

MEng Integrated Engineering - Programme Handbook 2021-22

Welcome from the Chief Academic Officer

'Welcome to NMITE and congratulations on starting your engineering journey by choosing the MEng Integrated Engineering. This is an exciting moment, and during your time with us we want you to take advantage of as many academic, social and professional opportunities as possible. This handbook provides important information on the many ways NMITE can support you in your studies and more widely. It provides key information on how your course is structured, how you and NMITE's educators will work together to help you learn, and how to work safely at NMITE. Read it now, and keep it handy for future reference.

I look forward to meeting you'.

Beverley

Professor Beverley Gibbs, BEng, MBA, MA, PhD, CEng MIMMM, SFHEA
Chief Academic Officer.

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Using this Handbook

This handbook is located on our [website](#) and information is correct at the time of issue at the start of the academic year.

This handbook contains important information of relevance to the NMITE MEng in Integrated Engineering. As such you should read the handbook as soon as possible.

For information on the regulations appropriate to this programme please see the Academic Regulations.

1. Studying at NMITE

1.1 Key Academic Contacts

Subject Area	Subject Area Lead
Liberal	Sarah J. Hitt
Mathematics and Academic Skills	Sarah Peers
Electrical and Electronic Engineering	Neil Rogers
Dynamics	Nadia Kourra
Manufacturing; Engineering Design; Project Management	Dave Allan
Control Systems	Pooh Ling E
Flow, Heat and Energy	Aris Quintana-Nedelcos
Materials	Costa Coleman
Programming	Tim Belden
Community Based Challenges	Peter Metcalfe
Bachelor's & Master's Engineering Projects	Gary Wood

1.2 Student Support

All information on the student support available to you at NMITE can be found in the Student Handbook or through myNMITE.

1.3 Location and Facilities

Your main location of study will be:

Blackfriars Campus, Blackfriars Street, Hereford HR4 9HS.

1.4 Accessing NMITE

Access to sites will be using your student ID card. Attendance will also be monitored through this system. You must wear your student ID at all times while on NMITE premises. Access to different premises will vary by location and time.

Only authorised visitors are allowed on NMITE premises. Authorised visitors must wear a visitor badge at all times while on NMITE premises. All guests must be and can only be signed in and out by a member of NMITE staff, not by a student. They must be escorted by a member of NMITE staff while on NMITE premises. If you need to bring a guest into NMITE premises, please discuss this in advance with a member of staff.

If you believe that there is an unauthorized visitor on the premises or trying to enter the premises, you should immediately report this to a member of NMITE staff, or, in appropriate circumstances, to the police.

1.5 Hours of Study

NMITE students on the MEng in Integrated Engineering Programme will study a variety of modules and as such there isn't a single, 'typical' timetable. It is important however to note that a 14-credit module, which normally runs over 3.5 weeks, requires a notional 140 hours of study, including all learning activities, your personal study time and the completion of assessments.

Attending seminars and tutorials is only a small part of what you need to do, the majority of your time being focused on directed learning activities/supervised practical tasks. Students are expected to spend 40 hours in total per week studying (which includes time spent in seminars, tutorials, co-curricular learning, assessments (including preparation) and developing academic skills). You are a full-time student and you should be working full-time on your programme.

1.6 Attendance and Absence

All students are required to attend the activities specified in the module timetable and listed on Canvas, NMITE's VLE, and fully engage with them (i.e. not just turn up but involve yourself with the topics being considered so that you can take a full part in discussions). Attendance will be monitored and NMITE students are expected to aim for 100% attendance. Failure to meet attendance levels of at least 80% of the scheduled learning and assessment activities during the FHEQ Level may impact upon your registration status as a student at NMITE.

1.7 Key Dates

Dates for current and future academic years as well as other useful dates for students can be found via Canvas and myNMITE. Please note that some dates

will be specific to your cohort and/or you, as such they may therefore differ from other cohorts and students. Furthermore, the order of modules undertaken by students within a cluster may vary and as such you must refer to your individual timetable provided by Student Support.

2. MEng Integrated Engineering

The NMITE MEng in Integrated Engineering is validated by The Open University and therefore our policies and procedures are in alignment with those specified by The Open University.

2.1 Programme Description

The NMITE MEng in Integrated Engineering is a challenge-based programme that uses block learning with deep integration of employers and the community in the learning experience. Modules are taken sequentially and are typically either 2-week, 3-week, or 3.5-week in duration. In each 3.5-week module, you will undertake real-world challenges while working predominantly as teams in a studio environment. Each challenge highlights and hones areas of engineering expertise and embeds liberal subjects while maintaining the integrated approach intrinsic to the programme.

As you progress through the degree, challenges become more demanding, needing an increasingly interdisciplinary approach that requires both engineering and broader expertise. Later challenges are built around the thematic areas of Infrastructure, Health, Security and Energy and the impact that future engineers will have on developing sustainable, appropriate, affordable solutions within these areas. Creativity, design, and innovation are emphasised throughout the programme.

By using a challenge-based learning approach, the programme enables you to become an agile, intellectually curious graduate with the broad skillsets necessary for future employment and lifelong learning. The programme incorporates fundamental technical topics in engineering, together with an emphasis on professional and social skills and behaviours, and a diverse range of liberal subjects.

