OFFICE USE ONLY	
Date of validation event:	31 July 2020
Date of approval by Academic Board:	21 September 2020
Approved Validation Period:	*Four years from September 2020*
Date and type of revision:	*Enter the date of any subsequent revisions (Detail the type of revision made and the implementation date)*

PROGRAMME SPECIFICATION

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Enter Programme Title(s)

BEng (Hons) Low Carbon Energy, Efficiency and Sustainability

1	**Awarding body**
	Glyndŵr University
2	**Programme delivered by**
	Glyndŵr University
3	**Location of delivery**
	Glyndŵr University Plas Coch Campus
4	**Faculty/Department**
	Engineering Faculty of Arts, Science and Technology
5	**Exit awards available**
	BEng (Ord) Low Carbon Energy, Efficiency and Sustainability Dip HE Low Carbon Energy, Efficiency and Sustainability Cert HE Engineering
6	**Professional, Statutory or Regulatory Body (PSRB) accreditation**
	Post validation, accreditation will be sought from the Institution of Mechanical Engineers (IMechE) and the Institution of Engineering and Technology (IET). This accreditation is not required for the delivery of the Degree Apprenticeships for Wales. **This information is correct at the time of validation, please refer to the PSRB register for current accreditation status.**
7	**Please add details of any conditions that may affect accreditation (e.g. is it dependent on choices made by a student?) *eg. completion of placement.*** N/A

8	JACS3 / HECoS **codes**
	H150/100182 Engineering design H220/100180 Environmental engineering H223/100549 Environmental impact assessment
9	UCAS **code**
10	**Relevant QAA subject benchmark statement/s**
	Subject Benchmark Statement; Engineering February 2015 and 2019
11	**Mode of study**
	Part time
12	**Normal length of study** for each mode of study *Note that students are not eligible for funding for a postgraduate qualification if the duration of the part time route is more than double the duration of the full time route.*
	3 years
13	**Language of study**
	English
14	**The following University Award Regulations apply to this programme**

✓	General Regulations and Definitions
✓	Regulations for Bachelor Degrees, Diplomas, Certificates and Foundation Degrees
☐	Regulations for Taught Masters Degrees
☐	Regulations for Taught Masters Degrees taught entirely by online distance learning
☐	Regulations for Integrated Masters Degrees
☐	Regulations for Masters of Research
☐	Regulations for Professional Graduate Certificate in Education
☐	Regulations for Postgraduate Certificate in Education
☐	Regulations for Certificate in Education
☐	Regulations for Graduate Diploma Graduate Certificate
☐	Regulations for BTEC Higher National Qualifications
☐	Regulations for Glyndŵr University Certificate of Attendance, Glyndŵr University Certificate of Continuing Education, Glyndŵr University Professional Certificate
☐	Regulations Glyndŵr University English Language Test

17 Criteria for admission to the programme

Standard entry criteria

For the three-year degree apprenticeship route applicants must be in full time relevant employment in a role aligned to the Engineering Degree Apprenticeship (Wales) framework (2019). Decisions on entry for this programme will be made in partnership between the University and the Employer ensuring that the candidate meets the standard academic entry requirements as well as the professional and employer entry requirements which varies between employer. This will be determined pre-application by the relationship manager, industry link within the programme team and employer representative. All apprentices enter into a three-way learning agreement upon acceptance to the programme.

Entry requirements are in accordance with the University's admissions policy https://www.glyndwr.ac.uk/en/Howtoapply/Admissionspolicies/7_Admissions%20Policy%20-%20October%202018%20revision%20final.pdf

The University's entry requirements are set out at http://www.glyndwr.ac.uk/en/Undergraduatecourses/UCAStariffchange2017/

3 year Bachelor	112 Tariff points

These figures are intended as a general guide. Each application is considered individually.

International entry qualifications are outlined on the National Academic Recognition and Information Centre (NARIC) as equivalent to the relevant UK entry qualification.

