# University of Huddersfield Programme Specification

| 1. | Awarding institution | University of Huddersfield |
| --- | --- | --- |
| 2. | Teaching institution | University of Huddersfield |
| 3. | School and Department | School of Computing and Engineering  Department of Engineering and Technology |
| 4. | Course accredited by | Institute of Mechanical Engineers (IMechE) |
| 5. | Mode of Delivery | Full-time  Sandwich |
| 6. | Final Award | Bachelor of Engineering with Honours (BEng(Hons))  Integrated Master of Engineering (MEng) |
| 7. | Course Title | Energy Engineering |
| 8. | UCAS Code | N/A |
| 9. | Subject benchmark statement | Engineering (2019) |
| 10. | Date of Programme Specification Approval | July 2008, March 2009, June 2009, June 2010, October 2010, February 2011, March 2012,  January 2013, February 2014, July 2015,  October 2017, June 2020, August 2020,  January 2021, August 2021, June 2022 |

## 11. Educational Aims of the Courses

Society today places a huge range of demands on the energy engineering community. These range from the desire for ever more sophisticated consumer goods to the challenges imposed by the need for clean forms of power and transport. Faced with these demands, engineering industries in the UK are continually seeking graduates with a range of skills.

The MEng and BEng Energy Engineering courses seek to provide a sound education in areas of mechanical and electrical engineering through an integrated and co-ordinated programme that includes a range of course titles. The courses are designed to stimulate interest and to attract a broad spectrum of prospective students from a variety of educational backgrounds. The close relationship of the courses ensures that graduates from any course will be well equipped to work as professional energy engineers and that delivery is both effective and efficient.

The course aims include both the University of Huddersfield Graduate Attributes for all taught degree courses and specific course aims for the named award/s.

All taught degree courses enable graduates to develop the following attributes core to the University of Huddersfield.

### University of Huddersfield Graduate Attributes

1. Self-motivated

2. Commercially aware

3. Enterprising

4. Resilient

5. An effective collaborator

6. A confident leader

7. Globally and socially aware

8. Plans growth and development

**In addition, the named awards will consider, and aim:**

(1) To provide graduates with the knowledge and skills required to work across a broad range of the Energy Engineering industry.

(2) To prepare graduates for employment as professional engineers able to place their engineering activities within a social, economic and ethical context.

(3) To produce graduates educated to MEng or BEng(Hons) level in the discipline of their course according to the requirements laid out in AHEP4th the subject benchmark and the QAA framework.

## 12. Course Learning Outcomes

On completion of the course, students will be able to:

### Knowledge and Understanding

1. Systematically state and explain the mathematical, scientific and engineering principles that underpin Energy Engineering analysis.

2. Describe and illustrate the principles and techniques of Energy Engineering design with knowledge of engineerign materials and components including recent developments in the fields.

3. Identify and outline the commercial and economic context of engineering processes and the management techniques which may be used to achieve engineering objectives within that context.

4. Recall and state the framework of relevant legal requirements governing engineering activities in general and specifically in Energy Engineering, including personnel, health, safety, and risk issues and the need for engineering activities to promote sustainable development.

5. Name and outline the codes of practice used in industry and review the need for a high level of professional and ethical conduct in engineering.

6. Recount the variety of contexts in which engineering knowledge can be applied.

M1. Have a greater depth and breadth of knowledge and an improved understanding of the limitations of this knowledge.

### Professional/practical skills

7. Integrate and apply wider learning from other engineering disciplines to support the study of Energy Engineering.

8. Apply engineering principles to enable engineering systems and their performance to be classified and described using analytical methods and modelling techniques.

9. Use appropriate mathematical analysis, simulation techniques and IT tools to obtain solutions to models of mechanical systems and processes.

10. Apply and manage a systematic and evaluative approach to the creation of innovative solutions that recognize customer requirements and technical uncertainty and the constraints due to environmental, health and safety and risk assessment factors.

11. Identify and manage cost drivers for engineering activities whilst ensuring fitness for purpose for the entire product or process life cycle.

12. Apply a range of workshop and laboratory practical skills to aid the research and development of engineering products and processes.

M2. Apply basic scientific principles in previously unfamiliar fields and adapt quickly to developments in IT pertinent to engineering.

M3. Place engineering projects in a wider business context and to be able to assess the technical, commercial and political risk of projects with respect to this setting.

### Transferable/Key Skills

13. Manipulate, sort and evaluate data using scientific methods and present it in a range of formats using IT tools where appropriate.

14. Be creative and innovative within a structured framework in problem solving with the ability to work with limited or contradictory information.

15. Manage their own time and resources and have both the desire and skills necessary for lifelong learning.

16. Be able to work effectively within a team environment, communicating in both written and oral form.

M4. MEng students will be equipped with the skills required to act as team leaders. They will be able to guide the creativity and learning of others and take a proactive approach towards their own lifelong learning.