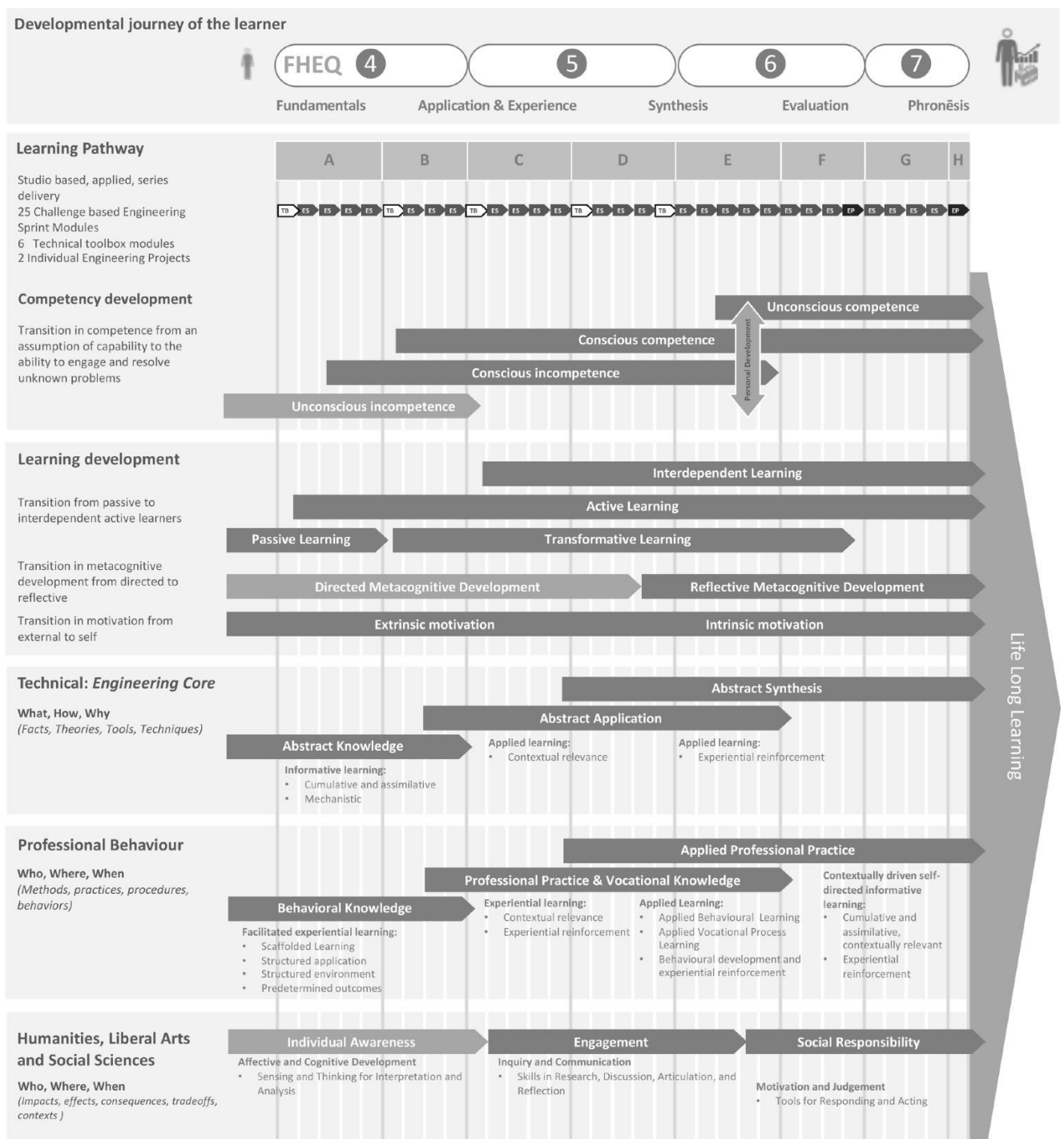
As an NMITE student you will appreciate that engineering is at its heart all about systems and connections, and that the best engineers understand how economics, geopolitics, culture, technology, and values work together to enable it. This is why NMITE's MEng integrates conventionally separate strands of engineering and goes still further—integrating engineering with other disciplines such as arts, humanities, and business.

Unlike traditional programmes where options to take outside subjects are available but not part of a coherent programme of learning, NMITE's integrated approach means these subjects are not isolated and all disciplines inform all learning at every stage.

NMITE explicitly defines places within the curriculum where distinct professional behaviours and competencies are developed, and deliberately embeds increasingly complex learning types across the Framework for Higher Education Qualifications (FHEQ) levels. Ultimately, this educational model provides the basis for industry-ready engineering capability as well as the foundation for lifelong learning.

The *MEng Programme Learning Model Overview* figure provides a visual description of the developmental journey of the NMITE student. It demonstrates the interdisciplinary focus which enhances the ability to learn technical concepts within social, environmental, and ethical contexts. Content within the MEng Integrated Engineering builds in depth and complexity throughout the programme, developing the capacity for lifelong learning alongside subject competence, professional competence, and personal attributes.

2.2 MEng Programme Learning Model Overview



2.3 Programme Aims and Objectives

The MEng in Integrated Engineering aims to:

- Satisfy the necessary educational standards for the award of Chartered Engineer by meeting the requirements of the Engineering Council Accreditation of Higher Education Programmes.
- Imbue students with knowledge and understanding of engineering, gained through innovative learning approaches, and interacting with employers and the community.
- Nurture an ability to integrate, synthesize, apply, and gain knowledge, with an awareness of social and ethical responsibilities.
- Encourage a desire to identify problems that need solving, and to find creative solutions to society's challenges.
- Develop agile, independent, curious, resilient, and passionate engineers.

2.4 Programme Specification

The programme specification contains information on the aims, objectives, learning outcomes and module hours as well as details of how the programme will be delivered and assessed.

The programme is comprised of 33 modules taken consecutively over 8 clusters. A cluster is a group of modules at the same educational level. Cluster A and B contain 9 modules at F Framework for Higher Education Qualifications (FHEQ) Level 4; Cluster C and D contain 10 modules at FHEQ Level 5; Cluster E and F contain 9 modules at FHEQ 6; Cluster G and H contain 5 modules. Further details on the programme can also be found below for FHEQ Levels [4](#), [5](#), [6](#) and [7](#).

2.5 Degree Title and Classification

Requirements for the MEng in Integrated Engineering:

- Students must pass 480 credits with at least 120 credits at FHEQ Level 7, no more than 120 credits at FHEQ Level 6, no more than 122 credits at FHEQ Level 5, no more than 120 credits at FHEQ Level 4.
- Students must meet or surpass all of the defined Learning Outcomes for the [Master's in Integrated Engineering](#).