In addition to the academic entry requirements, all applicants whose first language is not English or Welsh must demonstrate English language proficiency.

European students are able to provide this evidence in a number of ways (please see http://www.glyndwr.ac.uk/en/Europeanstudents/entryrequirements/ for details), including IELTS.

International students require a UKVI Approved Secure English Language Test (SELT) (please see http://www.glyndwr.ac.uk/en/Internationalstudents/EntryandEnglishLanguageRequirements/ for details).

DBS Requirements

No

Suitability for Practice Procedure

N/A

Non-standard entry criteria and programme specific requirements

Other learning and experience may be considered for entry to the programme. A student may be allowed entry if he or she does not have the standard entry qualifications but can provide evidence of necessary knowledge and skills to successfully enter and complete the course.

The University, in line with the Degree Apprenticeship provision in Wales, is committed to ensuring that applicants with vocational qualifications and/or significant workplace experience can access these Degree Apprenticeship Programmes.

The University has developed a portfolio based on the competencies outlined within the Apprenticeship Framework to enable apprentices to evidence these skills and competencies as part of the apprenticeship programme. This skills portfolio is a tool to enable the apprentice and employer to evidence the higher-level skills and competencies developed in the workplace as part of the apprenticeship programme. This portfolio is made available to employers and prospective apprentices as part of the admissions process when standard entry requirements are not met. Each candidate and employer will be interviewed by their mentor to review their skills portfolio to date and to assess whether advanced entry (RPL/RPEL) is appropriate for the needs of the company and the individual.

18 Recognition of Prior (Experiential) Learning

Applicants may enter the programme at various levels with Recognition of Prior Learning (RPL) or Recognition of Prior Experiential learning (RPEL) in accordance with the University General Regulations. Any programme specific restrictions are outlined below

Programme specific restrictions

N/A

19 Aims of the programme

The key aims of the programme are to:

- Enable students to develop an in-depth knowledge relating to a career as a professional engineer in industry and management roles in industry.
- Develop a critical awareness of current issues and developments in engineering and industry.
- Develop skills related to engineering and demonstrate problem solving
- Enable students to analyse the social and environmental implications of engineering and industry
- Encourage critical skills, a knowledge of professional responsibility, integrity and ethics together with the ability to reflect on personal progress as a learner and undertake independent study at level 6 for the dissertation module.
- Demonstrate a critical awareness life-long learning and an appreciation of the value of education in continuing professional development

Additionally, the student's competencies are to be assessed within the workplace by the employer; specifically, professional behaviour, health and safety and company roles, responsibilities and working practices. This will be evidenced within the three-way progress meetings throughout the programme by the personal/industry tutor.

The programme is designed to provide apprentices with the essential knowledge, skills and techniques which underpin and enhance the learning process. They will be encouraged to develop a positive, reflective and professional approach to their learning, taking responsibility for their own progression and career development.

These transferable skills enable and promote sustainable lifelong learning and continuing professional development within their professional field or sector. The programme is designed to provide an opportunity for apprentices to apply their knowledge, skills and ideas within their own working environment.

20 Distinctive features of the programme

There are existing Degree Apprenticeship Engineering Programmes being delivered at the university. They were developed to meet the demands of industry to provide engineering qualifications that not only cover the traditional theoretical aspects associated with this vocation but also encompass new and emerging technologies. This apprenticeship degree programme in low carbon energy, efficiency and sustainability will expand the offering and is designed to meet the need and interests of industry and the sustained and growing importance of low carbon technology/clean energy, energy efficiency and sustainability.

Degree apprenticeships in Wales are work-based learning programmes that provide opportunities for individuals working in Wales to develop relevant industry knowledge and job competencies while in paid employment, gaining the experience of doing a particular job(s).

Developed as a three-way learning partnership between the employer, the student and the academic programme team, the programmes will enable students to develop skills which will be in high demand in the future, meeting regional skills gaps.