## 13. Course Structures and Requirements, Levels, Modules, Credits and Awards

**13.1**

**MEng/BEng(Hons) Energy Engineering**

**September entry:full-time (FT) & sandwich (SW)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Level | Term | Modules | Status | Credit | Award |
| F (FHEQ 4) | Term 1 | NFM2104: Engineering Communication and Materials | Core | 20 |  |
| F (FHEQ 4) | Term 1 | NFM2106: Mathematics | Core | 20 |  |
| F (FHEQ 4) | Term 1 | NFM2102: Manufacturing, Measurement and Diagnostics | Core | 20 |  |
| F (FHEQ 4) | Term 2 | NFM2101: Engineering Science | Core | 20 |  |
| F (FHEQ 4) | Term 2 | NFE2102: Mechatronics | Core | 20 |  |
| F (FHEQ 4) | Term 2 | NFM2103: Professional Development and Transferable Skills | Core | 20 | Cert HE (120 credits) |
| I (FHEQ 5) | Term 1 | NIA2287: Analysis of Materials | Core | 20 |  |
| I (FHEQ 5) | Term 1 | NIM2212: Engineering Design | Core | 20 |  |
| I (FHEQ 5) | Term 1 | NIE2295: Electrical Principles | Core | 20 |  |
| I (FHEQ 5) | Term 2 | NIA2238: Thermofluids | Core | 20 |  |
| I (FHEQ 5) | Term 2 | NIE2202: Electrical Energy Conversion | Core | 20 |  |
| I (FHEQ 5) | Term 2 | NIM2214: Manufacturing and Production Systems | Core | 20 | Dip HE (240 credits) |
| N/A | Yearlong | NSZ2303: Industrial Placement (SW only) | Option | 120 |  |
| H (FHEQ 6) | Term 1 | NHM2405: Advanced Energy Systems | Core | 20 |  |
| H (FHEQ 6) | Term 1 | NHM2408: Eco Design and IPR | Option | 20 |  |
| H (FHEQ 6) | Term 1 | NHM2420: Project Quality and Production Management | Option | 20 |  |
| H (FHEQ 6) | Term 2 | NHA2430: Design Analysis | Core | 20 |  |
| H (FHEQ 6) | Term 2 | NHE2486: Electrical Power and Drive Systems | Core | 20 |  |
| H (FHEQ 6) | Yearlong | NHP2400: Final Year Project | Core | 40 | BEng(Hons) (360 credits) |
| M (FHEQ 7) | Term 1 | NME3539: Process Measurement and Control | Core | 15 |  |
| M (FHEQ 7) | Term 1 | NMM3515: Advanced Static Analysis | Core | 15 |  |
| M (FHEQ 7) | Term 2 | NMM3518: Project and Finance Management | Core | 15 |  |
| M (FHEQ 7) | Term 2 | NMM3519: Advanced Thermofluids | Core | 15 |  |
| M (FHEQ 7) | Term 2 | NME3521: Modelling of Electromechanical systems | Option | 15 |  |
| M (FHEQ 7) | Term 2 | NMM3531: New Product Development | Option | 15 |  |
| M (FHEQ 7) | Yearlong | NMM3510: Year 5 Group Project | Core | 45 | MEng (480 credits) |

### 13.2 Interim Awards

Certificate of Higher Education (Cert HE) in Engineering will be awarded to students gaining 120 credits

Diploma of Higher Education (Dip HE) in Energy Engineering will be awarded to students gaining 240 credits

## 14. Teaching, Learning and Assessment

**14.1**

As part of a wider programme in the department this course operates a teaching and learning strategy known as EnABLE (Engineering in an Activity-Based Learning Environment). This is an eclectic blend of styles from: Problem Based Learning, Project Based Learning, Design Based Learning, CDIO (Conceive, Design, Implement and Operate) and similar concepts of “Active Learning”. EnABLE will comprise engineering challenges that groups of students will engage with over the period of several weeks. Two such challenges would take place each term and be embedded in a pair of “parent” modules. EnABLE will be limited to the Foundation and Intermediate levels of the programmes with a total of 8 EnABLE challenges building on each other as students’ progress. This scheme is intended to equip students with the flexible and transferrable team-based skill set that is increasing demanded by employers. Amongst the “Abilities” fundamental to EnABLE are the skills objective:

* ...work as an effective team member
* ...critically analyse engineering problems
* ...search for and apply information pertinent to the problem solution
* ...conceptualise viable solutions
* ...build functional engineering artefacts
* ...test and evaluate the artefacts as built
* ...communicate effectively to lay and specialist audience
* ...present technical knowledge
* ...reflect upon own learning journey

In general modules will follow a uniform pattern of delivery where learners will engage in a blend of delivery methods facilitating both individual and collaborative aspects of learning to achieve the specified learning outcomes. This will require the learner to engage with the VLE materials where the learning is supported by the tutor-led two-way asynchronous discussion board. To focus the guided learning process, the tutor will set weekly summative Score As I Learn (SAIL) quizzes/assignments. These two elements will culminate in face-to-face sessions which will reinforce the learning by clarifying the content through student-led questions/answers interaction. These sessions are followed up by tutorials to illustrate the module content and enable practice in more depth. Where possible in face-to-face sessions cohort scale groups will be used offering the benefit of a full range of student input and engagement.

Formal assessments are designed to measure the students’ achievements in meeting the learning outcomes of individual modules. A variety of assessment strategies will be used depending on the type and nature of the module. These include reports on laboratory experiments, laboratory-based assignments, and projects. In all cases, assessment will take place under the regulations set out in the Regulations for Awards. These assessment strategies not only develop the students’ core competencies but also allows them to engage directly in a process that provides them with an academic and professional skill set upon which they can build their personal development planning (PDP) and their employability. More information on PDP is provided in Appendix 4. Furthermore, through EnABLE, students will engage group-work activities which assess their practical, theoretical, interpersonal, communication, organizational, problem-solving, planning and time-management skills. All assignments will be submitted and marked through the VLE to ensure timely feedback. An assessment schedule is provided in Appendix 5.

## 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**

**15.2.1** Central to the provision of student support are **Student Services**. The range of services they offer include:

## Wellbeing and Disability Services

* [Counselling](http://www.hud.ac.uk/wellbeing/studentcounselling/)
* [Back on Track](http://www.hud.ac.uk/wellbeing/back-on-track/)
* [Disability Services](http://www.hud.ac.uk/disability-services/)
* [Drop in (Counselling and Wellbeing)](http://www.hud.ac.uk/wellbeing/)
* [The Faith Centre](http://www.hud.ac.uk/faith-centre/)
* [Getting help](http://www.hud.ac.uk/wellbeing/needhelpwithaproblem/)
* [Group workshops and courses](http://www.hud.ac.uk/wellbeing/needhelpwithaproblem/groupworkshops/)
* [Hate Crime Reporting Centre](http://www.hud.ac.uk/wellbeing/hatecrimereporting/)
* Help for suspended students
* [Self help](http://www.hud.ac.uk/wellbeing/needhelpwithaproblem/selfhelp/)
* [Student parents](http://www.hud.ac.uk/wellbeing/studentparents/)
* [Student wellbeing](http://www.hud.ac.uk/wellbeing/)
* [Welfare support](http://www.hud.ac.uk/wellbeing/needhelpwithaproblem/studentwelfare/)
* [University Health Centre](http://www.universityhealthhuddersfield.co.uk/)
* Big White Wall

**Careers and Employability Service**

* Careers and Employability Service
* Jobshop

More information on the range of [student services can be found on their website](http://students.hud.ac.uk/wellbeing-disability-services/disabilityservices).

