NMITE Programme specification – MEng (Hons) Mechanical Engineering
1. Overview/ factual information

Programme/award title(s)	MEng (Hons) Mechanical Engineering
Date of first Validation	November 2024
Date of latest (re)validation	November 2024
Next revalidation	
Credit points for the award	480 credits
UCAS Code	
JACS Code	H100190
Programme start date and cycle of starts if appropriate.	September 2025
Underpinning QAA subject benchmark(s)	QAA Subject Benchmark for Engineering 2023 – Qualification Frameworks (2024) UK Quality Code for Higher Education (the Quality Code) 2024
Other external and internal reference points used to inform programme outcomes. For apprenticeships, the standard or framework against which it will be delivered.	NMITE Graduate Attributes NMITE Guiding Principles for Learning & Teaching
Professional/statutory recognition	NMITE will be seeking accreditation from IET that the programme meets the requirements for full CEng
For apprenticeships fully or partially integrated Assessment.	N/A
Mode(s) of Study (PT, FT, DL, Mix of DL & Face-to-Face) Apprenticeship	FT – accelerated and standard mode of attendance
Duration of the programme for each mode of study	4 academic years (standard) 3 calendar years (accelerated)
Dual accreditation (if applicable)	N/A

Date of production/revision of this specification	

Please note: This specification provides a concise summary of the main features of the programme. More detailed information on the learning outcomes, content, and teaching, learning and assessment methods for each module on the programme can be found in the individual module descriptions and programme regulations.

The accuracy of the information contained in this document is reviewed by NMITE, changes to this information can only be made through the approved programme and module change procedures.

2. Programme Aims

The aims of the programme

NMITE is a fully independent greenfield provider of Higher Education, established to meets the needs of industry with a particular focus on the Marches region through a 'new model' of higher education. NMITE aims to be distinctive in its admissions profile, study patterns, and in the work-readiness of its graduates. This programme aims to:

- Satisfy the necessary educational standards for the award of Chartered (MEng) Engineer by meeting the requirements of the Engineering Council Accreditation of Higher Education Programmes version 4;
- Imbue students with knowledge and understanding of mechanical engineering and its integration with other disciplines, gained through effective learning approaches, and interacting with employers and the community;
- Nurture an ability to gain, apply, integrate, and generate engineering insight whilst demonstrating sensitivity to environmental, social, legal and ethical responsibilities;
- Encourage a desire to identify problems that need solving, and to find creative solutions to society's challenges; and
- Develop agile, independent, curious, resilient and passionate engineers.

3. Relationship to other programmes and awards

3.1 Where the award is part of a hierarchy of awards/programmes, this section describes the articulation between them, opportunities for progression upon completion of the programme, and arrangements for bridging modules or induction

This award is co-taught with the BEng Mechanical Engineering. Students completing the BEng are able to apply to join the MEng during level 6, providing they have achieved an average mark of at least 50 at FHEQ level 6. (This is to meet with the accreditation requirements of the IET.) Personal tutors will ensure students have clear advice on progression, achievement and eligibility to progress to Level 7 at an early stage during Level 6.

3.2 List of All exit awards:

Cert HE Engineering (120 credits)

DipHE Mechanical Engineering (240 credits)

BEng (ordinary degree) Mechanical Engineering (300 credits)

BEng (Hons) Mechanical Engineering (360 credits)

4. Teaching, Learning and Assessment

4.1 Students will be supported on the programme with the following teaching and learning methods:

This is a studio-based course with high levels of social and active learning, meaningful reflection and consolidation space, well-structured and explicit professional skills, an assessment-for-learning philosophy and carefully supported interactions with industry and community.

The programme is challenge-led and utilises uses block delivery of learning with deep integration of employers and the community in the learning experience. Modules are taken sequentially and are typically 8 weeks in duration. In each 8-week module, students 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 humanities and social science subjects while maintaining the integrated approach intrinsic to the programme.

