Programme specification

(Notes on how to complete this template are provided in Annexe 3)

1. Overview / factual information

Programme/award title(s)	Foundation Degree (Fd) Manufacturing for Nuclear
Teaching Institution	Lakes College West Cumbria
Awarding Institution	The Open University (OU)
Date of first OU validation	17th October 2023
Date of latest OU (re)validation	
Next revalidation	
Credit points for the award	240
UCAS Code	
HECoS Code	
LDCS Code (FE Colleges)	
Programme start date and cycle of starts if appropriate.	January 2024
Underpinning QAA subject benchmark(s)	Subject Benchmark Statements: Subject Benchmark Statement - Engineering (qaa.ac.uk) Framework for Higher Education Qualifications: The Frameworks for Higher Education Qualifications of UK Degree-Awarding Bodies (qaa.ac.uk) The Accreditation of Higher Education Programmes (AHEP4): UK Standard for Professional Engineering Competence, Engineering Council: Engineering Council (engc.org.uk)
Other external and internal reference points used to inform programme outcomes. For apprenticeships, the standard or framework against which it will be delivered.	Engineering Council – UK Specification – Partial Learning for IEng
Professional/statutory recognition	Accreditation with the Institution of Engineering and Technology (IET) will be applied for post-validation Partial learning Incorporated Engineer

Please note: This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if they take full advantage of the learning opportunities that are provided.

More detailed information on the learning outcomes, content, and teaching, learning and assessment methods of each module can be found in student module guide(s) and the students handbook.

The accuracy of the information contained in this document is reviewed by the University and may be verified by the Quality Assurance Agency for Higher Education.

For apprenticeships fully or partially integrated Assessment.	NA
Mode(s) of Study (PT, FT, DL, Mix of DL & Face-to-Face) Apprenticeship	Part Time and Full Time Blended learning: mix of Distance Learning and Face to Face
Duration of the programme for each mode of study	Part Time – 3 years Full Time – 2 years
Dual accreditation (if applicable)	IET
Date of production/revision of this specification	

2. Programme overview

2.1 Educational aims and objectives

The Foundation Degree in Manufacturing for Nuclear has been designed to provide and widen opportunities for learners to enter a key industry that is going to support the manufacturing requirements for the Nuclear Industry, whilst also supporting either the new nuclear approach for energy generation or sustainable manufacturing. Job opportunities include for example; Manufacturing Technician, Nuclear Technician, Design Technician, Computer Aided Manufacturing Technician, Manufacturing Maintenance Technician, Computer Aided Design Technician and Systems Technicians.

In 2022, research work undertaken by the Local Skills Improvement Plan (LSIP) Trailblazer for Cumbria, identified a number of skill priority requirements which included:

Manufacturing skills
Specialist Manufacturing for Nuclear Applications

On the completion of the programme and it's aims, the learner will be able to:

- Assimilate a coherent body of knowledge appropriate to manufacturing, using a range of learning strategies
- Apply a range of knowledge, skills and behaviours that will be required within future manufacturing industries.
- Develop observation, reasoning, reflection, and analytical thinking skills to enable the embedding of work ready behaviours which are essential to working within a manufacturing environment.
- Adopt and embed work-related and transferable skills through experiencing real work scenarios.
- Develop and apply creative and innovative thought when creating innovative solutions for manufacturing problems.
- Apply and embed technical knowledge and skills to prepare for work within a manufacturing facility.
- Practice a range of technology, science, and design skills relevant to manufacturing activities.
- Work and communicate efficiently within a team and with a varied audience whilst applying a range of skills, knowledge, and behaviours within manufacturing.

2.2 Relationship to other programmes and awards

(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)

A Level 3 engineering bridging programme is available to support admission for candidates who may have a Level 3 profile which is not directly suitable for entry to a STEM HE qualification. This programme is delivered from September to December, providing a seamless transfer into the January enrolment of the Foundation Degree.

A number of modules within this programme are common to the Foundation Degree Low Carbon Energy Technology. These modules will be delivered as combined modules enabling efficiency of delivery. This approach also provides learners with an opportunity to share experiences of different phases within energy and manufacturing.