Provided that you have satisfied all the requirements of the programme, the title which will appear on your degree certificate is MEng in Integrated Engineering. Failure to meet all of the requirements will result in an [early exit award](#).

MEng classifications will be calculated using a combination of the assessment marks achieved in modules at FHEQ Levels 6 and 7 weighted at 50% and 50% respectively. Results from assessments in FHEQ Level 4 and FHEQ Level 5 modules will not affect your degree classification but will affect your ability to progress through the programme. Details on assessments and pass marks can be found [here](#).

BEng classifications will be calculated using a combination of the assessment marks achieved in modules at FHEQ Levels 5 and 6 weighted at a ratio of 1:2 respectively. Results from assessments in FHEQ Level 4 modules will not affect your degree classification but will affect your ability to progress through the programme. Details on assessments and pass marks can be found [here](#).

Degree Classification	Award Calculation
First Class	Greater than 70%
Upper Second Class (2:1)	60-69%
Lower Second Class (2:2)	50-59%
Third Class	40-49%

2.6 Early Exit Awards

Students will be eligible for an exit award of CertHE, DipHE or Bachelor of Engineering (BEng) to reflect their highest level of completed credits only where they are unable to complete the MEng.

CertHE:

This award requires a student to have successfully completed at least 120 credits at a minimum of FHEQ Level 4.

The structure of the MEng contains 118 credits at FHEQ Level 4, and exiting students would also have to complete one module at FHEQ Level 5 (most likely an 8-credit Toolbox for the efficiency of time) to secure the additional credits required to be eligible for a Cert HE.

DipHE:

This award requires a student to have successfully completed at least 240 credits - 120 of which must be at a minimum of FHEQ Level 4, and 120 of which must be at a minimum of FHEQ Level 5.

BEng (Unclassified award):

This award requires a student to have successfully completed at least 300 credits - 120 of which must be at a minimum of FHEQ Level 4; 120 of which must be at a minimum of FHEQ Level 5; and at least 60 of which must be at FHEQ Level 6. All successfully completed FHEQ Level 6 modules contained within the MEng will be eligible to make up the minimum 60 credits required.

BEng (Honours):

This award requires a student to have successfully completed at least 360 credits - 120 of which must be at a minimum of FHEQ Level 4; 120 of which must be at a minimum of FHEQ Level 5; and 120 of which must be at a minimum of FHEQ Level 6. NB: This award will not be accredited by a professional engineering association.

2.7 Academic Skills and Knowhow Centre (ASK)

NMITE views communication, mathematics and IT as vital tools but does not believe a high-level of knowledge in these subjects should be a pre-requisite to studying engineering. In line with its overall approach to teaching, NMITE will support, scaffold, promote and advance communication, mathematics, and IT learning 'through doing' as part of the modules that you study.

ASK is a collaborative centre bringing together the expertise of the communication, mathematics, and ICT educators with those with expertise in finance, project management, ethics, science, and other areas of relevance to NMITE. In the ASK centre and via the ASK's Canvas pages, you will find information, advice, and resources about the full range of academic support available. The centre will also be a place where you can share your own know-how.

ASK provides support in your studies from a location, room B15 Blackfriars and, even more conveniently, online on NMITE's Canvas system. You can make an appointment for face-to-face support or arrange for support to be provided remotely via telephone, Microsoft teams or e-mail, at your preference.

In ASK we can support you with:

- Mathematics and statistics related queries, problems and understanding
- Communications: writing reports, presentations, posters
- IT and digital: links to computing tools and resources
- Professional competencies, such as management skills and career development
- Study support, such as making sense of assignment feedback and understanding academic processes
- And lots of other resources to help make your learning more relevant.

ASK will initially enable you to fully engage with your programme irrespective of former learning and experience. While you are at NMITE, ASK will provide you

with signposting to other skills and resources, including other experts at NMITE, to help with your challenges, particularly for the final sprints. So, whether you wish to consolidate, improve, further or share your learning, ASK is happy to help.

The ASK Centre (B15 Blackfriars) is open 09.00-17.00 Monday-Thursday, with times outside those core hours available by appointment.

2.8 Competency Standards

Competency standards highlight the core skills students should be able to demonstrate by the end of the programme. The programme (including learning outcomes) has therefore been developed using the following points of reference:

- [Subject Benchmark Statements](#)
- Framework for Higher Education Qualifications (2008)
- UK Quality Code for Higher Education
- [The Accreditation of Higher Education Programmes: UK Standard for Professional Engineering Competence, Engineering Council](#), Third Edition.

2.9 Accreditation

NMITE is working with the Institution of Engineering Technology (IET) towards graduates' Chartered Engineer registration. As accreditation is output-based, it can only be given retrospectively, following cohort completion of the programme. Nevertheless, we are currently liaising with the IET to ensure the programme aligns with their expectations and requirements and we look to secure accreditation in 2024. In line with NMITE's approach of integrating liberal subjects with engineering, accreditation is also being investigated with the Chartered Management Institute (CMI) or the Institute of Leadership Management (ILM).

2.10 Timetables

Timetables are produced centrally and are available via Registry and Canvas. If you are experiencing any issues with viewing your timetable through Canvas then please request assistance from the IT Service Desk.

2.11 Assessments

The MEng in Integrated Engineering includes modules from FHEQ Level 4 to 7. Assessment at each level will be appropriate to the level, judged against QAA threshold standards and other guidance such as that from Professional Bodies (see [Competency Standards](#)). In line with such guidance, each assessment will have an associated marking rubric, available in advance to students,

highlighting the expectations for the pass (i.e. threshold) standard, and for higher standards of achievement. Consequently, assessments of a similar type will have different expectations for standards of achievement depending on the level being assessed. For example, an academic report at FHEQ Level 4 may be more focused on understanding and knowledge, while at high FHEQ levels the focus may be more on synthesis and engineering judgement. The time required to complete an assessment, including preparation time, will be in approximate proportion to the credits associated with the assessment.