Designed in response to employer need, students will study one day per week with the remaining four days in employment. By utilising the full calendar year and applying core tenants of work-based learning, students will be provided with the opportunity to achieve their award in three years.

Each apprentice is assigned an industry mentor who will support the apprentice and their employer to identify relevant and appropriate projects as well as ensure that both the employer and apprentice needs are met. Tutorials/progress reviews are an embedded feature within the programme and will encourage the engagement of the employer within the programme ensuring an open three-way dialogue between the provider, employer and apprentice with regular feedback on technical and professional skills and competencies in line with the Skills and Competencies portfolio aligned to the framework.

Where necessary the Industry Mentor or the Enterprise team will work with the employers to ensure that the employers are supported and trained to provide the best experience and support to their apprentices. WGU provides complimentary mentoring, professional supervision and other resources to expand the skills of apprentice supervisors and managers to ensure that the learning that is applied to the workplace is effective and impactful.

Both local and national organisations have had significant input into the development of the programme, particularly relating to programme and module content, ensuring it is ‘fit for purpose’. Also, students, both past and present, have been involved with the programme development, whereby scheduling of delivery and assessment has been influenced by student feedback.

All aspects of this programme and the delivery align with the relevant competencies and outcomes detailed on the Degree Apprenticeship for Wales Level 6 Engineering

Framework (2019) Pathways as well as complying with the provisions of the Apprenticeships, Skills, Children and Learning Act (2009), Specification of Apprenticeship Standards for Wales and aligning with the QAA guidance for apprenticeship programmes.

21 Credit accumulation and exit awards

The three-year, part time apprenticeship programme will utilise the extended academic year with three trimesters of delivery enabling students to undertake 120 credits per extended academic year. This programme has one initial entry point of September. This is to ensure the flexibility required by Apprenticeship provision. Each intake will follow the same programme structure as detailed below.
Day release taught modules will be delivered over three trimesters with assessment and progression boards taking place in September.

Exit Awards

Successful completion of 120 credits at Level 4 or above entitles the student to the exit award of Certificate of Higher Education in Engineering

Successful completion of 240 credits of which a minimum of 120 credit points are at Level 5 or above entitles the student to a Diploma of Higher Education in Low Carbon Energy, Efficiency and Sustainability

Successful completion of 300 credits of which a minimum of 60 credits are at Level 6 entitles the student to a Bachelor's degree in Low Carbon Energy, Efficiency and Sustainability (Ordinary)

22 Programme structure diagram

LEVEL 4							
Mod Code	ENG495	Mod title	Analytical Engineering Techniques	Credit value	20	Core	Semester 1 & 2
Mod Code	ENG498	Mod title	Engineering Standard, Business & Operations Management	Credit value	20	Core	Semester 1 & 2
Mod Code	ENG496	Mod title	Design & CAD	Credit value	20	Core	Semester 1 & 2
Mod Code	ENG493	Mod title	Energy Systems and Sustainability	Credit value	20	Core	Semester 1 & 2
Mod Code	ENG449	Mod title	Project (Environmental Audit Case Study)	Credit value	40	Core	Semester 1 – 3
LEVEL 5							
Mod Code	ENG5AA	Mod title	Analytical Control Techniques	Credit value	20	Core	Semester 1 & 2
Mod Code	ENG5AJ	Mod title	Modern Manufacture, Sustainability & Industry 4.0	Credit value	20	Core	Semester 1 & 2
Mod Code	ENG53F	Mod title	Renewable Energy Engineering	Credit value	40	Core	Semester 1 – 3
Mod Code	ENG5AM	Mod title	Project (Feasibility Study)	Credit value	40	Core	Semester 1 & 2
LEVEL 6							
Mod Code	ENG6AG	Mod title	Project	Credit value	40	Core	Semester 1 – 3
Mod Code	ENG6AF	Mod title	Product Design	Credit value	20	Core	Semester 1 & 2
Mod Code	ENG6AE	Mod title	Managing Workforce, Engagement & Commitment	Credit value	20	Core	Semester 1 & 2
Mod Code	ENG6AD	Mod title	Maintenance & Safety System	Credit value	20	Core	Semester 1 & 2
Mod Code	ENG60H	Mod title	Advanced Renewable Technology	Credit value	20	Core	Semester 1 & 2