Combined modules include:

Mathematics for Engineering & Science
Industrial Based Learning (Introduction to Professional Engineering for Industry)
Industrial Based Learning (Fault Finding and Root Cause Analysis for Industry)
Industrial Based Learning (Regulatory Considerations and Personal Professionalism)
Mechanical Engineering Science & Materials
Electrical Science & Instrumentation
Further Mathematics
Industrial Based Project Management
Industrial Based Project Scheduling
Industrial Based Project Implementation

The programme provides a progression pathway to the BEng Honours Manufacturing. The course also forms part of the wider suite of degrees and awards delivered within the Higher Engineering, Science and Nuclear Department which includes:

Foundation & Honours Degrees in Electrical Power Systems & Infrastructure
Foundation & Honours Degrees in Decommissioning & Waste Management
Foundation & Honours Degrees in Mechanical Engineering
Foundation & Honours Degrees in Civil Engineering with Asset Management
Foundation Degree in Applied Chemistry
HNC & HND (University validated) Electrical Engineering
HNC & HND (University validated) Mechanical Engineering

2.3 For Foundation Degrees, please list where the 60 credit work-related learning takes place. For apprenticeships an articulation of how the work based learning and academic content are organised with the award.

Level 4
Industrial Based Learning (Introduction to Professional Engineering for Industry)
Industrial Based Learning (Fault Finding and Root Cause Analysis for Industry)
Industrial Based Learning (Regulatory Considerations and Personal Professionalism)
10 credits Each

Level 5
Industrial Based Project Management - 10 credits
Industrial Based Project Scheduling - 10 credits
Industrial Based Project Implementation - 10 credits

2.4 List of all exit awards

Certificate of Higher Education (Manufacturing for Nuclear) on the completion of 120 credits at level 4

3. Programme structure and learning outcomes

(The structure for any part-time delivery should be presented separately in this section.)

Programme Structure - LEVEL 4 (Full Time)					
Compulsory modules	**Credit points**	**Optional modules**	**Credit points**	**Is module compensatable?**	**Semester runs in**
Mathematics for Engineering & Science	15			Yes	S1
Industrial Based Learning (Introduction to Professional Engineering for Industry)	10			No	S1
Industrial Based Learning (Fault Finding and Root Cause Analysis for Industry)	10			No	S2
Industrial Based Learning (Regulatory Considerations and Personal Professionalism)	10			No	S1 & S2
Introduction to Manufacturing Processes	15			Yes	S1
Mechanical Engineering Science & Material	15			Yes	S1
Electrical Science and Instrumentation	15			Yes	S2
Computer Aided Solid Modelling	15			Yes	S2
Introduction to Nuclear Science & the Nuclear Industry	15			Yes	S2
Programme Structure - LEVEL 4 (Part Time)					

	Credit points	Optional modules	Credit points	Is module compensatable?	Semester runs in
Mathematics for Engineering & Science	15			Yes	S1
Industrial Based Learning (Introduction to Professional Engineering for Industry)	10			No	S1
Industrial Based Learning (Fault Finding and Root Cause Analysis for Industry)	10			No	S2
Industrial Based Learning (Regulatory Considerations and Personal Professionalism)	10			No	S3
Introduction to Manufacturing Processes	15			Yes	S3
Mechanical Engineering Science & Materials	15			Yes	S2
Electrical Science and Instrumentation	15			Yes	S1
Computer Aided Solid Modelling	15			Yes	S3
Introduction to Nuclear Science & the Nuclear Industry	15			Yes	S2

Intended learning outcomes at Level 4 are listed below:

Learning Outcomes – LEVEL 4	
3A. Knowledge and understanding	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
K1 Apply knowledge of mathematics, science and engineering principles to broadly defined problems within manufacturing **K2** Analyse broadly defined problems reaching substantiated conclusions **K3** Utilise appropriate computational and analytical techniques to model broadly-defined problems with manufacturing **K4** Devise solutions for broadly-defined problems that meet a combination of user, business and customer needs as appropriate. **K5** Review and apply applicable health & safety, diversity, inclusion, cultural, societal and environmental matters, codes of practice and industry standards	**Learning and Teaching Strategy:** A combination of face to face and online delivery supported by seminars and tutorials. VR and AR models will be embedded into the teaching strategy to provide an experiential approach to learning **Assessment methodology:** Coursework, Exams, Practical Work