**15.2.2** **The Student Finance Office** provides:

* 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)

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

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

**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 can 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**), 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** Further School level resources include:

* An award-winning placement unit which supports 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**

At course level support is provided by:

* Supporting documentation is provided, online, in the form of Student Handbooks, Module Handbooks, Programme Specification Documents (PSD) and Module Specification Documents (MSD)
* The Course Leader is available to provide guidance on academic progress.
* Module tutors are available to help with academic problems during term time, either on campus or through electronic means such as Microsoft Teams, to facilitate support for distance learning students.
* All modules and year groups are supported on the Virtual Learning Environment

## 16. Criteria for Admission

**16.1** The University of Huddersfield seeks and encourages applicants in order to widen participation, improve access and apply the principles of equal opportunities. We provide support for applicants who require additional assistance in order to select the right course of study and make a successful transition to studying at University. We encourage local, national and international applications. Further information for [International Students can be found on their website](http://www.hud.ac.uk/international).<http://www.hud.ac.uk/international>

If you were educated outside the UK, you are required to have International English Language Testing System (IELTS) at a score of 6.0 with a minimum score of 6.0 in writing and a minimum of 5.5 in any single component. If you have alternative qualifications or do not meet the IELTS requirement we also offer a range of [Pre-Sessional English Programmes.](http://www.hud.ac.uk/international/pre-sessionalenglishprogramme/)

**16.2** The University provides opportunities for the accreditation of prior learning (APL) as stated in section c of the [Regulations for Awards.](https://www.hud.ac.uk/policies/registry/awards-taught/section-c/)

**16.3** The University’s general minimum entry requirements are specified in Section D of the [Regulations for Awards**.**](https://www.hud.ac.uk/policies/registry/awards-taught/section-d/)

**16.4** Every person who applies for this course and meets the minimum entry requirement – regardless of any disability – will be given the same opportunity in the selection process. General advice and information regarding disability and the support the University can give can be found by contacting student services as follows:

Telephone**:** 01484 472675

Email: disability@hud.ac.uk

Further information is available on the [disability services website.](http://students.hud.ac.uk/wellbeing-disability-services/disabilityservices)

Further advice on the specific skills and abilities needed to successfully undertake this course can be found by contacting the admissions tutor and by visiting our [course finder website page](http://www.hud.ac.uk/courses/).

* 1. However, the specific entry requirements and admission criteria for the courses are detailed below:

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

**17.1 University:** The methods for the validation and annual evaluation of courses, including those validated by external bodies, and for the review of teaching and research and of academic support services are specified in the University’s; [Quality Assurance Procedures for Taught Courses and Research Awards](https://www.hud.ac.uk/policies/registry/qa-procedures/).

**17.2 School:**

* The School Teaching and Learning Committee, a sub-committee of the University 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
* The School Board, via the School Teaching and Learning Committee has responsibility for implementing University policy through school-defined procedures.
* Periodic school and subject reviews take place on a rolling quinquennial programme and focus inter 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.
* 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.
  + 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.
* Amendments to course/programme and module documents are validated by the School Accreditation and Validation Panel.
* A process for peer observation of teaching is in place with the object of enhancing teaching practice and sharing ideas between staff.

## 18. Regulation of Assessment

**18.1** University awards are regulated by the [Regulations for Awards](https://www.hud.ac.uk/policies/registry/awards-taught) on the University website.

Quick links to the [Regulations for Taught Students, procedures and forms](https://www.hud.ac.uk/registry/current-students/taughtstudents/) can be accessed on the University website.

Details of the assessments and outcomes assessed for each module are provided in the module specification documents.

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
  + 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.

# 19. Indicators of Quality and Standards

The latest subject review for the subject area that includes these courses took place in November 2020. The panel commended the subject area for its assessment strategy, strong research portfolio, industrial liaison panel and the strength of its placement system. The named courses in the area were last accredited by the IMechE in January 2020. The panel commended the area for amongst other things, the Staffs’ enthusiasm toward the students, the enthusiasm and involvement of the Industrial Advisory Panel, the work of the Placement unit, plans for laboratories, innovative approaches to learning methods and the range of projects satisfying the learning outcomes.