Assessments will be on a module by module basis, with an overall mark being awarded for each module. In order to pass a module a mark of 40% or greater at FHEQ Levels 4-6 and 50% or greater at FHEQ Level 7 must be achieved in each assessment.

To meet with the accreditation requirements of the IET students must achieve an average mark of at least 50% at FHEQ Level 6 to be eligible to progress to Level 7 and continue to complete this MEng. Students who have achieved the 40% Pass mark for each module at Level 6, but not the required 50%, will not be eligible to continue to Level 7 for the award of MEng and instead will be transferred to the BEng (Hons) exit route.

Please refer to the MEng Assessment Policy, and for all other assessment details please refer to the guidance notes provided in the MEng Assessment Handbook.

2.12 Assessment Weightings

Weightings of the individual assessments for each module are provided in the Module Specifications and are available on Canvas.

2.13 Assessment Feedback

NMITE recognises that effective feedback is an essential part of both formative and summative assessment and that effective feedback is best given as a dialogue between students and educators. All modules will therefore have extensive opportunity for students to discuss their work, and its level, with staff in a formative manner. Feedback will also be provided on summative assessments in a form that reflects the nature of the assessment.

Feedback will compare the process, activity level, timing, effort, engagement, etc. with expected levels; and will provide guidance to students on areas that could be improved. Feedback will target the process followed rather than the result gained.

For details please refer to the guidance notes provided in the MEng Assessment Handbook.

2.14 Timings of Assessment Marks and Feedback

All information regarding the module assessments (including submission timings and methods) will be provided at the start of the module. Assessment marks and feedback will be provided within 15 working days of submission.

2.15 Resitting Assessments

If you achieve less than the assessment pass mark you will be required to undertake a resit of the assessment.

A resit is a second attempt of an assessment component within a module, following failure at first attempt. You may re-sit each assessment once (unless you have evidenced Extenuating Circumstances).

For assessments you resit, your mark will be capped at 40 for FHEQ Levels 4, 5 and 6 and capped at 50 for FHEQ Level 7.

A student shall not be permitted to be reassessed by resit in any module that has received a pass mark, or in a component that has received a mark of 40 or above at FHEQ Levels 4-6, or 50 at FHEQ Level 7.

The re-sit will normally be carried out by the same combination of written examination, coursework etc. as in the first attempt.

The deadline for resitting will be agreed upon by the Module Leader and Academic Registrar and confirmed to you in writing.

A retake is a second attempt of all assessment components within a module following failure at the first or resit attempt. Retake of the failed component may require the student to participate in classes to prepare them for the second attempt. Unless a student has approved Extenuating Circumstances, all retake assessments will be capped at the Pass mark (40 for FHEQ Levels 4, 5 and 6; and 50 for FHEQ Level 7).

This will be confirmed at the Assessment Board and notified to you in writing by the Academic Registrar.

Students should refer to Section 17 of the NMITE Regulations for full details about resitting/retaking failed assessments.

2.16 Late Submission of Assessments

If you hand in your work late, without a good reason for doing so, your mark will be reduced in line with the following:

- Submission within 6 working days: a reduction of 10 percentage points from the overall mark scored for each working day late, down to the 40% pass mark (for FHEQ Levels 4, 5 and 6) and 50% pass mark (FHEQ Level 7) and no further.

- Submission that is late by 7 or more working days: a mark of 0 is given.
- Non-submission: a mark of 0 is given.

In circumstances where the late submission results in a Fail of the assessment, the criteria for the Resitting of Assessments (in paragraph 3.14 above) will apply.

In circumstances where it is accepted that Extenuating Circumstances apply to the assessment submission, penalties will be waived for the affected assessment(s). Other options, such as the setting of a revised submission deadline, may also be applied if the Extenuating Circumstances Committee considers it appropriate. The revised submission deadline will be agreed upon by the Module Leader and Academic Registrar, and confirmed to you in writing.

2.17 Compensation for Marginal Failure

Compensation allows you to achieve a marginal failure in a limited number of modules on the basis of an overall performance which is sufficient to merit the award of your degree.

NMITE's MEng in Integrated Engineering has been developed to meet the accreditation requirements of the Engineering Council (a Professional, Statutory and Regulatory Body, or PSRB) which ensures that graduates obtain the educational base to become Chartered Engineers. The Engineering Council has mandatory requirements that all accredited programmes must meet. These include a requirement that students must achieve the Accreditation of Higher Education Programmes (AHEP) Learning Outcomes. In addition, the Engineering Council requires that any compensation scheme which allows students to fail modules and yet still graduate, meets specific criteria.

NMITE's progression rules have been established in order to satisfy the requirements of the Engineering Council and to align with OU Regulations. As such compensation is permitted for all modules, excluding those listed below:

- Module ME6EBPPF – Past, Present and Future
- Modules ME5CCCON1; ME5CCPRO1; ME6ECCON2; ME6ECPRO2 - Community Based Challenges
- Module ME6FABEP - Bachelor's Engineering Project
- Module ME7HAMEP - Master's Engineering Project

Compensation can be applied when a minimum mark of no more than 5 marks below the pass mark has been achieved. NMITE allows compensation of a maximum of 30 credits during the MEng programme provided an aggregate mark of 40% has been achieved for the qualification level of the programme (and in the case of FHEQ Level 7, provided an aggregate mark of 50% has been achieved).

2.18 Options for the Retake of Study

If, having exhausted all permitted compensation and resit/retake opportunities, you are still unable to pass a module, the Assessment Board may, at its discretion, permit one of the following options:

- Partial retake as a fully registered student
- Partial retake for assessment only
- Full retake

Further details can be found in the OU Regulations in the [Key Policies section of the website](#).

