| Term 2 | NHE2486 | 4. In-Class Test (50%) | Week 12 |  |
| Year | NHP2400 | 1. Written Assignment (10%) | Week 5 |  |
| Year | NHP2400 | 2. Written Assignment (20%) | Week 13 |  |
| Year | NHP2400 | 3. Oral Assessment (20%) | Week 23 |  |
| Year | NHP2400 | 4. Written Assignment (50%) | Week 24 |  |

# Year 4

#  Courses: BEng Electronic Engineering

| **Term** | **Module Code** | **Assessment Task** | **Week number** | **Last Submission of course ()** |
| --- | --- | --- | --- | --- |
| Term 1 | NHE2482 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NHE2482 | 2. Written Assignment (26%) |  |  |
| Term 1 | NHE2482 | 3. In-Class Test (50%) | Week 12 |  |
| Term 1 | NHE2487 (OPT) | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NHE2487 (OPT) | 2. Written Assignment (26%) |  |  |
| Term 1 | NHE2487 (OPT) | 3. In-Class Test (50%) | Week 12 |  |
| Term 1 | NHM2420 (OPT) | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NHM2420 (OPT) | 2. Project Work (33%) |  |  |
| Term 1 | NHM2420 (OPT) | 3. In-Class Test (43%) | Week 12 |  |
| Term 2 | NHE2483 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NHE2483 | 2. Written Assignment (26%) |  |  |
| Term 2 | NHE2483 | 3. In-Class Test (50%) | Week 12 |  |
| Term 2 | NHE2484 (OPT) | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NHE2484 (OPT) | 2. Written Assignment (26%) |  |  |
| Term 2 | NHE2484 (OPT) | 3. In-Class Test (50%) | Week 12 |  |
| Term 2 | NHE2530 (OPT) | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NHE2530 (OPT) | 2. Written Assignment (26%) |  |  |
| Term 2 | NHE2530 (OPT) | 3. In-Class Test (50%) | Week 12 |  |
| Year | NHP2400 | 1. Written Assignment (10%) | Week 5 |  |
| Year | NHP2400 | 2. Written Assignment (20%) | Week 13 |  |
| Year | NHP2400 | 3. Oral Assessment (20%) | Week 23 |  |
| Year | NHP2400 | 4. Written Assignment (50%) | Week 24 | **** |

# Year 4

#  Courses: BEng Electronic and Electrical Engineering

| **Term** | **Module Code** | **Assessment Task** | **Week number** | **Last Submission of course ()** |
| --- | --- | --- | --- | --- |
| Term 1 | NHE2482 (OPT) | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NHE2482 (OPT) | 2. Written Assignment (26%) |  |  |
| Term 1 | NHE2482 (OPT) | 3. In-Class Test (50%) | Week 12 |  |
| Term 1 | NHE2487 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NHE2487 | 2. Written Assignment (26%) |  |  |
| Term 1 | NHE2487 | 3. In-Class Test (50%) | Week 12 |  |
| Term 1 | NHM2420 (OPT) | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NHM2420 (OPT) | 2. Project Work (33%) |  |  |
| Term 1 | NHM2420 (OPT) | 3. In-Class Test (43%) | Week 12 |  |
| Term 2 | NHE2483 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NHE2483 | 2. Written Assignment (26%) |  |  |
| Term 2 | NHE2483 | 3. In-Class Test (50%) | Week 12 |  |
| Term 2 | NHE2486 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NHE2486 | 2. Written Assignment (13%) | Week 8 |  |
| Term 2 | NHE2486 | 3. Written Assignment (13%) | Week 11 |  |
| Term 2 | NHE2486 | 4. In-Class Test (50%) | Week 12 |  |
| Year | NHP2400 | 1. Written Assignment (10%) | Week 5 |  |
| Year | NHP2400 | 2. Written Assignment (20%) | Week 13 |  |
| Year | NHP2400 | 3. Oral Assessment (20%) | Week 23 |  |
| Year | NHP2400 | 4. Written Assignment (50%) | Week 24 | **** |