# PSD Appendix 1

## University of Huddersfield Graduate Attribute (HGA) Mapping to Modules

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Module / Huddersfield Graduate Attribute (HGA)   Energy Engineering MEng/BEng(Hons) | HGA 1 Self-motivated | HGA 2 Commercially aware | HGA 3 Enterprising | HGA 4 Resilient | HGA 5 Effective collaborator | HGA 6 Confident leader | HGA 7 Globally & socially aware | HGA 8 Plans personal development |
| NFM2104: Engineering Communication and Materials (C) | 1 |  |  |  |  |  |  |  |
| NFM2106: Mathematics (C) | 1 |  | 1 | 1 |  |  |  |  |
| NFM2102: Manufacturing, Measurement and Diagnostics (C) | 1 |  |  |  |  |  |  |  |
| NFM2101: Engineering Science (C) | 1 |  |  |  |  |  |  |  |
| NFE2102: Mechatronics (C) | 1 |  |  |  |  |  |  |  |
| NFM2103: Professional Development and Transferable Skills (C) | 1 |  | 1 | 1 | 1 |  |  | 1 |
| NIA2287: Analysis of Materials (C) | 1 | 1 | 1 | 1 |  |  |  |  |
| NIM2212: Engineering Design (C) | 1 |  | 1 |  | 1 |  |  |  |
| NIE2295: Electrical Principles (C) | 1 | 1 | 1 | 1 | 1 |  | 1 | 1 |
| NIA2238: Thermofluids (C) | 1 | 1 |  | 1 |  |  |  |  |
| NIE2202: Electrical Energy Conversion (C) | 1 | 1 |  |  | 1 |  |  |  |
| NIM2214: Manufacturing and Production Systems (C) | 1 |  |  |  |  |  |  |  |
| NSZ2303: Industrial Placement (SW only) (O) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| NHM2405: Advanced Energy Systems (C) | 1 |  |  |  |  |  |  |  |
| NHM2408: Eco Design and IPR (O) | 1 |  |  |  | 1 |  | 1 |  |
| NHM2420: Project Quality and Production Management (O) | 1 |  |  |  |  |  |  |  |
| NHA2430: Design Analysis (C) | 1 |  |  |  |  |  |  |  |
| NHE2486: Electrical Power and Drive Systems (C) | 1 | 1 | 1 | 1 | 1 | 1 |  | 1 |
| NHP2400: Final Year Project (C) | 1 | 1 |  | 1 |  |  |  |  |
| NME3539: Process Measurement and Control (C) | 1 | 1 | 1 | 1 | 1 |  |  |  |
| NMM3515: Advanced Static Analysis (C) | 1 | 1 |  |  |  |  |  |  |
| NMM3518: Project and Finance Management (C) | 1 | 1 |  |  | 1 |  |  |  |
| NMM3519: Advanced Thermofluids (C) | 1 | 1 | 1 | 1 |  |  | 1 |  |
| NME3521: Modelling of Electromechanical systems (O) | 1 | 1 | 1 | 1 | 1 |  | 1 | 1 |
| NMM3531: New Product Development (O) | 1 | 1 | 1 | 1 |  |  |  |  |
| NMM3510: Year 5 Group Project (C) | 1 | 1 |  |  | 1 | 1 |  |  |

# PSD Appendix 2

## Modules mapped to course learning outcomes (CLOs)

### Course learning outcomes for the final award of

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Energy Engineering MEng/BEng(Hons) | | | | | | | | | | | | | | | | | | | | | | |
| Module / Course Learning Outcome (CLO) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | M1 | M2 | M3 | M4 | 17 | 18 |
| NFM2104: Engineering Communication and Materials (C) |  | 1 |  |  |  |  |  |  |  | 1 |  |  |  | 1 | 1 | 1 |  |  |  |  |  |  |
| NFM2106: Mathematics (C) | 1 |  |  |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |  |  |  |
| NFM2102: Manufacturing, Measurement and Diagnostics (C) | 1 | 1 |  | 1 |  | 1 |  |  | 1 |  | 1 | 1 | 1 | 1 | 1 | 1 |  |  |  |  |  |  |
| NFM2101: Engineering Science (C) | 1 |  |  |  |  |  |  |  |  |  |  | 1 | 1 | 1 | 1 | 1 |  |  |  |  |  |  |
| NFE2102: Mechatronics (C) | 1 |  |  | 1 |  |  | 1 |  | 1 |  |  | 1 | 1 | 1 | 1 | 1 |  |  |  |  |  |  |
| NFM2103: Professional Development and Transferable Skills (C) |  |  |  | 1 |  | 1 |  |  |  | 1 | 1 |  |  |  | 1 | 1 |  |  |  |  |  |  |
| On meeting all of the above: Cert HE Energy Engineering | | | | | | | | | | | | | | | | | | | | | | |
| NIA2287: Analysis of Materials (C) | 1 | 1 |  |  |  | 1 |  | 1 | 1 |  |  | 1 | 1 | 1 | 1 | 1 |  |  |  |  |  |  |
| NIM2212: Engineering Design (C) |  | 1 | 1 | 1 |  |  | 1 |  |  | 1 | 1 |  |  | 1 | 1 | 1 |  |  |  |  |  |  |
| NIE2295: Electrical Principles (C) | 1 |  |  |  |  | 1 |  | 1 | 1 |  |  | 1 | 1 |  |  |  |  |  |  |  |  |  |
| NIA2238: Thermofluids (C) | 1 |  |  | 1 |  | 1 | 1 | 1 | 1 |  |  | 1 | 1 | 1 | 1 | 1 |  |  |  |  |  |  |
| NIE2202: Electrical Energy Conversion (C) | 1 |  | 1 | 1 | 1 |  |  |  |  | 1 |  |  |  |  |  | 1 |  |  |  |  |  |  |
| NIM2214: Manufacturing and Production Systems (C) | 1 | 1 | 1 | 1 |  |  | 1 |  | 1 | 1 |  |  | 1 | 1 | 1 | 1 |  |  |  |  |  |  |
| On meeting all of the above: Dip HE Energy Engineering | | | | | | | | | | | | | | | | | | | | | | |
| NSZ2303: Industrial Placement (SW only) (O) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| NHM2405: Advanced Energy Systems (C) | 1 |  |  |  |  |  |  | 1 | 1 |  |  | 1 | 1 |  |  | 1 |  |  |  |  |  |  |
| NHM2408: Eco Design and IPR (O) | 1 |  |  |  | 1 |  | 1 | 1 | 1 |  |  | 1 | 1 |  |  |  |  |  |  |  |  |  |
| NHM2420: Project Quality and Production Management (O) |  |  | 1 | 1 |  | 1 |  |  |  |  | 1 |  |  |  |  | 1 |  |  |  |  |  |  |
| NHA2430: Design Analysis (C) | 1 |  |  |  |  |  |  | 1 | 1 |  |  |  | 1 |  |  |  |  |  |  |  |  |  |
| NHE2486: Electrical Power and Drive Systems (C) | 1 |  |  |  |  |  |  | 1 | 1 |  |  |  | 1 |  |  |  |  |  |  |  |  |  |
| NHP2400: Final Year Project (C) |  |  | 1 | 1 | 1 | 1 |  |  |  | 1 |  |  |  |  | 1 |  |  |  |  |  |  |  |
| On meeting all of the above: Beng(Hons) Energy Engineering | | | | | | | | | | | | | | | | | | | | | | |
| NME3539: Process Measurement and Control (C) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 | 1 |  |  |  |  |
| NMM3515: Advanced Static Analysis (C) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 | 1 |  |  |  |  |
| NMM3518: Project and Finance Management (C) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |  | 1 | 1 |  |  |
| NMM3519: Advanced Thermofluids (C) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 | 1 |  |  |  |  |
| NME3521: Modelling of Electromechanical systems (O) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |  |
| NMM3531: New Product Development (O) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |  |
| NMM3510: Year 5 Group Project (C) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 | 1 | 1 |  |  |
| On meeting all of the above: MEng Energy Engineering | | | | | | | | | | | | | | | | | | | | | | |