3B. Cognitive skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
S1 Review and appraise the operation of systems within manufacturing **S2** Create solutions to problems within manufacturing **S3** Apply innovation to improve the performance of methodology used within manufacturing	**Learning and Teaching Strategy:** Workshop and laboratory sessions will be used to provide hands on opportunities with operation and problem solving with manufacturing technology systems. Seminars and tutorials are provided to support the student through the process. **Assessment methodology:** Presentations, Technical Report, Project Reports

3C. Practical and professional skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
P1 Select and use technical literature and other sources of information to address broadly defined problems within Manufacturing **P2** Identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity **P3** Recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion **P4** Use practical laboratory and workshop skills to investigate broadly-defined problems within manufacturing **P5** Select and apply appropriate materials, equipment, engineering technologies and processes for manufacturing	**Learning and Teaching Strategy:** Practical workshop sessions, supported by computational simulations. VR/AR will support simulation acitvities. Seminars and tutorials are provided to support the student through the process. Manufacturing equipment will be used to provide a realistic hands-on experience for the learners. **Assessment methodology:** Assignment, Workshop write ups, presentations, Project Report

3D. Key/transferable skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
T1 Apply a range of digital and computing skills to support manufacturing **T2** Write technical reports to meet the needs of prevailing standards within manufacturing **T3** Design and prepare presentations suitable for a range of audiences **T4** Work in a sustainable manner whilst ensuring compliance with environmental requirements	**Learning and Teaching Strategy:** An independent learning approach with the support of an assigned tutor. Seminars and tutorials are provided to support the student through the process. **Assessment methodology:** Presentations, Technical Reports, Project Report

[Cert HE Manufacturing for Nuclear – 120 credits at Level 4]

Programme Structure - LEVEL 5 (Full Time)					
Compulsory modules	**Credit points**	**Optional modules**	**Credit points**	**Is module compensatable?**	**Semester runs in**
Further Mathematics	15			Yes	S3
Fluid Mechanics & Thermo-fluids	15			Yes	S3
CAD/CAM	15			Yes	S4
CAD/CAM for Digital Manufacturing	15			Yes	S3
CIM & Automation	15			Yes	S4
Industrial Based Project Management	10			No	S3
Industrial Based Project Scheduling	10 (5+5)			No	S3 & S4
Industrial Based Project Implementation	10			No	S4
Nuclear Engineering	15			Yes	S4

Programme Structure - LEVEL 5 (Part Time)					
Compulsory modules	**Credit points**	**Optional modules**	**Credit points**	**Is module compensatable?**	**Semester runs in**
Further Mathematics	15			Yes	S4
Fluid Mechanics and Thermo-Fluids	15			Yes	S4
CAD/CAM	15			Yes	S5
CAD/CAM for Digital Manufacturing	15			Yes	S5
Computer Integrated Manufacturing & Automation	15			Yes	S6
Industrial Based Project Management	10			No	S4
Industrial Based Project Planning & Scheduling	10			No	S5
Industrial Based Project Implementation	10			No	S6
Nuclear Engineering	15			Yes	S6

Intended learning outcomes at Level 5 are listed below:

Learning Outcomes – LEVEL 5	
3A. Knowledge and understanding	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
K6 Apply a systematic approach to the solution of broadly-defined problems within manufacturing **K7** Evaluate the environmental and societal impact of solutions to broadly-defined problems within manufacturing **K8** Identify ethical concerns and make reasoned ethical choices informed by professional codes of conduct **K9** Apply knowledge of engineering management principles, commercial context and project management **K10** Describe relevant stakeholders, commercial and business acumen, business improvement process, project and business management techniques relevant to the manufacturing industry **K11** Demonstrate an ability to implement methods of determining the root cause of problems and demonstrating knowledge of learning from experience (LFE) processes.	**Learning and Teaching Strategy:** A combination of face to face and live online delivery lectures supported by seminars and tutorials. VR and AR models will be embedded into the teaching strategy to provide a hands on approach to learning. Manufacturing equipment will be used to provide the learners with a realistic hands on experience. **Assessment methodology:** Coursework, Exams, Practicals, Design work, Project reports, Technical Reports

