FDENG ELECTRICAL POWER SYSTEMS & INFRASTRUCTURE

Institute of Engineering, Computing and Advanced Manufacturing

Academic Level:	5	**Credits:**	240
UCAS Code:	Not applicable		
Awarding Body:	University of Cumbria		
Delivered by:	Lakes College West Cumbria		
Delivery Site:	Lakes College West Cumbria		
Programme Length:	PT (3 years)		
Mode of Delivery:	Face-to-face and Work Integrated		
Pattern of Delivery:	Part Time		
	Total weeks of study:	90 weeks	
	Delivery pattern:	6 x 15-week semesters	
	Standard semester dates:	No	
Placement:			
PSRB:	Institute of Engineering Technology (IET), Institute of Measurement an Control (InstMC). Upon completion of the degree students will have m the academic requirements for partial learning IEng status.		
	Date of accreditation: TBC	Accreditation period: TBC	
Programme Webpage:	TBC		

Entry Criteria
Government funding rules require that an apprentice must have the right to live and work in the UK, must be in employment, paid at least the legal minimum wage and have a written and signed agreement for the apprenticeship with their employer. The minimum duration periods for an apprenticeship set in each Apprenticeship Standard, is based on an apprentice working a minimum of 30 hours per week. Where the apprentice works fewer than 30 hours, the minimum duration of the apprenticeship must be increased on a pro-rata basis.

Funding for the apprenticeship is provided through the Employment and Skills Funding Agency (ESFA) and is paid in the following way:

1. Levy paying employers with sufficient funds in their digital account – 100% funding ·
2. Non Levy payers -90% ESFA funding, 10% Employer co-funding. Non-levy paying companies will be asked to pay their 10% of the full cost of the apprenticeship at the start of the programme.

All Degree Apprentices must be interviewed, assessed and offered a position by an employer before being admitted to the degree. Although the College may receive direct applications and filter these applications before passing them to prospective employers, some apprentices may apply directly to an employer. Either way, after acceptance by an employer, the College will require a formal application, which it will assess according to the programme entry criteria:

Selection criteria

The entry requirements are aligned to the University of Cumbria's admissions criteria. For APL, please refer to the University website. Each candidate for APL will be advised how that may affect ESFA funding (for further information, see the University website).

The University's standard criteria for admissions apply. Please refer to the Applicant Information pages of the University website for more information. For APL, please refer to the University website.

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 OCR Level 3 Certificate, 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 'C' or above) or equivalent experience for mature entry. 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.

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Exit from employment

If an apprentice is made redundant during their apprenticeship through no fault of their own, then the employer and College have a legal duty to help the apprentice try to find alternative employment. If the redundancy is within six months of the planned completion date of the apprenticeship, then ESFA will fund 100% of the remaining agreed cost, even if the apprentice cannot find another employer. If the redundancy is over six months from the planned end date, the ESFA will fund the remaining agreed cost for 12 weeks to allow the apprentice to find alternative employment. Where a new employer cannot be found the apprentice will be recorded as having left the programme

PROGRAMME AIMS AND OUTCOMES

Programme Aims

By the end of this programme, you will be able to:

1. Have an opportunity to assimilate a coherent body of knowledge appropriate to Electrical power systems & infrastructure using a range of learning strategies
2. Gain experience in higher education that reflects the requirements for original thought during activities that will occur within the future nuclear industry.
3. Encourage and develop observation, reasoning, reflection and analytical thinking powers to enable the embedding of work-ready behaviours which are essential to working within a nuclear environment
4. Inculcate work-related and transferable skills through experiencing electrical power systems through the exposure to real work scenarios
5. Develop and express of creative thought when finding solutions for the maintenance, operation and commissioning of electrical power systems & infrastructure systems
6. Gain technical knowledge and skills that will prepare you to be work-ready for a nuclear facility and be able to practice a range of technology and science skills relevant to electrical power systems & infrastructure activities
7. Work and communicate efficiently within a team and a varied audience when applying a range of skills and knowledge within electrical power systems & infrastructure activities

Programme Outcomes – Knowledge and Understanding

The programme provides opportunities for you to:

K1. Apply knowledge of mathematics, statistics, natural science and engineering principles to broadly defined problems to underpin the technical areas of electrical power systems & infrastructure

K2. Analyse broadly defined electrical power system problems and provide substantiated conclusions

K3. Use appropriate computational and analytical techniques to model broadly defined electrical power systems

K4. Design solutions for electrical power system and infrastructure problems that meet a combination of user, business and customer needs as appropriate.