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 students study. This essential part of the programme is supported by the Academic Skills and Knowhow Centre (ASK). 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. The ASK centre staff supports learning both within module delivery and by offering individual and group based support to students on a demand-led basis.
4.2 Students will be summatively assessed using the following assessment methods: Each module will be summatively assessed using multiple assessments. Assessments may be individual or team submissions. They will include the following types: Artefact, Specification, Presentation, Tutorial Questions, Lab Report, Report, Design, Portfolio, Essay, Project Plan (& Commentary), Poster, Video, Dissertation, Viva Voce, Q&A and Blog post. All modules other than *Integrated Design, Materials, and Processes* and *Bachelor's Project* have significant proportion of team-based assignments (30% or above of total module grade). NMITE has a range of strategies to support effective teamworking and a policy that allows for individual marks to be awarded to individual students in the case of groupwork where there is evidence that individual achievement of learning outcomes is inconsistent between group members. Further, every AHEP learning outcome is, at some point in the programme, assessed individually.
4.3 Student Development over the course of the programme (by levels as appropriate):

Level 4	Students will be introduced at FHEQ Level 4 to the fundamentals of engineering through challenge-based learning. They will begin their journey with an orientation into the engineering profession and practice (*Twenty-First Century Engineer*), and undertake one module each on three engineering themes: • Thermodynamics and Fluids • Statics and Dynamics of Simple Mechanisms • Fundamentals of Analogue and Digital Circuits 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.
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. They will begin Level 5 with a synoptic challenge that provides an opportunity to understand engineering in a social/community context, and to draw across all engineering learning in level 4 to create value in that context (*Creating Social Value Through Engineering*). Students then undertake a further module each in the three engineering themes: • Energy Engineering • Statics and Dynamics of Complex Mechanisms • Mechatronics and Control
Level 6	By the end of FHEQ Level 6 it is expected that students will have become self-motivated, efficient and organised independent learners. Level 6 begins with a closer examination of application of project management techniques in design and engineering projects (*Integrated Design, Materials, and Processes*), moves through two integrative mechanical engineering modules (*Mechanics of Materials* and *Manufacturing as Integrated Engineering*) before concluding with an individual project (*Bachelor's Project*). 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.
Level 7	Students will complete two level 7 modules that extend their integrated mechanical engineering outlook to full lifecycle concerns (*Lifecycle Performance of Engineering Infrastructure*), and develop key mindsets of *Research and Modelling*. Following this, students 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.

5. Admissions Criteria

Provide an overview of typical expected entry qualifications, including normal UCAS tariff points, any required subjects and IELTS requirement as appropriate:

Admissions requirements are:

- GCSE Maths and English should be Grade 5 or above AND
- 112-144 UCAS points or equivalent OR
- RPEL admission for applicants with prior experiential learning who demonstrate a strong probability of likely success OR
- BTEC Nationals and Apprenticeships OR
- Overall pass in International Baccalaureate including at least 16 points from three Higher Level subjects OR
- Successful completion of the NMITE foundation year.

Students whose first language is not English:

- IELTS 6.0 (with minimum of 5.5 in each component), *on condition of students having received English-medium instruction and passed a qualification at Level 2 or above;*
- IELTS 6.5 (with a minimum of 6 in each component), *where students do not have English-medium instruction at Level 2 or above*

6. Distinctive Programme/ Structure Features

The MEng Mechanical Engineering offers a qualitatively different course in both learning delivery and learning environment. There is a high level of supported group and team work to develop transferable skills, support students, and mimic the workplace. Block delivery model is adopted, and learning happens in a studio environment.

There is significant involvement of external commercial partners throughout the curriculum that clearly differentiates NMITEs approach from other engineering courses. And there is a wider and more ambitious involvement of the humanities in what remains an accredited engineering course. Finally, the pedagogy and curriculum work together to deliver world- and work-ready graduates, a sustained need that continues to be articulated by industry.

7. Support for Students and their Learning

Students at NMITE are able to access a range of support via Student Services, who provide both direct support and signposting on a range of issues including student living, health and wellbeing, money matters and student engagement and representation. Student Services is based at the Blackfriars campus, and students are able to access support both on a drop-in basis and also via a bookable appointments system.

Each student is allocated a Personal Tutor upon arrival at NMITE. Personal Tutors are the first point of contact for academic advice and guidance. They monitor students' progress, provide structured support for academic and professional development, and support students' wellbeing, working closely with the Student Services.
The Student Support Team meets with the Senior Tutor on a fortnightly basis for a Student Status meeting.

The Academic Skills and Knowhow Centre is a key element of supporting students within NMITE with their broader academic learning. Students are able to both drop in to the ASK for support with their learning, and book individual and group support sessions.

The programme is based at both Blackfriars and Skylon campus which has the 'Factory' facility which students use as part of their programme and for self-directed projects individually or in groups. Students have access to 'Canvas' as their VLE, on which students access all key programme information together with a range of

learning materials to support students. Students also have use of books at Hereford Library and are also provided with access to online journals and a 'Resource Room' at the Blackfriars campus.