22 Intended learning outcomes of the programme

Knowledge and Understanding

Undergraduate				
	Knowledge and understanding			
	Level 4	Level 5	Level 6	Level 6 Honours Degree
A1	*Develop an understanding of mathematical concepts or principles relevant to Engineering.*	*Apply mathematical concepts or principles relevant to Low carbon Engineering problems.*	*Apply mathematical principles and analytical techniques to integrated Industrial and Low Carbon Engineering problems.*	*Model and analyse complex industrial and low carbon systems using appropriate mathematical methods, while recognising the limitations of such analysis.*
A2	*Identify and explain scientific principles relevant to Engineering across a range of contexts.*	*Develop scientific principles and demonstrate an understanding of relevant applications within Industrial and Low Carbon Engineering.*	*Investigate Industrial and Low Carbon Engineering principles and applications.*	*Critically analyse complex industrial and low carbon engineering systems and demonstrate the ability to synthesise such engineering and systems.*
A3	*Develop an awareness of current technologies and their uses within Engineering across a range of contexts.*	*Analyse current and future technologies within Industrial and Low Carbon Engineering and develop an awareness of the sustainability implications.*	*Display a critical awareness of current issues and future prospects at the forefront of the discipline*	*Critically evaluate current and future developments within Industrial and Low Carbon Engineering and the careful consideration of the sustainability implications.*

Intellectual skills

	Intellectual skills			
	Level 4	Level 5	Level 6	Level 6 Honours Degree
B1	*Identify problems and potential causes and effects.*	*Identify and analyse problems and use diagnostic methods to recognise causes and achieve satisfactory solutions.*	*Apply engineering principles to the solution of design and operation problems in industrial and low carbon engineering.*	*Innovate in solving novel and challenging problems and be aware of the limitations of the solutions in industrial and low carbon engineering.*
B2	*Identify, organise and use resources to complete tasks safely and efficiently*	*Identify, organise and use resources effectively to complete tasks, with consideration for cost, quality,*	*Assess the resources and techniques used to complete tasks appropriately, and to achieve engineering objectives. Demonstrate a strong*	*Critically assess the resources and techniques used to complete tasks, and to achieve engineering objectives. Recommend new techniques or use of resources based on a strong*

Intellectual skills				
	Level 4	Level 5	Level 6	Level 6 Honours Degree
		safety and environmental impact.	*understanding of the legal requirements, appropriate ethical conduct and associated risks that may occur before, during and after the task has been completed.*	*understanding of legal requirements, appropriate ethical conduct and associated risks that may occur before, during and after the task has been completed.*
B3	*Apply given tools/methods to a well-defined problem and begin to appreciate the complexity of the issues.*	*Recognise and define key elements of problems and choose appropriate methods for their resolution in a considered manner.*	*Analyse, evaluate and interpret engineering data.*	*Critically appraise engineering problems. Generate and analyse data to solve complex engineering problems.*
B4	*Form opinions based upon knowledge and understanding of the subject in question.*	*Present arguments to uphold decisions following an evaluation of a particular subject.*	*Assess, interpret and implement decisions with an awareness of technical, economic and commercial implications.*	*Assess, interpret and implement decisions with a critical awareness of technical, economic and commercial implications.*