K5. Apply a systematic approach to the solution of problem that can be found with the electrical power system and infrastructure industry

K6. Evaluate the impact of the development and commissioning of electrical power systems and infrastructure on the environment and society

K7. Identify ethical concerns and make reasoned ethical choices informed by professional codes of conduct required as an Electrical Technician professional

K8. Apply knowledge of engineering management principles, commercial context and project management within an electrical power systems and infrastructure context

K9. Describe relevant stakeholders, commercial and business acumen, business improvement process, project and business management techniques relevant to the nuclear industry

K10. Demonstrate an ability to implement methods of determining the root cause of problems and demonstrating knowledge of learning from experience (LFE) processes.

K11. Describe the technology, safety, environmental and economics for a variety of nuclear scenarios for example the nuclear fuel cycle.

K12. Apply the standards for nuclear professional practice as required by the industry and professional body institutions.

K13. Engage with and support the successful outcome of nuclear projects within the context of electrical power systems and infrastructure.

K14. Analyse and apply the results of research and information gathering to evaluate and to propose solutions to a particular electrical power systems & infrastructure proposal.

K15. Apply the regulatory requirements for both national and international standards and its relevance to a job role within electrical power systems and infrastructure.

K16. Demonstrate knowledge of the nuclear industry (past, present and future) and the business, political and community environment in which a company operates.

Programme Outcomes – Skills and other Attributes

The programme provides you with the opportunity to:

S1. Select and use technical literature and other sources of information to address problems found within the electrical power systems & infrastructure industry

S2. Identify, evaluate and mitigate risks associated with a particular electrical power systems project or activity

S3. Recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion whilst engaged within the electrical power systems & infrastructure industry

S4. Use practical workshop skills to investigate the practice of a range of techniques used within the electrical power systems & infrastructure industry

S5. Select and apply appropriate materials, equipment, engineering technologies and processes to undertake tasks within the context of electrical power systems & infrastructure

S6. Recognise the need for quality management systems and continuous improvement in the context of electrical power systems & infrastructure

S7. Function effectively as an individual, and as a member of a team undertaking electrical power system projects or activities

S8. Communicate effectively with technical and non-technical audiences

S9. Plan and record self-learning and development as the foundation for lifelong learning/CPD

S10. Communicate effectively and appropriately at all levels within the organisation, using a range of communication skills (including written, oral, presentation)

S11. Demonstrate reliability, integrity and respect for confidentiality whilst working within the electrical power industry

S12. Demonstrate ability to work effectively within a team.

S13. Recognise and appreciate the impact of work on others, especially where related to diversity and equality.

S14. Demonstrate ability to work to a plan and deliver quality work to meet an agreed schedule.

S15. Take responsibility for personal development, demonstrating commitment to learning and self-improvement and be open to feedback.

S16. Demonstrate a strong commitment to personal safety behaviours and understanding of the consequences as set out in the nuclear industry and professional body requirements.