Learning Outcomes – LEVEL 5	
3A. Knowledge and understanding	
K12 Describe the technology, safety, environmental and economics for a variety of manufacturing scenarios **K13** Apply the standards for professional practice as required by the industry and professional body institutions are applied. **K14** Engage with and support the successful outcome of manufacturing projects. **K15** Analyse and apply the results of research and information gathering to evaluate and to propose solutions to a particular manufacturing application. **K16** Apply the regulatory requirements for both national and international and its relevance to the job role.	

3B. Cognitive skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
S4 Research and review systems and literature to enable the development of uniques approaches to manufacturing **S5** Adopt a reasoned approach to solving problems within manufacturing **S6** Derive approaches to model the performance and characteristics of systems within manufacturing	**Learning and Teaching Strategy:** Workshop and laboratory sessions will be used to provide hands on opportunities with operation and problem solving. Seminars and tutorials are provided to support the student through the process.

3B. Cognitive skills	
	Assessment methodology: Presentations, Project Report, Practical Work Reports

3C. Practical and professional skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
P6 Recognise the need for quality management systems and continuous improvement in the context of broadly-defined problems within manufacturing **P7** Communicate effectively and appropriately at all levels within the organisation, using a broad range of communication skills (including written, oral, presentation and active listening). **P8** Demonstrate reliability, integrity and respect for confidentiality on work related and personal matters. **P9** Recognise and appreciate the impact of work on others, especially where related to diversity and equality. **P10** Demonstrate ability to work to a plan and deliver quality work to meet an agreed schedule. **P11** Take responsibility for personal development, demonstrating commitment to learning and self-improvement and be open to feedback.	**Learning and Teaching Strategy:** Practical workshop sessions, supported by computational simulations. Seminars and tutorials are provided to support the student through the process. Manufacturing equipment will be used to provide the learners with a realistic hands on experience. **Assessment methodology:** Assignment, Presentations, Project Report, Technical Reports, Workshop Reports

3C. Practical and professional skills	
P12 Demonstrate a strong commitment to personal safety behaviours and understanding of the consequences as set out in nuclear industry requirements **P13** Undertake practical manufacturing processes to a professional standard	

3D. Key/transferable skills	
Learning outcomes:	**Learning and teaching strategy/ assessment methods**
T5 Function effectively as an individual, and as a member or leader of a team **T6** Communicate effectively with technical and non-technical audiences **T7** Demonstrate ability to work effectively within a wide, multi-disciplinary team **T8** Plan and record self-learning and development as the foundation for lifelong learning/CPD	**Learning and Teaching Strategy:** An independent learning with the support of an assigned tutor. Seminars and tutorials are provided to support the student through the process. **Assessment methodology:** Presentations, Project Report

[FD Manufacturing for Nuclear – 120 credits at Level 4 and 120 credits at Level 5]

4. Distinctive features of the programme structure

- **Where applicable, this section provides details on distinctive featurs such as:**
  - where in the structure above a professional/placement year fits in and how it may affect progression
  - any restrictions regarding the availability of elective modules
  - where in the programme structure students must make a choice of pathway/route
- **Additional considerations for apprenticeships:**
  - how the delivery of the academic award fits in with the wider apprenticeship
  - the integration of the 'on the job' and 'off the job' training
  - how the academic award fits within the assessment of the apprenticeship

- The programme structure and delivery model has been designed to widen access opportunities for students who wish to study from home or the workplace whilst also attending college on 1 week-blocks to undertake practical and laboratory activities
- An illustration of the part-time and full-time delivery models are given below:

PART TIME

Three Years (Six Semesters)

Each Semester – 120 hours of delivery – 280 hours of independent study

FULL TIME

Two Years (Four Semesters) – 180 hours of delivery – 420 hours of independent study

The structure has also been designed to provide opportunities for part time and full time students to combine with a number of block weeks to support the student community and share experiences.