# PSD Appendix 3

## Subject Benchmark Mapping

### Course learning outcomes (CLOs) mapped to subject benchmark

Quality Assurance Agency for Higher Education (QAA) has adopted the Engineering Council’s standards (Accreditation of Higher Education Programmes (AHEP4th) - 2020) for accredited engineering degrees as the subject benchmark statement for engineering. The mapping of the course learning outcomes to the AHEP4 learning outcomes



### Module mapping to AHEP 4th

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Module / AHEP4 Outcomes  Energy Engineering MEng/BEng(Hons) | Core | Science and Maths | Engineering Analysis | | | Design and Innovation | | The Engineer and Society | | | | | Engineering Practice | | | | | | | |  |  | M1 | M2 | M3 | M4 | M5 | M6 | M7 | M8 | M9 | M10 | M11 | M12 | M13 | M14 | M15 | M16 | M17 | M18 | |  |  | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 | C13 | C14 | C15 | C16 | C17 | C18 | | NFM2104: Engineering Communication and Materials | Core | 1 |  |  | 1 | 1 |  |  |  |  |  |  |  | 1 |  | 1 | 1 | 1 | 1 | | NFM2106: Mathematics | Core | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |  |  | | NFM2102: Manufacturing, Measurement and Diagnostics | Core | 1 |  |  |  | 1 | 1 | 1 | 1 |  |  |  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | NFM2101: Engineering Science | Core | 1 |  |  |  | 1 |  |  |  |  |  |  |  |  | 1 | 1 | 1 | 1 | 1 | | NFE2102: Mechatronics | Core | 1 |  |  |  | 1 | 1 | 1 | 1 |  |  |  |  |  | 1 | 1 | 1 | 1 | 1 | | NFM2103: Professional Development and Transferable Skills | Core | 1 |  |  | 1 | 1 | 1 | 1 | 1 |  |  | 1 | 1 |  |  | 1 | 1 | 1 | 1 | | NIA2287: Analysis of Materials | Core | 1 |  |  |  | 1 |  |  |  |  |  |  | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | NIM2212: Engineering Design | Core | 1 |  |  | 1 | 1 | 1 | 1 | 1 |  |  |  |  | 1 |  | 1 | 1 | 1 | 1 | | NIE2295: Electrical Principles | Core | 1 |  |  |  |  |  |  |  |  |  |  | 1 |  | 1 |  | 1 |  |  | | NIA2238: Thermofluids | Core | 1 |  |  |  | 1 | 1 | 1 | 1 |  |  |  | 1 |  | 1 | 1 | 1 | 1 | 1 | | NIE2202: Electrical Energy Conversion | Core | 1 |  |  | 1 | 1 | 1 | 1 | 1 |  |  |  |  |  |  | 1 | 1 | 1 | 1 | | NIM2214: Manufacturing and Production Systems | Core | 1 |  |  | 1 | 1 | 1 | 1 | 1 |  |  | 1 |  | 1 |  | 1 | 1 | 1 | 1 | | NSZ2303: Industrial Placement (SW only) | Opt |  |  |  |  |  |  |  |  |  |  | 1 |  |  |  |  |  |  |  | | NHM2405: Advanced Energy Systems | Core | 1 |  |  |  | 1 |  |  |  |  |  |  |  |  | 1 |  | 1 |  | 1 | | NHM2408: Eco Design and IPR | Opt | 1 |  |  | 1 | 1 | 1 |  |  |  |  |  |  |  | 1 | 1 | 1 | 1 |  | | NHM2420: Project Quality and Production Management | Opt |  |  |  |  | 1 | 1 | 1 | 1 |  |  |  | 1 |  |  | 1 | 1 |  | 1 | | NHA2430: Design Analysis | Core | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |  |  | | NHE2486: Electrical Power and Drive Systems | Core | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 1 |  |  | | NHP2400: Final Year Project | Core | 1 |  |  | 1 | 1 | 1 | 1 | 1 |  | 1 |  | 1 |  |  | 1 | 1 | 1 |  | | NME3539: Process Measurement and Control | Core | 1 | 1 | 1 |  | 1 |  |  |  |  |  |  |  | 1 |  | 1 |  |  |  | | NMM3515: Advanced Static Analysis | Core | 1 | 1 | 1 |  | 1 |  |  |  |  |  |  |  | 1 |  | 1 |  |  |  | | NMM3518: Project and Finance Management | Core | 1 |  |  |  | 1 |  | 1 | 1 | 1 | 1 |  |  | 1 |  | 1 | 1 |  |  | | NMM3519: Advanced Thermofluids | Core | 1 | 1 | 1 |  | 1 |  |  |  |  |  |  |  | 1 |  | 1 |  |  |  | | NME3521: Modelling of Electromechanical systems | Opt | 1 |  |  |  |  |  |  |  |  |  |  |  | 1 |  | 1 |  |  |  | | NMM3531: New Product Development | Opt | 1 |  |  |  |  |  |  |  |  |  |  |  | 1 |  | 1 |  |  |  | | NMM3510: Year 5 Group Project | Core | 1 | 1 | 1 |  | 1 |  | 1 | 1 | 1 | 1 | 1 |  |  |  | 1 | 1 |  |  | | Total count | 26 | 24 | 4 | 4 | 7 | 19 | 10 | 11 | 11 | 2 | 3 | 4 | 7 | 11 | 8 | 20 | 20 | 12 | 12 | | Total core | 21 | 21 | 4 | 4 | 6 | 17 | 8 | 10 | 10 | 2 | 3 | 3 | 6 | 9 | 7 | 16 | 18 | 11 | 11 | |