3. Framework for Higher Education Qualifications (FHEQ) Level 4

Students will be introduced at FHEQ Level 4 to the fundamentals of engineering through challenge-based learning. Within teams, students will be able to apply their developing skills to analyse standard problems in a multi- and interdisciplinary way. Students will undertake focused activities and will be able to evaluate and interpret data and present the results in a clear and reliable manner.

Throughout FHEQ Level 4, students will develop their independent learning skills together with their team-building with emphasis on project management and communication (including rhetoric, effective writing, and deep and critical reading). Industry focused communication assessment methods have been selected for those modules which have been created to instigate the development of the behavioural practices of an industry ready graduate.

Assessment at FHEQ Level 4 is predominantly focused upon the development of factual and theoretical knowledge.

Module Type	Method of Learning Delivery
8 or 12 Credit Module (referred to as a 'Toolbox')	Toolboxes are two-week or three-week modules designed to introduce specific skills and competencies which will have applications throughout the overall programme, for example teamwork and engineering communication. <i>There are 2 Toolboxes at FHEQ Level 4.</i>
14 Credit Module (referred to as an 'Engineering Sprint')	Engineering Sprints are 3.5-week challenge-based modules with emphasis on a particular technical area such as fluid flow or structural behaviour. Students are divided into teams, with each team assigned a challenge that requires exploration and understanding of the technical area. A typical Engineering Sprint consists of tutorials; seminars; supervised practical tasks; and self-directed learning.

<i>There are 7 Engineering Sprints at FHEQ Level 4.</i>

3.1 Modules

A summary of the FHEQ Level 4 MEng in Integrated Engineering modules (including module codes and the cluster in which the module is taught) is as follows:

Code	Module Title	Duration in Weeks	Credits	Semester/ Cluster
ME4ABCER	Certainty	2	8	A
ME4AEMAT1	Engineering Materials and Processes	3.5	14	A
ME4AEEEE1	Introduction to Electrical and Electronic Engineering	3.5	14	A
ME4AEDYN1	Statics and Structures	3.5	14	A
ME4AEPRG	Programming	3.5	14	A
ME4BBMIH	Making It Happen	3	12	B
ME4BECTR1	Integrated Systems	3.5	14	B
ME4BEFHE1	Introduction to Flow, Heat and Energy	3.5	14	B
ME4BEDYN2	Dynamics	3.5	14	B

3.2 Learning Outcomes

Knowledge and understanding
L4 A1: develop a sound understanding of the fundamentals of engineering within Integrated Engineering
L4 A2: acquire basic skills in modelling and analysis and the ability to solve straightforward technical challenges
Cognitive skills

L4 B1: acquire basic design skills and the ability to create simple engineering designs using a multi-disciplinary approach

L4 B2: develop an awareness of the responsibilities of engineers in economic, social, and environmental contexts

Practical and professional skills

L4 C1: develop practical skills and the ability to conduct and evaluate experiments

L4 C2: create, use and/or evaluate computer software with integration into engineering solutions

Key/transferable skills

L4 D1: develop project management and communication skills to an expected industrial format

L4 D2: develop cooperative skills through team-based challenges

L4 D3: develop independence and interdependence when learning

L4 D4: develop a responsible and professional attitude

3.3 Nominal Learning Hours (for guidance purposes only)

Nominal learning hours are the number of hours which it is expected that a learner (at a particular level) will spend, on average, to achieve the specified learning outcomes at that level. This will include all learning activities including directed learning, independent study and assessments. One credit is typically described as being equal to 10 hours of notional learning.

Code	Seminars	Tutorials	Enrichment Lecture	Directed Learning Activities/ Supervised Practical Tasks	Assessments	Academic Skills	Total
ME4ABCER	12	4	-	44	10	10	80
ME4AEMAT1	12	4	2	91	16	15	140
ME4AEEEE1	12	4	2	89	18	15	140
ME4AEDYN1	12	4	2	88	19	15	140

ME4AEPRG	12	4	2	92	15	15	140
ME4BBMIH	18	6	-	69	12	15	120
ME4BECTR1	12	4	2	89	18	15	140
ME4BEFHE1	12	4	2	91	16	15	140
ME4BEDYN2	12	4	2	90	17	15	140
TOTAL	114	38	14	743	141	130	1180



- Seminars
- Tutorials
- Enrichment Lecture
- Directed Learning Activities/Supervised Practical Tasks
- Assessments
- Academic Skills

4. Framework for Higher Education Qualifications (FHEQ) Level 5

Students at FHEQ Level 5 will develop a more extensive knowledge and understanding of the core areas of engineering with, where appropriate, support in mathematics and sciences. Assessment at FHEQ Level 5 is focused on methodologies which have been selected for the purpose of developing core engineering skills, whilst assessing the ability of the student to apply prior learning. Assessments will therefore include a variety of output media including industry test reports, group presentations, etc. At FHEQ Level 5, students will undertake a community-based challenge activity which will require conceptual thinking, analysis, logical thought, judgment and the clear presentation of their ideas. In addition, students will apply their knowledge and understanding to more complex challenges whilst continuing to develop their independent learning, communication skills and their ability to work in teams.