PROGRAMME FEATURES

Programme Overview
Degree Apprenticeships combine academic study and workplace learning to enable apprentices to gain a full bachelor's degree. This provision of an academic undergraduate degree is integrated with experience, practice and further learning in the workplace. The minimum duration of an apprenticeship is set in each Apprenticeship Standard and is based on a minimum 30 hour week. Where an apprentice works fewer than 30 hours, the apprenticeship minimum duration must be increased on a pro-rata basis. It is a legal requirement that the apprentice does not pay any training costs or student fees. Degree Apprenticeships are co-designed by employers ensuring that apprentices are equipped with the skills employers need and for their own future career (Source: The Future Growth of Degree Apprenticeships, Universities UK, March 2016) The Standard and Assessment Plan for the Degree Apprenticeship in Nuclear Technician have been designed by employers in the sector. A Degree Apprenticeship programme integrates the provision of undergraduate degree level academic knowledge, understanding and skills with the opportunity to contextualise this provision in the workplace and thus to develop occupation competency at a professional level in specific job roles. The programme has been designed to meet the employer-led national Standard and to follow the associated Assessment Plan, as well as being referenced to the QAA Subject Benchmarking Statement for Engineering (2023) and other academic standards. Apprentices, who are in permanent full-time professional employment, are also learning in the workplace in a structured delivery pattern, supported by both the College and the employer. In addition, the programme has been developed with the assistance of a range of local employers to ensure it meets the needs of the region. This programme is part of a suite of degrees which have been developed to meet the need for Nuclear Technicians, Engineers and Scientists within the area of nuclear clean up as identified within the Governments Nuclear Sector Skills Strategy document and sanctioned by the National Curriculum & Qualification Advisory Group for Nuclear (CQAG). The need for nuclear clean-up specialists is now an urgent requirement particular with the advent of major decommissioning projects and the ever increasing demand for medium and long term nuclear waste storage options and facilities. Such projects currently exist in the new industry across the UK and internationally. The programme has been designed to provide a unique learning experience and delivery will occur within the National College for Nuclear – Northern Hub building. The course delivery model will make significant use of experiential learning and delivery methods which can be defined as 'learning from doing'. Considerable use will be made of the project/technology centre supported by a virtual reality suite which will provide the students with a real time immersed experience of a nuclear environments, particularly associated with high risk from prolonged exposure. The course will be delivered on a block basis which will provide an opportunity to undertake enhanced practical activities supporting technical theoretical delivery methods and embedding theoretical knowledge through experience, observation and reflection.

The course also consists of a work-based modules and an industrial project. These modules provide an opportunity to further embed experiential learning within an industrial environment. For PT students this work will take place within the normal place of work and for PT students' project work will be selected to provide opportunities to experience a number of industrial case studies.

The first work-based module A will occur across year 1, providing an early introduction to a real work scenario, work-based module B in the second semester of year 2 (embedding further learning in business and management processes) and the industrial project will be undertaken throughout year 3.

The Foundation Degree in Electrical power systems & infrastructure has been designed to provide opportunities to enter work as e.g. Electrical Power Technician, Electrical Infrastructure Maintenance Technician, Power Systems Engineer. In addition, the programme covers the knowledge-based requirement of the level 5 Nuclear Technician Standard. The course also acts as a direct entry qualification to the BEng Honours Electrical power systems & infrastructure

Learning and Teaching

The ethos of this programme is to prepare and enhance the students' ability to work within the 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 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, 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 of the nuclear industry. 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, you 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 you 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

The Lakes Colleges West Cumbria Teaching, Learning and Assessment Strategy has been developed in line with the University's Learning, Teaching and Assessment Strategy 2024-27.

College-based learning is the predominant experience with attendance at all scheduled sessions seen as imperative to student progression. This is further enhanced by the use of 'virtual learning environments' (VLE) for example Moodle where each module studied has a designated Moodle site providing not only standard lecture and practical material but supplementary reading, virtual exercises and the capacity for online forums. The utilisation of 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. You

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

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

Independent Learning

When not attending scheduled learning activities you will be expected to continue learning independently through self-study.

Teaching Staff

At present, the expertise within the Lakes College West Cumbria Higher Engineering, Science & Nuclear can be found within:

- Control Engineering, Instrumentation & Electrical Power Systems
- Robotics
- Radiological Science & Nuclear Decommissioning
- Electrical Design & Embedded Systems
- Nuclear Plant & Operations
- Mechanical Engineering & Design
- Nuclear Physics
- 3D Modelling & CAD
- Civil Engineering Structures & Modelling
- Building Asset Management

The Team has many years of industrial experience particularly in the nuclear industry. The delivery team will also be supported by keynote lectures from existing industrial experts providing further vocational context.

The delivery team are also regularly involved in scholarly activity relating to nuclear project developments, which are supported by regular development meetings with industrial practitioners.