# Year 4

#  Courses: BEng Electronic and Communication Engineering

| **Term** | **Module Code** | **Assessment Task** | **Week number** | **Last Submission of course ()** |
| --- | --- | --- | --- | --- |
| Term 1 | NHE2404 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NHE2404 | 2. Written Assignment (26%) |  |  |
| Term 1 | NHE2404 | 3. In-Class Test (50%) | Week 12 |  |
| Term 1 | NHE2482 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NHE2482 | 2. Written Assignment (26%) |  |  |
| Term 1 | NHE2482 | 3. In-Class Test (50%) | Week 12 |  |
| Term 2 | NHE2483 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NHE2483 | 2. Written Assignment (26%) |  |  |
| Term 2 | NHE2483 | 3. In-Class Test (50%) | Week 12 |  |
| Term 2 | NHE2484 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NHE2484 | 2. Written Assignment (26%) |  |  |
| Term 2 | NHE2484 | 3. In-Class Test (50%) | Week 12 |  |
| Year | NHP2400 | 1. Written Assignment (10%) | Week 5 |  |
| Year | NHP2400 | 2. Written Assignment (20%) | Week 13 |  |
| Year | NHP2400 | 3. Oral Assessment (20%) | Week 23 |  |
| Year | NHP2400 | 4. Written Assignment (50%) | Week 24 | **** |

# Year 4

#  Courses: BEng Electronic Engineering and Computer Systems

| **Term** | **Module Code** | **Assessment Task** | **Week number** | **Last Submission of course ()** |
| --- | --- | --- | --- | --- |
| Term 1 | NHE2404 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NHE2404 | 2. Written Assignment (26%) |  |  |
| Term 1 | NHE2404 | 3. In-Class Test (50%) | Week 12 |  |
| Term 1 | NHE2482 (OPT) | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NHE2482 (OPT) | 2. Written Assignment (26%) |  |  |
| Term 1 | NHE2482 (OPT) | 3. In-Class Test (50%) | Week 12 |  |
| Term 1 | NHE2487 (OPT) | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NHE2487 (OPT) | 2. Written Assignment (26%) |  |  |
| Term 1 | NHE2487 (OPT) | 3. In-Class Test (50%) | Week 12 |  |
| Term 2 | NHE2483 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NHE2483 | 2. Written Assignment (26%) |  |  |
| Term 2 | NHE2483 | 3. In-Class Test (50%) | Week 12 |  |
| Term 2 | NHE2530 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NHE2530 | 2. Written Assignment (26%) |  |  |
| Term 2 | NHE2530 | 3. In-Class Test (50%) | Week 12 |  |
| Year | NHP2400 | 1. Written Assignment (10%) | Week 5 |  |
| Year | NHP2400 | 2. Written Assignment (20%) | Week 13 |  |
| Year | NHP2400 | 3. Oral Assessment (20%) | Week 23 |  |
| Year | NHP2400 | 4. Written Assignment (50%) | Week 24 | **** |

# Year 5

#  Courses: MEng Electronic Engineering

| **Term** | **Module Code** | **Assessment Task** | **Week number** | **Last Submission of course ()** |
| --- | --- | --- | --- | --- |
| Term 1 | NME3522 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NME3522 | 2. Written Assignment (36%) |  |  |
| Term 1 | NME3522 | 3. Project Work (40%) | Week 12 |  |
| Term 1 | NME3523 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NME3523 | 2. Written Assignment (26%) |  |  |
| Term 1 | NME3523 | 3. In-Class Test (50%) | Week 12 |  |
| Term 1 | NME3585 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NME3585 | 2. Written Assignment (26%) |  |  |
| Term 1 | NME3585 | 3. In-Class Test (50%) | Week 12 |  |
| Term 2 | NME3510 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NME3510 | 2. Written Assignment (26%) |  |  |
| Term 2 | NME3510 | 3. In-Class Test (50%) | Week 12 |  |
| Term 2 | NMM3518 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NMM3518 | 2. Project Work (50%) |  |  |
| Term 2 | NMM3518 | 3. In-Class Test (26%) | Week 12 |  |
| Year | NMM3510 | 1. Project Work (100%) |  | **** |

# Year 5

#  Courses: MEng Electronic and Electrical Engineering

| **Term** | **Module Code** | **Assessment Task** | **Week number** | **Last Submission of course ()** |
| --- | --- | --- | --- | --- |
| Term 1 | NME3522 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NME3522 | 2. Written Assignment (36%) |  |  |
| Term 1 | NME3522 | 3. Project Work (40%) | Week 12 |  |
| Term 1 | NME3539 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NME3539 | 2. Written Assignment (26%) |  |  |
| Term 1 | NME3539 | 3. In-Class Test (50%) | Week 12 |  |
| Term 1 | NME3545 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 1 | NME3545 | 2. Written Assignment (26%) |  |  |
| Term 1 | NME3545 | 3. Project Work (50%) | Week 12 |  |
| Term 2 | NME3521 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NME3521 | 2. Written Assignment (26%) | Week 11 |  |
| Term 2 | NME3521 | 3. In-Class Test (50%) | Week 12 |  |
| Term 2 | NMM3518 | 1. SAIL (24%) | Weeks 1-11 inclusive |  |
| Term 2 | NMM3518 | 2. Project Work (50%) |  |  |
| Term 2 | NMM3518 | 3. In-Class Test (26%) | Week 12 |  |
| Year | NMM3510 | 1. Project Work (100%) |  | **** |