### AHEP4th Learning outcomes Partial: CEng

|  |  |
| --- | --- |
| Partial CEng | AHEP 4th Outcome |
| 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 |
| C2. | Analyse complex problems to reach substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles |
| C3. | Select and apply appropriate computational and analytical techniques to model complex problems, recognising the limitations of the techniques employed |
| C4. | Select and evaluate technical literature and other sources of information to address 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 |
| C6. | 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 |
| C8. | 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 |
| C10. | 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 |
| C12. | Use practical laboratory and workshop skills to investigate complex problems |
| C13. | 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 |
| C15. | 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 |
| C17. | Communicate effectively on complex engineering matters with technical and non-technical audiences |
| C18. | Plan and record self-learning and development as the foundation for lifelong learning/CPD |

### AHEP4th Learning outcomes: CEng

|  |  |
| --- | --- |
| CEng | AHEP 4th Outcome |
| 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 |
| 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 |
| M3. | Select and apply appropriate computational and analytical techniques to model complex problems, discussing the limitations of the techniques employed |
| M4. | Select and critically evaluate technical literature and other sources of information to solve complex problems |
| 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 |
| M6. | Apply an integrated or systems approach to the solution of complex problems |
| 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 |
| M8. | Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct |
| M9. | Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity |
| M10. | Adopt a holistic and proportionate approach to the mitigation of security risks |
| M11. | Adopt an inclusive approach to engineering practice and recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion |
| M12. | Use practical laboratory and workshop skills to investigate complex problems |
| M13. | Select and apply appropriate materials, equipment, engineering technologies and processes, recognising their limitations |
| M14. | Discuss the role of quality management systems and continuous improvement in the context of complex problems |
| M15. | Apply knowledge of engineering management principles, commercial context, project and change management, and relevant legal matters including intellectual property rights |
| M16. | Function effectively as an individual, and as a member or leader of a team. Evaluate effectiveness of own and team performance |
| M17. | Communicate effectively on complex engineering matters with technical and non-technical audiences, evaluating the effectiveness of the methods used |
| M18. | Plan and record self-learning and development as the foundation for lifelong learning/CPD |

# PSD Appendix 4

## PDP Mapping

Demonstration of how personal development planning (PDP) maps onto modules and is progressed through the course, evidencing the strategy on PDP summarised in section 14 and available in the

|  |  |  |  |
| --- | --- | --- | --- |
| Year 1 | | | |
| Aspect of PDP | Modules/area PDP delivery | How is PDP achieved | Process |
| Personal Reflection | NFM2103 Professional Development and Transferable Skills | Consolidation/reflection from over the year or module |  |
| Personal Tutor PDP process | Students are guided to review their own performance |  |
| Technical Modules |  | Reflection on feedback provided |
| EVIDENCE | Completed PDP proforma from PAT PDP process |  |  |
|  |
| Sample Formal Report from a technical module. |  | Reflection on feedback |  |
| Career Planning | Presentations from and meeting with the careers advisor as part of NFM2103 Professional Development and Transferable Skills | Attendance and engagement with careers service in presentations and meetings |  |  |
| EVIDENCE | CV Personal research into professional competencies required for chosen career area |  | Consideration and development of CV and careers drop in |  |
| Developing independence / confidence | Academic Modules |  |  |  |
| Group presentations | Working independently as a self learner. Planning and time management | Working as part of a larger group and presenting infront of peers and staff |  |
| EVIDENCE | A range of modules | Formal reports, grades and feedback. Laboratory log books grades and feedback. Examination results | Teaching and learning during the year |  |

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| Year 2 | | | |
| Aspect of PDP | Modules/area PDP delivery | How is PDP achieved | Process |
| Personal Reflection | NIM2212E Engineering Design  Personal Tutor PDP process | Consolidation/reflection from over the year or module | Engineering Design Sample Assignment report Completed PDP proforma from PT PDP process |
| Personal Tutor PDP process |  | Students are guided to review their own performance |
| Technical Modules | Reflection on feedback provided |  |
| EVIDENCE |  |  |  |
| Completed PDP proforma from PAT PDP process |  |  |
| Sample Formal Report from a technical module. |  |  |
| Career Planning | 1hr/wk timetabled sessions with Industrial Training/Careers guidance officer. |  |  |
| EVIDENCE | CV Personal research into professional competencies required for chosen career area | Attendance and engagement with careers service in presentations and meetings | CV, feedback from mock interviews |
| Developing independence / confidence | Incorporated into NIA2201 Materials and Biocompatibility, NIA2238 Thermofluids NMM3515 Advanced Static Analysis Personal Tutor PDP process | Working as part of a larger group and presenting infront of peers and staff |  |
|  | Academic Modules | Working independently as a self learner. Planning and time management |  |
| EVIDENCE | Group presentations | Draft project report, and feedback. Project grade. Formal reports, grades and feedback. Examination results | Teaching and learning during the year |