Module Type	Method of Learning Delivery
8 or 12 Credit Module	Toolboxes are two-week or three-week modules designed to introduce specific skills and competencies which will

(referred to as a 'Toolbox')	<p>have applications throughout the overall programme, for example teamwork and engineering communication.</p> <p><i>There are 3 Toolboxes at FHEQ Level 5.</i></p>
14 Credit Module (referred to as an 'Engineering Sprint')	<p>Engineering Sprints are 3.5-week challenge-based modules with emphasis on a particular technical area such as fluid flow or structural behaviour. Students are divided into teams, with each team assigned a challenge that requires exploration and understanding of the technical area. A typical Engineering Sprint consists of tutorials; seminars; supervised practical tasks; and self-directed learning.</p> <p>Included within the 7 Engineering Sprints at FHEQ Level 5 are '<i>Community-Based Challenges</i>' consisting of two consecutive Engineering Sprints of direct relevance to the community. Community-Based Challenges enable students to: 1) integrate their technical knowledge; 2) extend their experience of working in teams with external partners on real, current engineering challenges; 3) appraise the human, cultural, economic, business and aesthetic aspects of challenges, and integrate them fully in their solutions; and 4) develop their skills in systems integration, communication and project planning.</p> <p><i>There are 7 Engineering Sprints at FHEQ Level 5.</i></p>

4.1 Modules

A summary of the FHEQ Level 5 MEng in Integrated Engineering modules (including module codes and the cluster in which the module is taught) is as follows:

Code	Module Title	Duration in Weeks	Credits	Semester/ Cluster
ME5CBMAE	Managing Engineering	2	8	C
ME5CCCON1	Community Based Challenge: Concept 1	3.5	14	C
ME5CCPRO1	Community Based Challenge: Prototype 1	3.5	14	C
ME5CEEEE2	Electromagnetics in Engineering	3.5	14	C

ME5CEMAT2	Structural Materials and their Innovation	3.5	14	C
ME5DBINF	Information	2	8	D
ME5DECTR2	Control Systems	3.5	14	D
ME5DEFHE2	Energy Systems	3.5	14	D
ME5DEMAN	Manufacturing Systems Optimisation	3.5	14	D
ME5DBCIT	Creativity in a Team	2	8	D

4.2 Learning Outcomes

Knowledge and understanding
L5 A1: develop a detailed understanding of the fundamentals of engineering within Integrated Engineering
L5 A2: acquire and develop further skills in modelling and analysis and the ability to solve well-established technical challenges
Cognitive skills
L5 B1: acquire and develop design skills and the ability to create relatively complex engineering designs using a multi-disciplinary approach
L5 B2: further develop an awareness of the responsibilities of engineers in economic, social, and environmental contexts
Practical and professional skills
L5 C1: further develop practical skills and the ability to conduct and evaluate experiments of increasing complexity
Key/transferable skills
L5 D1: develop communication skills, both oral and written, to confidently communicate in a variety of formats to a range of audiences
L5 D2: develop business skills required of an engineer
L5 D3: interact effectively with the rest of the members of their team in all team-based challenges
L5 D4: develop study skills through the successful management of available resources taking responsibility for their own learning
L5 D5: further develop a responsible and professional attitude

4.3 Nominal Learning Hours (for guidance purposes only)

Code	Seminars	Tutorials	Enrichment Lecture	Directed Learning Activities/ Supervised Practical Tasks	Assessments	Academic Skills	Total
ME5CBMAE	12	4	-	40	14	10	80
ME5CCCON1	10	4	2	87	22	15	140
ME5CCPRO1	10	4	2	87	22	15	140
ME5CEEEE2	10	4	2	85	24	15	140
ME5CEMAT2	10	4	2	92	17	15	140
ME5DBINF	12	4	-	40	14	10	80
ME5DECTR2	10	4	2	86	23	15	140
ME5DEFHE2	10	4	2	85	24	15	140
ME5DEMAN	10	4	2	90	19	15	140
ME5DBCIT	12	4	-	42	12	10	80
TOTAL	106	40	14	734	191	135	1220



- Seminars
- Tutorials
- Enrichment Lecture
- Directed Learning Activities/Supervised Practical Tasks
- Assessments
- Academic Skills

5. Framework for Higher Education Qualifications (FHEQ) Level 6

By the end of FHEQ Level 6 it is expected that students will have become self-motivated, efficient and organised independent learners. Assessment methods are designed to include a combination of both academic and industrially focused formats. Focus will be given to assessing the development and attainment of the knowledge and understanding necessary to apply technology to engineering problems and processes, and to maintain and manage current technology. At FHEQ Level 6, students will be required to undertake an individual Bachelor's Engineering Project where they will develop technical and professional skills.

Module Type	Method of Learning Delivery
8 or 12 Credit Module (referred to as a 'Toolbox')	<p>Toolboxes are two-week or three-week modules designed to introduce specific skills and competencies which will have applications throughout the overall programme, for example teamwork and engineering communication.</p> <p><i>There is 1 Toolbox at FHEQ Level 6.</i></p>
14 Credit Module (referred to as an 'Engineering Sprint')	<p>Engineering Sprints are 3.5-week challenge-based modules with emphasis on a particular technical area such as fluid flow or structural behaviour. Students are divided into teams, with each team assigned a challenge that requires exploration and understanding of the technical area. A typical Engineering Sprint consists of tutorials; seminars; supervised practical tasks; and self-directed learning.</p> <p>Included within the 8 Engineering Sprints at FHEQ Level 6 are '<i>Community-Based Challenges</i>' consisting of two consecutive Engineering Sprints of direct relevance to the community. Community-Based Challenges enabling students to: 1) integrate their technical knowledge; 2) extend their experience of working in teams with external partners on real, current engineering challenges; 3) appraise the human, cultural, economic, business and aesthetic aspects of challenges, and integrate them fully in their solutions; and 4) develop their skills in systems integration, communication and project planning.</p> <p>At FHEQ Level 6 students will participate in one individual '<i>Bachelor's Engineering Project</i>' as part of the Engineering Sprints. Bachelor's Engineering Projects will typically be suggested by a collaborating organisation in the private or public sectors; others may be student-designed by</p>

	<p>negotiation. In completing the challenge the student will need to draw upon, synthesize and apply prior learning, and to acquire new knowledge in relevant areas, primarily through self-directed and interdependent learning. Wider considerations will also be needed and, depending on the nature of the challenge, will include ethical, sustainable, cultural, social, commercial, and financial considerations. Tutorials, supervised project work and directed independent learning activities will be supported by an invited supervisor from a client organisation and an NMITE educator.</p> <p><i>There are 8 Engineering Sprints at FHEQ Level 6.</i></p>
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5.1 Modules