**Appendix D Engineering Council – Learning Outcomes**

The learning outcomes statements, listed are a direct copy of those contained in the Fourth Edition of Accreditation of Higher Education Programmes (AHEP4) produced by the Engineering Council - the short codes against each of the statements have been added by the IET.

The codes have been allocated to learning outcomes as follows for Partial CEng;

 C1 Science and Mathematics

 C2, C3, C4 Engineering Analysis

 C5, C6 Design and Innovation

 C7, C8, C9, C10, C11 The Engineer and Society

 C12, C13, C14, C5, C16, C17, C18 Engineering Practice

The codes have been allocated to learning outcomes as follows for Full CEng;

 M1 Science and Mathematics

 M2, M3, M4 Engineering Analysis

 M5, M6 Design and Innovation

 M7, M8, M9, M10, M11 The Engineer and Society

 M12, M13, M14, M5, M16, M17, M18 Engineering Practice

**Engineering Competence Course Learning Outcomes**

|  |  |
| --- | --- |
| ***Partial CEng (BEng)*** | ***Full CEng (MEng)*** |
|  |  |
| C1. Apply knowledge of mathematics, statistics, natural science and engineering principles to the solution of complex problems. Some of the knowledge will be at the forefront of the particular subject of study | M1. Apply a comprehensive knowledge of mathematics, statistics, natural science and engineering principles to the solution of complex problems. Much of the knowledge will be at the forefront of the particular subject of study and informed by a critical awareness of new developments and the wider context of engineering |
| C2. Analyse complex problems to reach substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles | M2. Formulate and analyse complex problems to reach substantiated conclusions. This will involve evaluating available data using first principles of mathematics, statistics, natural science and engineering principles, and using engineering judgment to work with information that may be uncertain or incomplete, discussing the limitations of the techniques employed |
| C3. Select and apply appropriate computational and analytical techniques to model complex problems, recognising the limitations of the techniques employed | M3. Select and apply appropriate computational and analytical techniques to model complex problems, discussing the limitations of the techniques employed |
| C4. Select and evaluate technical literature and other sources of information to address complex problems | M4. Select and critically evaluate technical literature and other sources of information to solve complex problems |
| C5. Design solutions for complex problems that meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards | M5. Design solutions for complex problems that evidence some originality and meet a combination of societal, user, business and customer needs as appropriate. This will involve consideration of applicable health & safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards |
| C6. Apply an integrated or systems approach to the solution of complex problems | M6. Apply an integrated or systems approach to the solution of complex problems |
| C7. Evaluate the environmental and societal impact of solutions to complex problems and minimise adverse impacts | M7. Evaluate the environmental and societal impact of solutions to complex problems (to include the entire life-cycle of a product or process) and minimise adverse impacts |
| C8. Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct | M8. Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct |
| C9. Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity | M9. Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity |
| C10. Adopt a holistic and proportionate approach to the mitigation of security risks | M10. Adopt a holistic and proportionate approach to the mitigation of security risks |
| C11. Adopt an inclusive approach to engineering practice and recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion | M11. Adopt an inclusive approach to engineering practice and recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion |
| C12. Use practical laboratory and workshop skills to investigate complex problems | M12. Use practical laboratory and workshop skills to investigate complex problems |
| C13. Select and apply appropriate materials, equipment, engineering technologies and processes, recognising their limitations | M13. Select and apply appropriate materials, equipment, engineering technologies and processes, recognising their limitations |
| C14. Discuss the role of quality management systems and continuous improvement in the context of complex problems | M14. Discuss the role of quality management systems and continuous improvement in the context of complex problems |
| C15. Apply knowledge of engineering management principles, commercial context, project and change management, and relevant legal matters including intellectual property rights | M15. Apply knowledge of engineering management principles, commercial context, project and change management, and relevant legal matters including intellectual property rights |
| C16. Function effectively as an individual, and as a member or leader of a team | M16. Function effectively as an individual, and as a member or leader of a team. Evaluate effectiveness of own and team performance  |
| C17. Communicate effectively on complex engineering matters with technical and non-technical audiences | M17. Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used |
| C18. Plan and record self-learning and development as the foundation for lifelong learning/CPD | M18. Plan and record self-learning and development as the foundation for lifelong learning/CPD |
|  |  |