- The programme has been designed with the engagement of local employers and with the National College for Nuclear network
- Flexible delivery approach designed to make the programme accessible to learners who are under-represented in STEM subjects
- Experiential approach to learning and delivery enabling learning from doing using a wide range of practical and virtual skills
- Meets local, regional, and national demand from employers and government strategic skills directives
- Develops real-life practical skills and work readiness through industrial-based scenarios and case studies
- Enhances the development of appropriate industrial behaviours using employer/industrial-based scenarios
- Maps to the Engineering Council UKSPEC for partial IEng which is sought by graduates and employers

- Prepares students for future professional and academic study with a progression pathway to the BEng (Hons) Manufacturing for Nuclear
- There are no elective modules
- This is not an apprenticeship programme

5. Support for students and their learning
(For apprenticeships this should include details of how student learning is supported in the workplace)

The ethos of this programme is to prepare and enhance the students' ability to work within industry in terms of knowledge, skills, and behaviours. The course has therefore been designed to fit with this strategy and has been structured to provide a natural means of embedding 'Experiential Learning' where appropriate into the curriculum in terms of content, delivery, and assessment.

The programme of teaching and learning is designed to enable the student to demonstrate the attainment of the stated learning outcomes of the programme and learning and assessment strategies are as such matched to these outcomes.

The student will be supported in a progressive acquisition of subject knowledge and skills, gradually advancing towards more independent learning whilst developing a reflective approach to personal progress.

Elements of experiential learning will support students in applying their knowledge and conceptual understanding to real-world problems or situations where the lecturer directs and facilitates learning.

Classroom/virtual classroom, laboratory and virtual reality facilities will serve as a setting for embedding activities such as case and problem-based studies, guided inquiry, simulations, experiments, and projects. The students will be given opportunities to learn in authentic situations which will make learning becomes more powerful.

By engaging in formal, guided, authentic, real-world experiences the programme will enable the students to:

- deepen their knowledge through acting and then reflecting on this action
- develop skills through practical application and reflection
- support the construction of new understandings when placed in novel situations
- extend their learning as they bring their learning back to the academic classroom environment

Students will be provided with opportunities for practice and feedback, this process of practice and feedback provides a link to 'learn from experience' which is an important behavioural requirement within engineering. The programme will provide an integration of:

- Knowledge — the concepts, facts, and information acquired through formal learning and past experience
- Activities — the application of knowledge to "real work" scenarios where appropriate and the synergetic integration of work based activities with academic studies
- Reflection—the analysis and synthesis of knowledge and activity to create new knowledge Content and assessment will provide students with experiences that are carefully chosen for their learning potential (i.e. whether they provide opportunities for students to practice and deepen emergent skills, encounter novel and unpredictable situations that support new learning, or learn from natural consequences, mistakes, and successes).
- Throughout the programme, the learner will be actively engaged in posing questions, investigating, experimenting, being curious, solving problems, assuming responsibility, being creative, and constructing meaning, and is challenged to take initiative, make decisions and be accountable for results.
- The programme will provide the opportunities for reflection on learning during and after experiences and this will be an integral component of the learning outcomes. This approach will lead the student to be able to analyse, apply critical thinking, and synthesise.
- The programme will engage the learners intellectually, emotionally and/or physically, which produces a perception that the learning taking place is authentic.
- The programme will promote real work type relationships and will promote communications between the students and peers, management, and other stakeholders.
- The programme will have an embedded culture of safety

A blended approach between live active remote lessons and College based activities are the predominant experience with attendance at all scheduled live remote /recorded and in college sessions seen as imperative to student progression. This is further enhanced by the use of 'virtual learning environments' (VLE) for example Canvas where each module studied has a designated Canvas site providing not only standard lecture and practical material but supplementary reading, virtual exercises, and the capacity for online forums. The utilisation of the VLE allows for flexibility in learning whereby materials may be accessed at an individual's convenience on site or via remote access.