These meetings enable essential industrial development knowledge and case studies to be presented during the delivery of the courses.

Some members of the team have been actively involved with the nuclear industry in terms of consultation and implementation projects. These include:

- Commissioning of a Nuclear Plant (industrial project)
- Decommissioning of building & Processes
- Commissioning an IPES and reverse engineering of control software (implementation)
- Petrochemical Plant Control Systems (Consultation)
- Designing a centralised DCS control room within a petrochemical plant (consultation)
- Maximising efficiency of a Food Manufacturing Plant Control System (Consultation)
- Managing the Inventory of spent fuel (advisory)
- Commissioning electrical drive systems within a nuclear plant (advisory)

Assessment

The assessment strategy has been developed to be in line with the University's Learning, Teaching and Assessment Strategy 2024-27.

The main drivers of this strategy are to:

provide innovative, challenging and stimulating assessments which will enable you to develop the knowledge and professional skills required for employment.

be student-centred, flexible and modern in both content and approach.

be fully supported by and integrated with technological approaches such as the Moodle virtual learning environment (VLE).

impart academic rigour to the teaching and learning processes.

support the development of independence, autonomy and self-reflection.

support learners' needs at different stages of development.

Within a balanced scheme, assessment methods may include:

unseen examinations

laboratory reports

computer-based assessments

problem-solving exercises (both of a practical and written format)

analyse case studies to demonstrate knowledge and understanding

oral, audio-visual and poster presentations

peer and self-assessment

group work

Formative assessment is also used extensively throughout the programme for and as learning. Whilst elements of assessment will test knowledge and ability, the emphasis is on a more developmental approach to building the knowledge and skills utilised within employment.

Formative assessment will involve the student being actively engaged in the assessment to encourage them to think about the learning process, to develop an ability to learn independently and to develop employability skills. It will also be used to evaluate teaching.

Personal development and reflective practice will take place throughout the programme and will be implemented through the wide range of activities (both formative and summative) as well as via the personal tutorial process.

An important aspect of this higher education programme is the development of the student's independence and ability to learn from experience (LFE), which is a key behavioural requirement of the nuclear industry. These skills will be developed through project work, investigative practical work and portfolio building with reflective analysis. This reflective analysis and associated experiences will also develop critical thinking thought processes with some assessment requiring students to summarise their work with a critical review of their experience.

Overview of the methods of assessment used on the programme within each year of study

<u>Year 1</u>

Unseen examinations

Practical & Laboratory work

Presentations

Portfolios

<u>Year 2</u>

Unseen examinations

Practical & Laboratory work

Technical Reports

Year 3

Unseen examinations

Practical & Laboratory work

Technical Reports

Project Work

Feedback

Verbal and/or written feedback will be provided to you within 20 working days of the assessment hand-in deadline. This feedback will be designed to provide opportunities for reflection and improvement. All assessments will be in line with the University of Cumbria Academic guidelines.

End Point Assessment

The Foundation Degree has been mapped to the Level 5 Nuclear Technician Apprenticeship Standard. Within the foundation, 40 credits of work-based modules have also been mapped directly to a number of the competencies within the standard, supporting the competence development towards the End Point Assessment (EPA). The EPA for the Level 5 Standard consist of a 4000-word technical report and a presentation and interview with an independent Chartered Engineer. The foundation degree has been designed to support you through the KSBs and gateway whilst evidence from the work-based modules provides opportunities for evidence within the EPA technical report. Several presentation assessments during the degree also support the development of the required EPA presentation skills.

Graduate Prospects

The programme meets the immediate demand for Technicians and Engineers in key skill shortage areas as identified within the Government Nuclear Skills Strategy paper. Technical skills at levels 4 to 6 are in short supply with a particular emphasis within the paper identifying requirements for:

Control System & Instrumentation Technicians

Electrical Design Technicians

Electrical Power Technicians

Nuclear Clean-up Specialists

The programmes also address some of the technical skill requirements for current nuclear projects within the commissioning of new plants and technology to enable new and advanced decommissioning and infrastructure activities to take place whilst also dealing with legacy & future waste considerations. Sellafield Sites Limited operates a very large facility within West Cumbria which includes several legacy buildings which require asset managed to ensure compliance to the NNI.