**PSD Appendix E**

**PDP Mapping**

**Personal Development Planning (PDP)**

* All students are introduced to and encouraged to undertake PDP.
* Personal Tutors will meet their students at least five times: twice in term 1, twice in term 2 and once in term 3.
* Students are required to complete a self evaluation PDP form, available electronically on Unilearn (Blackboard), which enables them to assess their own personal/social competences and module performance. This information is then used as a basis for further discussions during personal tutor sessions.
* Personal tutors are the Year Tutors for Years 1 and 2, and the Project Supervisor for Year 4
* PDP is further covered in the following modules throughout the course;
	+ Year 1: Professional Development (learning logs etc).
	+ Year 2: Enterprise: Electronic Product Design & Manufacture
	+ Year 4: Individual Project
	+ Year 5: Group Project

A brief outline of the main personal and professional competences and areas where addressed are listed in the tables below;

|  |  |  |  |
| --- | --- | --- | --- |
| Competencies | Course Year | Areas where addressed | Evidence |
| PersonalCommunication Skills | Year 1 | * NFE2156 Professional Development module
* Personal Tutor (PT) PDP process
 | * Sample Formal Report from a technical module.
* PowerPoint presentation and grade for NFE2156.
* Completed PDP proforma from PT PDP process
 |
| Time Management andSelf OrganisationIndependent Learner | Year 2 | * NIE2208 Enterprise: Electronic Product Design & Manufacture module
* Personal Tutor PDP process
 | * Enterprise group presentation. Sample Assignment report
* Completed PDP proforma from PT PDP process
 |
| Self awareness/Reflective Practice | Year 4 | * Personal Tutor PDP process
 | * Project report and poster.
* Completed PDP proforma from PT PDP process
 |
| Group Working | Year 5 | * Group Project module.
* Personal Tutor PDP process
 | * Project report and presentations.
* Completed PDP proforma from PT PDP process
 |
|  | Year 1 | * Year group sessions with careers guidance officer in NFE2156 Professional Development module
 | * CV
* Personal research into professional competencies required for chosen career area.

Completed PDP proforma from PT PDP process. |
| Career Planning | Year 2 | 1hr/wk timetabled sessions with Industrial Training/Careers guidance officer. | * CV, feedback from mock interviews.
 |
|  | Year 4 | * Group session with careers guidance officer.
* Personal session with careers guidance officer - recommended
 | * Personal research into professional competencies required for chosen career area.
* Completed PDP proforma from PT PDP process.
 |
|  | Year 5 | * Personal session with careers guidance officer - recommended
 | * Personal research into professional competencies required for chosen career area.
* Completed PDP proforma from PT PDP process.
 |
| ProfessionalIT Skills (IT) | Year 1 | * IT, AS, PS1/2 : addressed to varied degrees across all modules.
* Personal Tutor PDP process
 | * Formal reports, grades and feedback.
* Laboratory log books grades and feedback.
 |
| Analytical Skills (AS) | Year 2 | * IT, AS, PS1/2 : addressed to varied degrees across all modules.
* Personal Tutor PDP process

Further competence areas relating to technical or management knowledge and skills are selected by the student as part of the PDP process. It would be expected that these would be themes running through the years, e.g. knowledge and skills in software development and embedded systems; knowledge and skills in technical management etc. | * Formal reports, grades and feedback.
* Laboratory log books grades and feedback.
* Formal reports, grades and feedback.
* Laboratory log books grades and feedback.

Examination results |
| Problem Solving (PS1)Practical Skills | Year 4 |
| (PS2) | Year 5 |
| Technical Knowledge | Year 1 |
| Managerial | Year 2 | Further competence areas relating to technical or management knowledge and skills are selected by the student as part of the PDP process. It would be expected that these would be themes running through the years, e.g. knowledge and skills in software development and embedded systems; knowledge and skills in technical management etc. | * Formal reports, grades and feedback.
* Laboratory log books grades and feedback.
* Examination results
 |
|  | Year 4 | * Draft project report, and feedback.
* Project grade.
* Formal reports, grades and feedback.
* Laboratory log books grades and feedback.
* Examination results
 |
|  | Year 5 | * Group project report, and feedback.
* Formal reports, grades and feedback.
* Examination results
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