8. Programme Structure and learning outcomes (for each level of the programme)

8.1 Level 4

Level Learning outcomes

4a Subject Specific Knowledge and Skills
At the end of level 4, students will be able to: 4a1: Identify, describe and apply engineering concepts relevant to the course focus. 4a2: Deploy introductory skills in mathematical analysis to reach substantiated conclusions to straightforward, clearly defined technical challenges. 4a3: Describe and demonstrate understanding of engineering and project management, legal and commercial factors that influence the practice of engineering. 4a4: Apply design skills and underpinning knowledge to create simple engineering designs using a multi-disciplinary approach. 4a5: Describe the environmental, ethical and societal impact of engineering.
4b Professional Capabilities
At the end of level 4, students will be able to: 4b1 Describe their own responsibilities to equality, diversity and inclusion and how such responsibilities are important to engineers and employees . 4b2 Deploy team management practices in team-based challenges, critically reflecting on their own effectiveness. 4b3 Demonstrate workshop skills and the ability to conduct experiments using given instructions and direction. 4b4 communicate engineering or related work in variety of oral, media and/or written formats. 4b5 use provided technical literature to inform decision making.

Level Modules

Compulsory Modules		*Credits*	*Is module Compensatable (Y/N)*	*Level Learning outcomes this module supports*	*PSRB requirements for this module (if applicable)*
Code	*Name*				
E4009	The Twenty-First Century Engineer	*30*	Y	4a1, 4a2, 4a5, 4b1, 4b3, 4b5	*See AHEP mapping spreadsheet*
E4010	Thermodynamics and Fluids	*30*	Y	4a1, 4a2, 4b3	
E4011	Statics and Dynamics of Simple Mechanisms	*30*	Y	4a1, 4a2, 4a4, 4b3	
E4012	Fundamentals of Analogue and Digital Circuits	*30*	Y	4a1, 4a2, 4a4, 4b2, 4b4	

Certificate in Higher Education Engineering – exit qualification on successful completion of all level 4 credits (120)

8.2 Level 5

Level Learning outcomes

5a Subject Specific Knowledge and Skills
At the end of level 5, students will be able to: *5a1* Identify, describe and apply a wider range of engineering concepts relevant to the course focus. *5a2* deploy mathematical analysis and modelling approaches to reach substantiated conclusions to problems that exhibit more complexity (in functional requirement and/or level of uncertainty). *5a3* apply principles of engineering and project management, legal and commercial factors that influence the practice of engineering to generation of engineering solutions, demonstrating sensitivity to commercial context. *5a4* Apply design skills and underpinning knowledge to create relatively complex engineering designs using an integrated engineering approach. *5a5* describe generic reasoning/approaches to minimising adverse environmental, ethical and societal impacts of engineering, and apply strategies to a defined problem.
5b Professional Capabilities
At the end of level 5, students will be able. 5b1 interact effectively with team members in all team-based challenges. *5b2* develop workshop skills by selecting appropriate materials and processes and, with guidance, risk assessing one's own practical work. *5b3*, propose experimental approaches that answer predetermined questions/hypotheses. *5b4* demonstrate personal improvement in confidence and effectiveness across repertoire of communication methods, planning and recording self-learning and development. *5b5*: critically evaluate and select relevant technical and grey literature to inform decision making.

Level 5 Modules

Compulsory Modules		*Credits*	*Is module Compensatable (Y/N)*	*Level Learning outcome this module supports*	*PSRB requirements for this module (if applicable)*
Code	*Name*				
E5009	Creating Social Value through Engineering	*30*	Y	5a3, 5b1, 5b2, 5b3, 5b4	*See AHEP mapping spreadsheet*
E5010	Energy Engineering	*30*	Y	5a1, 5a2, 5a3, 5a5, 5b3, 5b5	
E5011	Statics and Dynamics of Complex Mechanisms	*30*	Y	5a1, 5a2, 5a3, 5b2, 5b3	
E5013	Mechatronics and Control	*30*	Y	5a1, 5a2, 5a4, 5b2	

Exit qualification at this level: Diploma in Higher Education in Mechanical Engineering