In addition to the experiential experience previously discussed, a variety of other learning and teaching methods will be used to both reflect the variety of learning styles that inevitably exist within a group and ensure the acquisition and development of appropriate concepts, knowledge, and skills. This will enable students to experience teaching methods best suited to their own preferred learning style. As previously identified, work readiness is key to this programme and enhancing employability is a core theme throughout the programme. Therefore, the learning and teaching methods are designed to support the move to autonomy and independent learning. Learners are

expected and encouraged to be reflective in their learning and as such the strategies adopted focus on deep and experiential learning and typically include:

- Lectures live and recorded
- laboratory classes and virtual reality experiences
- individual and group tutorials
- the utilisation of case studies
- seminars and workshops
- directed and independent study involving electronic resources (VLE), textbooks and other self-study materials
- problem-based learning
- training and practice in the use of IT and software packages
- project work, both individually and in teams
- reading and interpreting research publications

The student will be allocated a Learning Mentor to provide pastoral guidance both directly and in liaison with subject tutors, the course leader or through study support. The Learning Mentor will arrange interviews/tutorials at certain times through the year to discuss progress on the course or concerns about the course in general. The aim of a tutorial session is to identify any underlying reasons for the concerns, discuss possible solutions and agree how progress can be facilitated. It is intended to be a positive and structured forum for any concerns to be discussed and resolutions identified. The student will be encouraged to initiate a tutorial if they feel that they require assistance in some way. The process provides a collaborative approach between the tutor, student, and other Services.

During the tutorial, the student and the tutor may also explore the range of support mechanisms in place both internally and externally, such as academic skills assistance, counselling, and medical support for example.

Library and Student Services (LRC) offer a wide range of support, including; access to library learning resources, academic skills, careers and employability, financial help, counselling, health and wellbeing and support for disabled students and those with specific learning requirements.

Module leaders will collaborate with LRC advisers to ensure that the student reading lists are current and items are available via the online library. In order to maximise access, availability and usefulness, ebooks and electronic journal titles will, in most cases, be prioritised. Module reading lists will be made available to the student electronically using the module Canvas pages.
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6. Criteria for admission

(For apprenticeships this should include details of how the criteria will be used with employers who will be recruiting apprentices.)

Entry criteria:

All students will be interviewed to assess their suitability for the course

Achievement following 2 years post-16 study will demonstrate the capacity to benefit from the course. Thus the equivalent of 2 ‘A2’ Levels at Grade ‘D’ (48 UCAS points) in a science and/or maths related subject is expected or the successful completion of the Lakes College Level 3 Bridging Certificate Engineering, Foundation Diploma or Extended Diploma at Pass grade or similar qualification.

There is also a requirement for 5 GCSE’s (including both mathematics and English at Grade ‘4’ or above) or equivalent experience. Accreditation of prior learning and direct entrants into later years of the programme will be considered as appropriate, taking into account pre-requisite requirements for individual modules.

Please also see the College’s Admissions Policy and Accreditation of Prior Learning Policy

7. Language of study

English

8. Information about non-OU standard assessment regulations (including PSRB requirements)

The Foundation Degree has been mapped to the UK SPEC at Partial IEng Level.

To meet the accreditation of the IET, a maximum of 30 credits is compensable across Levels 4, 5 and 6 of study. Individual advice will be provided to learners should compensation be applicable.

9. For apprenticeships in England End Point Assessment (EPA)

(Summary of the approved assessment plan and how the academic award fits within this and the EPA)

NA

10. Methods for evaluating and improving the quality and standards of teaching and learning

The Academic Board, supported by the Quality Assurance Committee has oversight of the quality and standards of higher education programmes delivered at Lakes College. Their remit is to ensure that:

- Programme design and delivery takes account of sector best practice, regulatory and professional body requirements
- All programmes have External Examiners
- Student voice is encouraged, captured, and acted on
- There is continuous improvement of teaching and learning through a process of peer observation and staff development activities
- All programmes have a continuous improvement plan and undertake regular self-assessment and monitoring

Teaching staff are required to have achieved a recognised teaching qualification in addition to their subject/sector qualifications/experience. Improvements are facilitated by individual, team, and College-wide staff development activities. There is an HE staff development programme. Improvements and enhancements are captured through programme continuous improvement plans and are reported through Institutional and Programme Monitoring to the Open University.