Nuclear Technology, decommissioning and waste management and Infrastructure development is key within the current strategy of the NDA and underpinning these areas are innovative scientific solutions at all levels. An additional theme is the need for safe working environments and sustainability through the continuous monitoring and evaluation of radioactive environments and safety cases. These programmes will support the sustainability of recruitment within the nuclear industry, particularly managing the requirement for staff who will have relevant Level 5-6 qualifications.

Therefore, there are upskilling opportunities for employers and the scope for graduates to register with the Engineering Council and enhance their career opportunities both within their existing employment or for full-time students to gain sustainable and well-paid employment.

These unique courses of academic and work-based elements have been designed to provide individuals who require higher education qualifications with an opportunity to study locally and also gain credit for real work activities.

MODULES

Year 1			
Code	**Title**	**Credits**	**Status**
NUCL4036	Mathematics	20	Compulsory
NUCL4005	Work-Based Learning A	20	Core
NUCL4035	Engineering Science	20	Compulsory
NUCL4009	Introduction to Nuclear Science & the Nuclear Industry	20	Compulsory

Year 2			
Code	**Title**	**Credits**	**Status**
NUCL4041	Electrical & Electronic Principles	20	Compulsory
NUCL4008	Control Systems & Instrumentation	20	Compulsory
Students exiting at this point with 120 credits would receive a CertEd Electrical Power Systems and Infrastructure			
NUCL5035	Further Mathematics	20	Compulsory
NUCL5004	Electrical Machines	20	Compulsory

Year 3			
Code	**Title**	**Credits**	**Status**
NUCL5037	Industrial Based Project & Business Improvement	20	Core
NUCL5043	Theoretical Control Systems	20	Compulsory
NUCL5006	Transmission, Distribution & Protection	20	Compulsory
NUCL5036	Engineering Design	20	Compulsory
Students exiting at this point with 240 credits would receive a FdEng Electrical Power Systems & Infrastructure			

Key to Module Statuses	
Core modules	Must be taken and must be successfully passed.
Compulsory modules	Must be taken although it may possible to compensate as a marginal fail (within the limits set out in the Academic Regulations and provided that all core or pass/fail elements of module assessment have been passed). For

	professional registration purposes, a maximum of 30 credits of compensation across all levels is allowed but with a maximum of 10 credits at level 6.

Timetables

Three-year programme based on six semesters. Each year will be timetabled with eight block weeks, starting in January.

Each year block delivery will include:

February – Block 1

March – Block 2

April – Block 3

May – Block 4

Sept – Block 5

October – Block 6

ADDITIONAL INFORMATION

Student Support

Learning Mentor System

You will be allocated a Learning Mentor to provide pastoral guidance both directly or and in liaison with subject tutors, the course leader or through study support.

The Learning Mentor will arrange interviews/tutorials at certain times throughout the year to discuss your 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. You are encouraged to initiate a tutorial if you feel that you require assistance in some way. The process provides a collaborative approach between the tutor, yourself and other Services.

During the tutorial, you 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.

Learning Resource Centre (LRC) and Student Services

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. We know that you want to get the most out of your programme, make the best use of your time and find or continue in the career you always dreamed of.

Module leaders will collaborate with LRC advisers to ensure that your reading lists are current and items are available via the library collections. In order to maximise access, availability and usefulness, eBooks and electronic journal titles will, in most cases, be prioritised. Where appropriate, module reading lists will be made available to you electronically using the College's Canvas pages.

Course Representatives

Course representatives are invited to attend Course Team Meetings and other similar meetings to discuss any issues of concern in order to improve the quality of the teaching and to enhance your learning experience. One course representative from all the HE courses can be elected as a learner governor on the governing body of the College.

Employability

Lakes College aims to deliver accessible, flexible and quality assured programmes that provide academic inspiration and challenge, and support excellence. The courses are designed with a strong vocational focus and emphasis is given to the development of core professional and transferable skills to enhance employability.