A summary of the FHEQ Level 6 MEng in Integrated Engineering modules (including module codes and the cluster in which the module is taught) is as follows:

Code	Module Title	Duration in Weeks	Credits	Semester/ Cluster
ME6EEMAT3	Advanced Materials and Processes	3.5	14	E
ME6EEDYN3	Advanced Solid Mechanics	3.5	14	E
ME6EBPPF	Past, Present and Future	2	8	E
ME6ECCON2	Community Based Challenge: Concept 2	3.5	14	E
ME6ECPRO2	Community Based Challenge: Prototype 2	3.5	14	E
ME6FEEEE3	Integrated Electronic Engineering	3.5	14	F
ME6FEFHE3	Thermal Fluids	3.5	14	F
ME6FECTR3	Advanced Control Systems	3.5	14	F
ME6FABEP	Bachelor's Engineering Project	3.5	14	F

5.2 Learning Outcomes

Knowledge and understanding
L6 A1: acquire up-to-date knowledge and understanding of theory and practice within Integrated Engineering
L6 A2: continue to develop skills in modelling and analysis utilising these skills in order to solve complex challenges
Cognitive skills
L6 B1: develop creativity, synthesis and design skills, and the ability to create engineering design solutions
Practical and professional skills
L6 C1: design and evaluate experiments and undertake numerical modelling using a range of computer software
Key/transferable skills
L6 D1: continue to develop communication, teamwork and project management skills to a professional standard and be proactive in taking responsibility for the success of a project
L6 D2: develop the facility for independent and interdependent learning, open-mindedness, and critical enquiry, including self-reflection
L6 D3: develop the ability to tackle unforeseen demands with confidence and competence as required within industry

5.3 Nominal Learning Hours (for guidance purposes only)

Code	Seminars	Tutorials	Enrichment Lecture	Directed Learning Activities/ Supervised Practical Tasks	Assessments	Academic Skills	Total
ME6EEMAT3	8	4	2	88	23	15	140
ME6EEDYN3	8	4	2	95	16	15	140
ME6EBPPF	12	4	-	38	16	10	80
ME6ECCON2	8	4	2	83	28	15	140
ME6ECPRO2	8	4	2	85	26	15	140

ME6FEEEE3	8	4	2	87	24	15	140
ME6FEFHE3	8	4	2	90	21	15	140
ME6FECTR3	8	4	2	94	17	15	140
ME6FABEP	6	-	2	94	23	15	140
TOTAL	74	32	16	754	194	130	1200



- Seminars
- Tutorials
- Enrichment Lecture
- Directed Learning Activities/Supervised Practical Tasks
- Assessments
- Academic Skills

6. Framework for Higher Education Qualifications (FHEQ) Level 7

Students will complete a series of four Advanced Engineering Sprints exploring engineering challenges in depth in thematic areas such as health, energy, infrastructure, and security. Following these challenges, the students will be required to undertake an individual Master's Engineering Project. They will develop enhanced technical and professional skills, and specialist knowledge. In addition, students will be required to record and reflect on their accumulating experiences for later use in professional recognition. Assessments at FHEQ Level 7 are designed to assess engineering capability and industry readiness, and therefore adopt mechanisms which assess ability in application. Assessment methods include a combination of both academic and industrially focused formats. These include academic reports such as literature reviews, laboratory and experimental write-ups, project reports and industry relevant formats such as industry-based test report, design review presentation and technical communication. Assessments therefore provide a demonstration of the greater range and depth of specialist knowledge at FHEQ Level 7, within a research and industrial environment, as well as a broader and more general academic base. The foundation for leadership and a wider appreciation of the

economic, legal, social, ethical, and environmental context of engineering are also included.

Module Type	Method of Learning Delivery
<p>14 Credit Module (referred to as an 'Engineering Sprint')</p>	<p>Engineering Sprints are 3.5-week challenge-based modules where students are divided into teams, with each team assigned a challenge that requires exploration and understanding of the technical area. A typical Engineering Sprint consists of tutorials; seminars; supervised practical tasks; and self-directed learning.</p> <p>At FHEQ Level 7 the Engineering Sprints focus on developing advanced knowledge in thematic areas such as Health; Energy; Infrastructure and Security. They: 1) fulfil NMITE's aim of ensuring graduates have extensive experience of working at an advanced level in teams; 2) ensure students have deep and broad technical knowledge, and the ability to extend and synthesize it; 3) ensure students consider, variously, the human, cultural, economic, business and aesthetic aspects of problems, and integrate them fully in their solutions; and 4) give students multiple opportunities to develop their communication skills at an advanced level. The 4 Engineering Sprints at FHEQ Level 7 are referred to as '<i>Advanced Engineering Sprints</i>'.</p> <p><i>There are 4 Engineering Sprints at FHEQ Level 7.</i></p>
<p>64 Credit Module (referred to as a 'Master's Engineering Project')</p>	<p>Students will participate in an individual '<i>Master's Engineering Project</i>' for 16 weeks. Master's Engineering Projects will typically be undertaken with an industrial or community partner in a professional engineering context and address an industrial or social need. In other cases, the project may be research-based or self-defined by students (subject to academic approval). In all cases technical complexity, novelty, and a requirement to meet the needs of varied stakeholders will be present. In addition, the student will need to draw upon, synthesize and apply prior learning, and to acquire new, advanced knowledge in relevant areas, primarily by self-directed and interdependent learning. Wider considerations will be</p>

	<p>needed and, depending on the nature of the challenge, will include a combination of ethical, sustainable, cultural, social, commercial and financial considerations. Tutorials, supervised project work and directed independent learning activities will be supported by an invited supervisor from a client organisation and a NMITE educator.</p> <p><i>There is one Master's Engineering Project at FHEQ Level 7.</i></p>
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6.1 Modules