8.3 Level 6

Level Learning outcomes

6a Subject Specific Knowledge and Skills
At the end of level 6, students will be able to: *6a1* Identify, describe and apply a broadening range of engineering concepts with particular attention to integration of engineering sub-disciplines, including contexts at the forefront of the field of study. *6a2* Select and apply mathematical analysis, modelling and/or optimisation approaches to reach substantiated conclusions to problems that exhibit more complexity (in functional requirement and/or level of uncertainty), recognising the limitations of the techniques employed. *6a3* Apply principles of engineering and project management, legal and commercial factors that influence the practice of engineering to generation of engineering solutions, applying strategies appropriate to the specific commercial context. *6a4* Apply design skills, underpinning knowledge and an integrated engineering approach to create relatively complex engineering designs that meet a combination of (potentially conflicting) user and contextual needs. *6a5* Identify opportunities to minimise adverse environmental and societal impacts of engineering, applying and evaluating effective strategy(ies) through reasoned choices informed by professional codes of conduct. *6a6* Adopt a holistic and proportionate approach to the mitigation of security risks. *6a7*: Discuss the role of quality management systems and continuous improvement in the context of complex problems.
6b Professional Capabilities
At the end of level 6, students will be able to: *6b1*: develop communication, teamwork and project management skills to a professional standard and be proactive in taking responsibility for the success of a project. *6b2*: use experimental data and knowledge synthesizing skills to investigate complex problems, proposing appropriate methodologies and risk assessing one's own practical work. *6b3:* demonstrate continued personal improvement in confidence and effectiveness across repertoire of communication methods with a wider range of audiences. *6b4:* complete a focused literature review for a defined question using scholarly, technical and grey literature. *6b5:* plan and record self-learning and development as the foundation for lifelong learning/CPD.

Level Modules

Compulsory Modules		*Credits*	*Is module Compensatable (Y/N)*	*Level Learning outcome this module supports*	*PSRB requirements for this module (if applicable)*
Code	*Name*				
E6012	Integrated Design, Materials, and Processes	30	*Y*	6a3, 6a7, 6b1, 6b3	*See AHEP mapping spreadsheet*
E6013	Mechanics of Materials	30	*Y*	6a1, 6a2, 6a4, 6a6, 6b2, 6b3	
E6010	Manufacturing as Integrated Engineering	30	*Y*	6a2, 6a2, 6a3, 6b1	
E6011	Bachelor's Project	30	*N*	6a1, 6a2, 6a5, 6b3, 6b4, 6b5	

Exit qualification at this level: BEng (Hons) Mechanical Engineering (360 credits), BEng Mechanical Engineering (ordinary degree) (300 credits)

8.4 Level 7

Level Learning outcomes

7a Subject Specific Knowledge and Skills
At the end of level 7, students will be able to: *7a1:* Identify, describe and apply a comprehensive range engineering concepts, many of which are at the forefront of the field of study. *7a2:* select and apply mathematical analysis, modelling and/or optimisation approaches to reach substantiated conclusions to problems that exhibit more complexity (in functional requirement and/or level of uncertainty), discussing the limitations of the techniques employed. *7a3:* apply principles of engineering and project management, legal and commercial factors that influence the practice of engineering to generation of engineering solutions, applying strategies appropriate to the specific commercial context. *7a4:* Apply design skills, underpinning knowledge and an integrated engineering approach to demonstrate originality in the creation of solutions for complex engineering problems that meet a combination of (potentially conflicting) user and contextual needs, demonstrating an inclusive approach. 7a5: identify opportunities to minimise adverse environmental and societal impacts of engineering across the entire lifecycle of a product or process, applying and evaluating effective mitigation strategy(ies) through reasoned choices informed by professional codes of conduct.
7b Professional Capabilities
At the end of level 7, students will be able to: *7b1:* evaluate effectiveness of own and team performance, and describe own leadership skills and goals. *7b2:* demonstrate continued personal improvement across a repertoire of communication methods with a wider range of audiences, demonstrating the evaluation of the effectiveness of different communication methods. *7b3:* complete a focused literature review using scholarly, technical and grey literature. *7b4:* plan, record and reflect self-learning and development as the foundation for lifelong learning/CPD. *7b5:* develop the ability to tackle unforeseen technical demands and to apply new technologies in novel situations with confidence and competence as expected in industry.

Level 7 Modules

Compulsory Modules		*Credits*	*Is module Compensatable (Y/N)*	*Level Learning outcome this module supports*	*PSRB requirements for this module (if applicable)*
Code	*Name*				
E7006	Research and Modelling	30	Y	7a1, 7a2, 7a4, 7b3, 7b5	*See AHEP mapping spreadsheet*
E7007	Lifetime Performance of Engineering Assets	30	Y	7a1, 7a3, 7a4, 7a5, 7b5	
E7008	Master's Project	60	N	7a1, 7a3, 7b1, 7b2, 7b3, 7b4	