Subject Skills

Subject skills				
	Level 4	Level 5	Level 6	Level 6 Honours Degree
C1	*Conduct given laboratory experiments to investigate engineering principles and properties of devices and systems.*	*Devise laboratory experiments to prove engineering principles and properties of devices and systems.*	*Conduct laboratory experiments to investigate engineering principles and properties of devices and systems in industrial and low carbon engineering.*	*Conduct and analyse experiments, adapting experimental procedures to novel situations if necessary, analysing experimental data in detail, and drawing comprehensive conclusions*
C2	*Design and construct devices and systems to meet given performance criteria.*	*Design and construct devices/systems and devise methods of testing to check for given performance criteria.*	*Design, construct, test and evaluate devices and systems to meet given performance criteria, including the use of computer-based tools where appropriate.*	*Design, construct, test and evaluate devices and systems to meet given performance criteria, including the use of computer-based tools.*
C3	*Monitor processes or systems across a range of contexts, and develop an awareness of possible improvements.*	*Monitor processes or systems, trend processes and make predictions, in order to bring about continuous improvement.*	*Extract and evaluate information relating to industrial and low carbon engineering. Prepare descriptive, interpretive and evaluative technical reports.*	*Analyse and evaluate processes, techniques or systems relating to unfamiliar problems with an awareness of quality issues and their application to continuous improvement.*

Subject skills				
	Level 4	Level 5	Level 6	Level 6 Honours Degree
C4	*Propose and plan a self-directed individual programme of investigation.*	*Plan and undertake and report a self-directed individual programme of investigation and design.*	*Plan and carry out a personal programme of work.*	*Propose, plan, undertake and report a self-directed individual programme of investigation, design and implementation.*

Practical, professional and employability skills

Practical, professional and employability skills				
	Level 4	Level 5	Level 6	Level 6 Honours Degree
D1	*Identify basic information and suitable sources, carry out searches and bring information together in a way that ensures work is accurate, clear and properly saved.*	*Plan how to obtain and use required information for the purpose of an activity and use appropriate structures and procedures to explore and develop information.*	*Communicate effectively in writing, verbally and through graphical representations.*	*Identify problems, bias and recommendations effectively through graphical, written and verbal forms of communication.*
D2	*Use oral, written and electronic methods for the communication of technical and other information.*	*Use oral, written and electronic methods for effective communication of technical and other information.*	*Optimise use of resources and time in project planning and implementation.*	*Use information technology competently - to source information, to prepare reports, to model performance using specialised software packages.*
D3	*Apply safe systems of work across a range of contexts.*	*Manage and apply safe systems of work.*	*Learn independently and be familiar with how to access key information.*	*Evaluate and reflect on own performance and self-management.*
D4	*Work reliably without close supervision accepting responsibility for tasks undertaken*	*Demonstrate the ability to work reliably and effectively without supervision accepting responsibility for tasks undertaken.*	*Demonstrate the practical skills of independent planning and execution of projects which relate to relevant engineering discipline.*	*Interpret the role of the engineer as a manager of himself/herself and of others, ensuring the highest level of professional and ethical conduct and acting within the legal framework governing engineering activities.*

23 Curriculum matrix

To demonstrate how the overall programme outcomes are achieved and where skills are developed and assessed within individual modules.

	Module Title	Core or option?	A1	A2	A3	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4
Level 4	*Analytical Engineering Techniques*	Core	X					X		X	X			X	X		
	Engineering Standard, Business & Operations Management	Core			X				X			X	X	X	X	X	X
	Design & CAD	Core		X	X	X	X	X	X		X	X	X	X	X		X
	Energy Systems and Sustainability	Core	X	X	X	X	X	X	X	X	X		X		X	X	
	Project (Environmental Audit Case Study)	Core	X	X	X	X	X	X	X				X	X	X		X
Level 5	*Renewable Energy Engineering*	Core			X	X	X			X	X	X			X	X	
	Analytical Control Techniques	Core	X	X				X		X				X	X		
	Modern Manufacture, Sustainability & Industry 4.0	Core			X	X	X	X	X			X		X	X		
	Project (feasibility study)	Core	X	X	X	X		X		X		X			X	X	X
Level 6	*Project*	Core	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Managing Workforce, Engagement & Commitment	Core				X	X		X				X	X	X	X	X
	Maintenance & Safety System	Core			X	X	X					X		X	X	X	X
	Product Design	Core	X		X	X	X	X	X		X	X	X	X	X		X
	Advanced Renewable Technology	Core	X	X	X	X		X		X		X			X	X	