A summary of the FHEQ Level 7 MEng in Integrated Engineering modules (including module codes and the cluster in which the module is taught) is as follows:

Code	Module Title	Duration in Weeks	Credits	Semester / Cluster
ME7GAIST	Advanced Integrated Engineering - Infrastructure	3.5	14	G
ME7GAEGY	Advanced Integrated Engineering - Energy	3.5	14	G
ME7GAHEA	Advanced Integrated Engineering - Health	3.5	14	G
ME7GASTY	Advanced Integrated Engineering - Security	3.5	14	G
ME7HAMEP	Master's Engineering Project	16	64	H

6.2 Learning Outcomes

Knowledge and understanding
L7 A1: specialise in considerable depth in a chosen area of Integrated Engineering
L7 A2: acquire up-to-date knowledge and understanding of theory and practice in a chosen area of Integrated Engineering
L7 A3: continue to further develop skills in modelling, analysis and problem solving for complex challenges with a range of uncertainties
Cognitive skills
L7 B1: develop advanced creativity, synthesis and design skills, and the ability to create original engineering design solutions to a high professional standard

Knowledge and understanding

L7 B2: independently design and evaluate experiments to a high standard

Practical and professional skills

L7 C1: record and reflect on experiences and improve performance as the foundation for professional lifelong learning

L7 C2: develop an awareness of the role of future engineers within society

Key/transferable skills

L7 D1: develop self-directed, interdependent learning, open-mindedness, and critical enquiry

L7 D2: develop the ability to tackle unforeseen technical demands and to apply new technologies in novel situations with confidence and competence as expected in industry

L7 D3: practise reflective, meta-cognitive development

L7 D4: lead and work creatively within a team-based project

L7 D5: evaluate the implications of social, cultural, environmental, legal, economic, and commercial drivers in engineering challenges

L7 D6: efficiently and effectively communicate to a professional standard

6.3 Nominal Learning Hours (for guidance purposes only)

Code	Seminars	Tutorials	Enrichment Lecture	Directed Learning Activities/ Supervised Practical Tasks	Assessments	Academic Skills	Total
ME7GAIST	6	4	2	78	35	15	140
ME7GAEGY	6	4	2	78	35	15	140
ME7GAHEA	6	4	2	78	35	15	140
ME7GASTY	6	4	2	78	35	15	140
ME7HAMEP	-	-	-	597	43	-	640
TOTAL	24	16	8	909	183	60	1200



- Seminars
- Tutorials
- Enrichment Lecture
- Directed Learning Activities/Supervised Practical Tasks
- Assessments
- Academic Skills

7. Curriculum Map

This table indicates which modules assume responsibility for delivering (shaded) and assessing (✓) particular programme learning outcomes.

Level	Study module/unit	Programme outcomes									
		A1	A2	B1	B2	C1	C2	D1	D2	D3	D4
4	ME4ABCER		✓			✓		✓		✓	✓
	ME4AEMAT1	✓	✓		✓						
	ME4AEEEE1	✓				✓	✓				
	ME4AEDYN1	✓	✓			✓		✓	✓		
	ME4AEPRG		✓				✓				
	ME4BBMIH		✓	✓	✓	✓		✓			✓
	ME4BECTR1	✓	✓	✓							
	ME4BEFHE1	✓	✓	✓		✓					
	ME4BEDYN2		✓			✓					

Level	Study module/unit	Programme outcomes									
		A1	A2	B1	B2	C1	D1	D2	D3	D4	D5
5	ME5CBMAE			✓	✓		✓	✓			
	ME5CCCON1			✓	✓	✓	✓		✓		
	ME5CCPRO1			✓	✓	✓	✓		✓		
	ME5CEEEE2	✓	✓	✓			✓				
	ME5CEMAT2	✓	✓		✓	✓					
	ME5DBINF		✓		✓	✓	✓			✓	

	ME5DECTR2		✓	✓		✓					
	ME5DEFHE2	✓	✓	✓	✓						
	ME5DEMAN			✓	✓					✓	✓
	ME5DBCIT			✓	✓		✓	✓	✓	✓	✓

Level	Study module/unit	Programme outcomes						
		A1	A2	B1	C1	D1	D2	D3
6	ME6EEMAT3	✓	✓	✓	✓	✓		
	ME6EEDYN3	✓	✓		✓			
	ME6EBPPF					✓	✓	✓
	ME6ECCON2			✓		✓	✓	✓
	ME6ECPRO2	✓	✓	✓		✓	✓	✓
	ME6FEEEE3	✓	✓	✓	✓			✓
	ME6FEFHE3	✓	✓		✓			
	ME6FECTR3		✓	✓	✓			✓
	ME6FABEP	✓		✓		✓	✓	✓

Level	Study module/unit	Programme outcomes													
		A1	A2	A3	B1	B2	C1	C2	D1	D2	D3	D4	D5	D6	
7	ME7GAIST	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	
	ME7GAEGY	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	
	ME7GAHEA	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	
	ME7GASTY	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	
	ME7HAMEP	✓	✓	✓	✓	✓	✓		✓		✓		✓	✓	

8. Assessment Board

The membership of the Assessment Board will be in accordance with the approved Terms of Reference and will include NMITE staff (such as the Chief Academic Officer (Chair), academic staff and the Academic Registrar), appointed External Examiners, and a representative from The Open University as NMITE's validating partner.

8.1 External Examiners

The External examiners for the MEng Integrated Engineering are – Greg Rowsell, Dr Rebecca Selwyn and Dr Simon Handley.

External Examiners are an essential part of NMITE's quality assurance and enhancement process, serving to ensure that academic standards are maintained. The knowledgeable and independent views of External Examiners are invaluable in certifying that NMITE's awards are appropriate and comparable as well as highlighting good practice and potential areas of enhancement.

It is inappropriate for any student to submit complaints and/or representations directly to an external examiner or to seek to influence the external examiners. Inappropriate communication towards an examiner may render you liable for disciplinary action.