As such, a wide range of transferable skills are covered. These include:

- Communication
- Group work

- Problem solving

Use of information technology

Support in the Workplace & Apprenticeship Liaison Tutor

In the workplace, the student will be supported by the employer and a Lakes College Apprenticeship Coach. Exact arrangements and terminology are the responsibility of the employer, but typically, you will be supported as follows, where the roles may be combined in one person;

- A Mentor designated by the employer to provide vocational and pastoral support for individual students, who may or may not be your line manager. In particular support will be provided for work-based learning assignments, portfolio and the final year project.
- An Employer Apprenticeship Liaison Manager who manages the relationship between the programme (via the College Liaison Tutor) and the employer.
- An Apprenticeship Coach & Technical Support provided by Lakes College.

The College and the employer are bound by contract to work together to support you as an apprentice. This will include quarterly meetings between the College, the student, and the employer.

The Level 5 standard has been broken down into three main components; Knowledge, Skills and Behaviours. There are 28 competencies in total with 10 being Knowledge based, 7 being Skills based and 11 being Behavioural. The Apprentices are required to build a portfolio of evidence against the 28 competencies over the 3 years of the Apprenticeship, which falls in line with the 3 years taken to complete the Foundation Degree. The portfolio will be made up of a number of task reports, of a set format, in which the Apprentices will describe the work that they have been completing in the workplace and a Project Report. There are a number of competences that will only be assessed within Stage 2 of the EPA i.e. the Interview. The Competencies that will be linked to the Learning Outcomes of the 3 modules (discussed below), will be the only Competencies that will be assessed as part of Stage 1 of the EPA i.e. the Technical Report. The 28 competencies are identified below as well as how they will be assessed within the EPA process.

The Level 5 Apprenticeship is not an integrated Degree Apprenticeship (unlike the Level 6, which is integrated). However, within the Foundation Degrees there has been 3 modules that have been included to aid the Apprentices in generating evidence towards meeting the Competency requirements of the Apprenticeship. This enhances the experience of the Apprentices during the course of their Apprenticeship, but also eliminates the Apprentices from unnecessarily doubling up on work. The reports that will form the Apprentices Portfolio will be linked to that modules Learning Outcomes. These Learning Outcomes have been linked to a number of the Degree Apprenticeship Competencies, which have been specifically identified.

These modules also serve a secondary purpose. Work Based Learning A is a Level 4 module, Work Based Learning & Business Improvement and the Industrial Based Project are both Level 5 modules. This is important, as the funding rules state that the Apprentices must show progress across the full length of their Apprenticeship. If progress was only measured at Level 5, then there would be little progress shown during the first year. By integrating Work Based Module A across the

whole of the first year, we can show that the Apprentices are progressing against the competencies by completing the assessments within the module.

The module tutor for each of the work based/project modules will also be the apprenticeship lead and apprenticeship liaison tutor.

The three modules are identified below.

Work Based Learning A (Year 1, Semester 1 and 2)

This module will run for the whole of the first year across both semesters. The Learning Outcomes for this module have been linked to a number of the competencies, which have been specifically selected for this module. This allows the work to be assessed as part of the Degree as well as count towards the Apprentice Portfolio, which is required for the End Point Assessment. There will be a number of assessments throughout the year (twice a semester, dates to follow), in which the Apprentice will have to submit task reports per assessment. This will mean that the Apprentices will submit task reports in the first year, which will be a sufficient number to allow the delivery staff to be able to prove that the Apprentices are making progress towards meeting the competencies in year 1.

Work Based Learning & Business Improvement (Year 2, Semester 2)

This module will run for the 2nd semester of the second year. The Learning Outcomes for this module have been linked to a number of the competencies, which have been specifically selected for this module. This allows the work to be assessed as part of the Degree as well as count towards the Apprentice Portfolio, which is required for the End Point Assessment. This module is a Level 5 module and will thus produce evidence for the Apprentices' portfolio at Level 5.