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| --- | --- | --- | --- |
| Year 3 (Placement) | | | |
| Aspect of PDP | Modules/area PDP delivery | How is PDP achieved | Process |
| Personal Reflection | Work placement | Consolidation/reflection from over the year or module | Engineering Design Sample Assignment report Completed PDP proforma from PT PDP process |
| Personal Tutor PDP process | Appraisal by visiting academic tutor twice during placement  Exit appraisal by placement line manager |  |
|  |
| EVIDENCE | Completed PDP proforma from PAT PDP process |  | Evaluation of performance with respect to peers |  |
|  |
|  |
| Career Planning | Reflection on personal suitability of placement company | Possibly address ongoing relationship with placement company | Reflect on wider commercial setting and personal suitability |  |
| EVIDENCE | Personal research into professional competencies required for chosen career area | Reflect on individual roles and personal position in the company | Completion of company report |  |
| Developing independence / confidence | Working as part of a professional industiral team |  | Presenting infront of peers and wider staff body |  |
| EVIDENCE |  | Completed placement logbook |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Year 4 | | | |
| Aspect of PDP | Modules/area PDP delivery | How is PDP achieved | Process |
| Personal Reflection | Technical Modules | Consolidation/reflection from over the year or module | Engineering Design Sample Assignment report |
| Personal Tutor PDP process | . |  |
|  |
| EVIDENCE | Completed PDP proforma from PAT PDP process |  |  |  |
|  |
| Project report, viva and poster |  | Sample Formal Report from a technical module. |  |
| Career Planning | Group session with careers guidance officer Personal session with careers guidance officer - recommended |  |  |  |
| EVIDENCE | CV Personal research into professional competencies required for chosen career area | Attendance and engagement with careers service in presentations and meetings | Personal research into professional competencies required for chosen career area |  |
| Developing independence / confidence | Group work in H level modules | Working as part of a larger group and presenting infront of peers and staff | Peer assessment exercise |  |
|  | Incorporated in and focussed on NHP 2400 Personal Tutor PDP process | Working increasingly independently as a self learner. Planning and time management | Draft project report, and feedback. Project grade. |  |
| EVIDENCE | Group presentations | Formal reports, grades and feedback. Laboratory log books grades and feedback. Examination results |  |  |

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| --- | --- | --- | --- |
| Year 5 | | | |
| Aspect of PDP | Modules/area PDP delivery | How is PDP achieved | Process |
| Personal Reflection | Group Project module | Reflection on the issues of group project work and management | Project report and presentations Peer assessment |
| Personal Tutor PDP process | . | Completed PDP proforma from PT PDP process |
|  |
| EVIDENCE | Exchange and dialogue in regular Group Project meeting | Minutes of Group project meetings and final report | Sample Formal Report from a technical module. |  |
|  |
|  |
| Professional development | Drop in session with careers guidance officer | Completed PDP proforma from PT PDP process | Applications for Graduate role of schemes |  |
| EVIDENCE | CV Personal research into professional competencies required for chosen career area |  | Attendance and engagement with careers service in presentations and meetings |  |
| Developing independence / confidence | Incorporated in and focussed on Group Project Personal Tutor PDP process | Working as part of a larger group and presenting infront of peers and staff |  |  |
|  | Working increasingly independently as a self learner. Planning and time management | Draft project report, and feedback. Project grade. |  |
| EVIDENCE | Group presentations |  | Formal reports, grades and feedback. Examination results |  |