24 Learning and teaching strategy

The team recognises that the learning and teaching strategy should reflect the different requirements of both Degree Apprenticeships and the individual students. In order to achieve this the team have agreed the following strategy:

1. A key feature of apprenticeships is that the majority of learning and training takes place 'on-the-job' while apprentices are engaged in work activity. It is therefore fundamental that an apprentice's work will provide a source for learning, an environment for learning and the key context for learning. This is recognised by the team and supported by the provision on an Industry mentor linking the work-place to the programme of study.

2. To ensure that the teaching methods adopted for classroom and related activity are planned effectively so that that tutors use a range of examples, reflecting the diversity of experiences when explaining the application of theory to practice. This will also provide the opportunity for apprentices to bring their work-based experiences back into the teaching space and develop a shared learning network with their peers.

3. To ensure that group discussions, case study / problem solving activity relate to and reflect the different aspects of practice represented within the classroom.

4. Where guest lecturers are used, they will be briefed by the module tutor to ensure that they are aware of the student profile and that the proposed presentation / lecture accommodates this.

5. Students will be supported by tutorial discussions between the tutor and student to ensure that the proposed learning reflects the practice needs of the student.

6. To ensure that the assessment strategy and methods of assessment are sufficiently flexible to enable students to apply and demonstrate their learning in a context which is relevant to them.

7. Blended delivery will be employed, which embraces the Glyndŵr university active learning framework (ALF). The mix of face to face and online (synchronous and asynchronous) delivery will ensure that learning and teaching is flexible, accessible and inclusive. This is particularly helpful for apprenticeship students.

The programme places emphasis on the importance of reflective learning, and envisages students drawing on informal and formal feedback to engage in a dialogue with staff to help plan their future learning. The three-way progress reviews required every 61 days provide a communication channel for apprentice, employer and provider to facilitate the shared learning between the workplace and the classroom or laboratory.

The relationship between the employer, apprentices and industry mentor is overseen by a member the Enterprise Team at WGU.

In addition, Apprentices, in negotiation with employers and industry mentor, will be able to develop the ability to identify additional learning opportunities within the context

of their day-to-day work activity. Apprentices will be able to undertake negotiated work-based projects that build on work activities and integrate knowledge, skills, behaviours and values developed through higher education learning.

Alongside the assessed components of the programme, apprentices are encouraged to complete a portfolio of skills and competencies based on the Degree Apprenticeship Framework. This portfolio enables the apprentices to recognise the skills and abilities they have developed both through the programme of study and the work-based activities undertaken during their learning journey.

The learning and teaching methods adopted reflect the QCA /QAA descriptors in the following ways:

- Lectures are used to impart key information and show case new ways of working which will enable students to develop a sound understanding of the principles of their field of study as well as identifying new ways of working.

- Case studies, role plays, and group working will be used to facilitate application of the principles more widely. They will also be used to prompt discussion and practise problem solving skills. This will also allow students to evaluate the appropriateness of different approaches to solving problems.

- The use of portfolios facilitates reflection on the qualities necessary for employment, requiring the exercise of personal responsibility and decision making. Additionally, they will allow students to identify the limits of their knowledge and skills and identify strategies for development.

- Assessments are used to facilitate learning as well as providing an indication of student achievement.

The programme team has developed a strategic approach to delivering learning and teaching which meets the needs of the student group, enables skills development, allows for the practical application of knowledge and encourages students to become reflective and critically evaluative practitioners. The balance between face-to-face lectures and directed study is detailed within the module specifications. Students will be encouraged, through classroom activities and assessments, to reflect on both their own and organisational behaviour in order to improve their performance as well as giving them the knowledge and confidence to contribute towards the development of their organisational performance.
Learning and Teaching are activities which operate at different levels simultaneously. To the student the immediate activity relates to the explicit topics being studied. However, transferable skills are also inherent in order for the student to both carry out the tasks and to develop. These elements are built into the modules comprising the programme as what might be called embedded issues. Other embedded issues, such as awareness of environmental impact, sustainability and commercial implications are also integrated in modules throughout the programme.