Industrial Based Project (Year 3, Semesters 1 and 2)

This module will run through the whole of the 3rd year (semesters 1 and 2). The Learning Outcomes for this module have been linked to a number of the competences. The aim on this module is for the Apprentice to engage with and manage a Work Based project from concept to conclusion. During this module, the Apprentice will need to reflect on the work that they have previously completed in the workplace. Using the knowledge and skills they have gained and the behaviours they have exhibited, the Apprentices must be able to demonstrate that they can manage and run with a project. They will do this by producing a project report, in which they will describe how they went about managing the project, the work that they had to produce, what the outcome of the project was and if there are any recommendations that can be made. It is envisaged that the project will allow the Apprentice to meet the majority of the Competencies that will be assessed by the Project Report.

Prior to starting the project, the Apprentices will produce a project proposal, in which they will explain their project idea. This will allow the delivery team to assess whether or not the project has

sufficient depth to cover the Learning Outcomes. If a project is assessed as not having enough depth to cover all of the Learning Objectives, the delivery team will work with the Apprentice to assess any necessary additions to the project.

Additional Support for Students Transferring from an Academic only Programme to the Level 5 Apprenticeship Standard

A gap analysis will be undertaken for students transferring directly from an academic programme in to the apprenticeship level 5 standard. This analysis will determine the contents of a development plan to ensure that the learner is given the work based or work simulated opportunities to generate evidence mapped to the identified competence gaps. The Academic Lead for Level 5 and 6 Apprenticeships will meet with the learner and new employer on a monthly basis (as an addition to the normal review process) to update the development plan and make adjustments as and if required.

Student Support Between Day Release Sessions

Between block delivery students will have access to a range of additional support mechanisms which will include:

- Access to a virtual learning environment with supporting learning materials for each module which will include; case study materials, practice examples, interactive tests, discussion board and direct access to the module tutor via an online share point.
- Access to the Lakes College Learning Resource Centre which is open till 8 pm (Monday to Thursday) and the specialist HE Section for quiet study within the LRC.
- Drop in seminar sessions within the National College for Nuclear facility
- Timetabled drop in Maths support sessions once per week
- An employer mentoring system will be supported where appropriate
- Each student will have direct access on a daily basis to the Academic Lead for level 5 and 6 apprenticeships

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Course Costs

Tuition Fees

Course fees can be found *insert link*

The following course-related costs are included in the fees:

- Include any course-related costs that are included in the fees i.e. visits to museums, use of equipment etc…

Additional Costs

The following course-related costs are not included in the fees:

- Include any course-related costs that are not included in the fees i.e. optional field trips, required equipment etc… and their approximate cost

Exceptions to the Academic Regulations

This programme operates in accordance with the University's Academic Regulations and Academic Procedures and Processes with the following permitted exceptions due to the requirements of the Engineering Council. A maximum of 30 credits will be allowed for compensation across all levels of 4, 5 and 6 (inclusive of a progression to a top-up honours qualification).

External and Internal Benchmarks

The programme outcomes are referenced to the Level 5 Nuclear Technician Apprenticeship Standard (and also the related Assessment Plan).

QAA Benchmark statements for Engineering (March 2023): Link Subject Benchmark Statement: Engineering (qaa.ac.uk)

Engineering Council's Accreditation of Higher Education Programmes (AHEP4) in engineering, in line with the UK Standard for Professional Engineering Competence (UK-SPEC) – Competence Matrix for IEng – link Engineering Council (engc.org.uk)

Nuclear Engineer & Scientist Degree Apprenticeship Standard – Knowledge, Skills and some Behaviour Competences: Link Nuclear scientist and nuclear engineer (integrated degree) / Institute for Apprenticeships and Technical Education

National College for Nuclear – Course Structure Guidance

Nuclear Institute & Nuclear Delta: Link Nuclear Delta (nuclearinst.com)

Disclaimer

This programme has been approved (validated) by the University of Cumbria as suitable for a range of delivery modes, delivery patterns, and delivery sites. This level of potential flexibility does not reflect a commitment on behalf of the University or Lakes College to offer the programme by all modes/patterns and at all locations in every academic cycle. The details of the programme offered for a particular intake year will be as detailed on the programme webpage.