# PSD Appendix 5

## Assessment Schedule

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| |  |  |  |  | | --- | --- | --- | --- | | Energy Engineering MEng/BEng(Hons)  Module | Assessment Task | Week number | Last Submission of course (P) | | NFE2102: Mechatronics | Task 1 ICT 24% | T2,wks\_1-11 |  | | NFE2102: Mechatronics | Task 2 PRJ 26% | T2,wk\_11 |  | | NFE2102: Mechatronics | Task 3 ICT 50% | T2,wk\_12 |  | | NFM2101: Engineering Science | Task 1 ICT 24% | T2,wks\_1-11 |  | | NFM2101: Engineering Science | Task 2 PRJ 26% | Lab+2 |  | | NFM2101: Engineering Science | Task 3 CWK 20% | Lab+2 |  | | NFM2101: Engineering Science | Task 4 ICT 30% | T2,wk\_12 |  | | NFM2102: Manufacturing, Measurement and Diagnostics | Task 1 ICT 24% | T1,wks\_1-11 |  | | NFM2102: Manufacturing, Measurement and Diagnostics | Task 2 PRJ 26% | T1,wk\_13 |  | | NFM2102: Manufacturing, Measurement and Diagnostics | Task 3 POR 20% | T1,wk\_11 |  | | NFM2102: Manufacturing, Measurement and Diagnostics | Task 4 ICT 30% | T1,wk\_12 |  | | NFM2103: Professional Development and Transferable Skills | Task 1 ICT 24% | T2,wks\_1-11 |  | | NFM2103: Professional Development and Transferable Skills | Task 2 CWK 20% | T2,wk\_10 |  | | NFM2103: Professional Development and Transferable Skills | Task 3 PRS 20% | T2,wk\_10 |  | | NFM2103: Professional Development and Transferable Skills | Task 4 ICT 36% | T2,wk\_12 |  | | NFM2104: Engineering Communication and Materials | Task 1 ICT 24% | T1,wks\_1-11 |  | | NFM2104: Engineering Communication and Materials | Task 2 PRJ 26% | T1,wk\_19 |  | | NFM2104: Engineering Communication and Materials | Task 3 CWK 20% | T1,wk\_9 |  | | NFM2104: Engineering Communication and Materials | Task 4 ICT 30% | T1,wk\_12 |  | | NFM2106: Mathematics | Task 1 ICT 24% | T1,wks\_1-11 |  | | NFM2106: Mathematics | Task 2 ICT 38% | T1,wk\_6 |  | | NFM2106: Mathematics | Task 3 ICT 38% | T1,wk\_12 |  | | NHA2430: Design Analysis | Task 1 ICT 24% | T2,wks\_1-11 |  | | NHA2430: Design Analysis | Task 2 CWK 38% | T2,wk\_15 | BEng | | NHA2430: Design Analysis | Task 3 ICT 38% | T2,wk\_12 |  | | NHE2486: Electrical Power and Drive Systems | Task 1 ICT 24% | T2,wks\_1-11 |  | | NHE2486: Electrical Power and Drive Systems | Task 2 CWK 13% | T2,wk\_7 |  | | NHE2486: Electrical Power and Drive Systems | Task 3 CWK 13% | T2,wk\_9 |  | | NHE2486: Electrical Power and Drive Systems | Task 4 ICT 50% | T2,wk\_12 |  | | NHM2405: Advanced Energy Systems | Task 1 ICT 24% | T1,wks\_1-11 |  | | NHM2405: Advanced Energy Systems | Task 2 CWK 20% | Lab+2 |  | | NHM2405: Advanced Energy Systems | Task 3 CWK 10% | T1,wk\_10 |  | | NHM2405: Advanced Energy Systems | Task 4 ICT 46% | T1,wk\_12 |  | | NHM2408: Eco Design and IPR | Task 1 ICT 24% | T1,wks\_1-11 |  | | NHM2408: Eco Design and IPR | Task 2 CWK 26% | T1,wk\_4 |  | | NHM2408: Eco Design and IPR | Task 3 CWK 50% | T1,wk\_15 |  | | NHM2420: Project Quality and Production Management | Task 1 ICT 24% | T1,wks\_1-11 |  | | NHM2420: Project Quality and Production Management | Task 2 PRJ 33% | T1,wk\_10 |  | | NHM2420: Project Quality and Production Management | Task 3 ICT 43% | T1,wk\_12 |  | | NHP2400: Final Year Project | Task 1 CWK 10% | T1,wk\_5 |  | | NHP2400: Final Year Project | Task 2 PRS 20% | T1,wk\_6 |  | | NHP2400: Final Year Project | Task 3 PRJ 20% | T1,wks\_1-12/ T2,wks\_1-12 |  | | NHP2400: Final Year Project | Task 4 CWK 50% | T2,wk\_10 |  | | NIA2238: Thermofluids | Task 1 ICT 24% | T2,wks\_1-11 |  | | NIA2238: Thermofluids | Task 2 PRJ 26% | T2,wk\_6 |  | | NIA2238: Thermofluids | Task 3 CWK 20% | Lab+2 |  | | NIA2238: Thermofluids | Task 4 ICT 30% | T2,wk\_12 |  | | NIA2287: Analysis of Materials | Task 1 ICT 24% | T1,wks\_1-11 |  | | NIA2287: Analysis of Materials | Task 2 PRJ 26% | T1,wk\_14 |  | | NIA2287: Analysis of Materials | Task 3 ICT 50% | T1,wk\_12 |  | | NIE2202: Electrical Energy Conversion | Task 1 ICT 24% | T2,wks\_1-11 |  | | NIE2202: Electrical Energy Conversion | Task 2 CWK 26% | Lab+2 |  | | NIE2202: Electrical Energy Conversion | Task 3 ICT 50% | T2,wk\_12 |  | | NIE2295: Electrical Principles | Task 1 ICT 24% | T1,wks\_1-11 |  | | NIE2295: Electrical Principles | Task 2 CWK 26% | T1,wk\_7 |  | | NIE2295: Electrical Principles | Task 3 ICT 50% | T1,wk\_12 |  | | NIM2212: Engineering Design | Task 1 ICT 24% | T1,wks\_1-11 |  | | NIM2212: Engineering Design | Task 2 PRJ 26% | T1,wk\_24 |  | | NIM2212: Engineering Design | Task 3 CWK 50% | T1,wk\_10 |  | | NIM2214: Manufacturing and Production Systems | Task 1 ICT 24% | T2,wks\_1-11 |  | | NIM2214: Manufacturing and Production Systems | Task 2 PRJ 26% | T2,wk\_11 |  | | NIM2214: Manufacturing and Production Systems | Task 3 ICT 50% | T2,wk\_12 |  | | NME3521: Modelling of Electromechanical systems | Task 1 ICT 24% | T2,wks\_1-11 |  | | NME3521: Modelling of Electromechanical systems | Task 2 CWK 26% | T2,wk\_10 |  | | NME3521: Modelling of Electromechanical systems | Task 3 ICT 50% | T2,wk\_12 |  | | NME3539: Process Measurement and Control | Task 1 ICT 24% | T1,wks\_1-11 |  | | NME3539: Process Measurement and Control | Task 2 CWK 26% | T1,wk\_18 |  | | NME3539: Process Measurement and Control | Task 3 ICT 50% | T1,wk\_12 |  | | NMM3510: Year 5 Group Project | Task 1 PRJ 100% | T2,wk\_13 |  | | NMM3515: Advanced Static Analysis | Task 1 ICT 24% | T1,wks\_1-11 |  | | NMM3515: Advanced Static Analysis | Task 2 PRS 40% | T1,wk\_10 |  | | NMM3515: Advanced Static Analysis | Task 3 ICT 36% | T1,wk\_16 |  | | NMM3518: Project and Finance Management | Task 1 ICT 24% | T2,wks\_1-11 |  | | NMM3518: Project and Finance Management | Task 2 PRJ 50% | T2,wk\_15 |  | | NMM3518: Project and Finance Management | Task 3 ICT 26% | T2,wk\_14 |  | | NMM3519: Advanced Thermofluids | Task 1 ICT 24% | T2,wks\_1-11 |  | | NMM3519: Advanced Thermofluids | Task 2 CWK 36% | T2,wk\_16 | MEng | | NMM3519: Advanced Thermofluids | Task 3 ICT 40% | T2,wk\_12 |  | | NMM3531: New Product Development | Task 1 ICT 24% | T2,wks\_1-11 |  | | NMM3531: New Product Development | Task 2 POR 76% | T2,wk\_7 |  | |

# PSD Appendix 6

## CAB Model

| **Model** | **Mode of Study** | **Course Start Month** | **Length before Main CAB** | **Expected Month for Main CAB** |
| --- | --- | --- | --- | --- |
| A | UGT FT | September | 9 months | June |