10. Changes made to the programme since last (re)validation

NA

Annexe 1: Curriculum map

Level	Module Code	Module Title	Programme Outcomes															
			K1	K2	K3	K4	K5	S1	S2	S3	P1	P2	P3	P4	P5	T1	T2	T3	T4
4		Mathematics for Engineering & Science	✓		✓														
		Industrial Based Learning (Introduction to Professional Engineering for Industry)				✓	✓				✓	✓	✓	✓	✓				✓
		Industrial Based Learning (Fault Finding and Root Cause Analysis for Industry)				✓	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
		Industrial Based Learning (Regulatory Considerations and Personal Professionalism)				✓	✓					✓	✓	✓	✓			✓	✓
		Introduction to Manufacturing Processes	✓	✓				✓	✓	✓					✓	✓			
		Mechanical Engineering Science and Sustainable Materials	✓	✓	✓			✓						✓			✓		
		Electrical Science and Instrumentation	✓	✓	✓			✓	✓					✓		✓	✓		
		Computer Aided Solid Modelling	✓		✓			✓		✓	✓					✓	✓		
		Introduction to Nuclear Science and the Nuclear Industry	✓	✓			✓				✓	✓		✓					✓

Level	Module Code	Module Title	Programme Outcomes																									
			K6	K7	K8	K9	K10	K11	K12	K13	K14	K15	K16	S4	S5	S6	P6	P7	P8	P9	P10	P11	P12	P13	T5	T6	T7	T8
5		Further Mathematics	✓									✓				✓												
		Fluid Mechanics and Thermo-Fluids										✓											✓					
		CAD-CAM	✓						✓				✓	✓	✓	✓							✓	✓				
		CAD-CAM for Digital Manufacturing	✓									✓	✓	✓	✓	✓							✓	✓				
		Computer Integrated Manufacturing and Automation	✓			✓		✓	✓			✓		✓	✓	✓							✓	✓		✓		
		Industrial Based Project Management		✓	✓	✓	✓			✓	✓						✓	✓	✓	✓	✓	✓	✓		✓		✓	✓
		Industrial Based Project Scheduling		✓	✓	✓	✓			✓	✓	✓					✓	✓		✓	✓	✓	✓		✓	✓	✓	✓
		Industrial Based Project Implementation	✓	✓	✓		✓	✓		✓	✓		✓	✓	✓			✓	✓		✓	✓	✓		✓	✓		✓
		Nuclear Engineering		✓					✓	✓		✓	✓						✓				✓					

Annexe 3: Notes on completing programme specification templates

1 **-** This programme specification should be mapped against the learning outcomes detailed in module specifications.

2 – The expectations regarding student achievement and attributes described by the learning outcome in section 3 must be appropriate to the level of the award within the **QAA frameworks for HE qualifications**: http://www.qaa.ac.uk/AssuringStandardsAndQuality/Pages/default.aspx

3 – Learning outcomes must also reflect the detailed statements of graduate attributes set out in **QAA subject benchmark statements** that are relevant to the programme/award: http://www.qaa.ac.uk/AssuringStandardsAndQuality/subject-guidance/Pages/Subject-benchmark-statements.aspx

4 – In section 3, the learning and teaching methods deployed should enable the achievement of the full range of intended learning outcomes. Similarly, the choice of assessment methods in section 3 should enable students to demonstrate the achievement of related learning outcomes. Overall, assessment should cover the full range of learning outcomes.

5 - Where the programme contains validated **exit awards** (e.g. CertHE, DipHE, PGDip), learning outcomes must be clearly specified for each award.

6 - For programmes with distinctive study **routes or pathways** the specific rationale and learning outcomes for each route must be provided.

7 – Validated programmes delivered in **languages other than English** must have programme specifications both in English and the language of delivery.