Knowledge and Understanding
Acquisition of knowledge is by means of lectures, practical and laboratory-based exercises, investigative exercises involving searching of various sources, directed reading and further reading. Pre-written notes will have a role in supporting these

activities. Understanding is developed through tutorials, discussion, evaluation exercises and individual exercise sheets.

Intellectual Skills
These skills are developed by the students undertaking individual activities, within tutorials and practical sessions, or by being required to contribute to group activities. In each case, throughout the course a range of problems are set requiring the student to carry out information searches, analysis, design formulation, synthesis, test definition, modelling (software based), a methodology or by calculation. Reflective self-evaluation forms part of this. Critical evaluation is encouraged via debate and discussion in the tutorials.

Key Skills
Key skills include: communication skills, ability to work in a group or on one's own, management of time, use of computers and other technology, the application of calculations (the discipline of regularly attending and contributing to classes exercises the transferable skills of self-management and time management). Each module specification provides examples of transferable skills covered within its learning outcomes. Beyond this most modules require performance in several skill areas including self-management, communication and use of computer packages. All of these are monitored by the module tutors and feedback given.

VLE (Virtual Learning Environment)
Extensive use is made of Glyndŵr University's VLE, Moodle, to enhance the learning experience. Moodle is used by staff to provide information about the courses and individual modules, a repository of lecture notes, embedded content (e.g. videos), Moodle quizzes, discussion boards, activities and links to other sources of information.

The university has developed a new model for learning; the Active Learning Framework (ALF). Grounded in the University's values of being accessible, supportive, innovative and ambitious, ALF will support flexible learning that makes best use of spaces on Campus together with digitally-enabled learning opportunities designed to be accessed anytime, anywhere as appropriate. In addition, ALF will embody ways of teaching and learning that create and support a sense of belonging for students – critically important for us as a university that prides itself on being a supportive community.

In addition to the VLE, tools such as Panopto will be utilised as part of ALF, provide flexibility and a mix of synchronous and asynchronous content.

In addition to the above learning and teaching strategies, apprentices are expected to demonstrate professional competencies and behaviour within the workplace. A three-way learning plan is agreed between employer, apprentice and University which will detail the on the job training and professional competencies detailed within the relevant apprenticeship framework. These will be reviewed as part of the progress update process every two months and is specific to the individual employer (such as working practices, company structure and processes, induction, and professional behaviour).

The personal/industry tutor will be responsible for gathering progress and behaviour information from the academic team and feeding this information into the progress update process. The notes from these meetings will be shared with relevant academic staff if they impact on any aspect of the teaching or learning required.

25 The Wrexham Glyndŵr Graduate

	CORE ATTRIBUTES				KEY ATTITUDES					PRACTICAL SKILLSETS					
Module title	Engaged	Creative	Enterprising	Ethical	Commitment	Curiosity	Resilient	Confidence	Adaptability	Digital fluency	Organisation	Leadership and team working	Critical thinking	Emotional intelligence	Communication
ENG495 Analytical Engineering Techniques	■	□	□	□	□	□	□	■	■	■	□	□	■	□	□
ENG493 Energy Systems and Sustainability	■	□	□	■	□	■	□	□	□	□	□	□	■	□	□
ENG496 Design & CAD	□	■	□	□	□	■	■	□	□	■	□	□	□	□	□
ENG498 Engineering Standard, Business & Operations Management	■	□	■	□	□	□	□	□	□	□	□	■	□	■	■
ENG449 Project (Environmental Audit Case Study)	■	□	□	■	□	□	□	□	□	□	■	□	■	□	■
ENG5AA Analytical Control Techniques	■	□	□	□	□	□	□	□	□	■	□	□	■	□	□
ENG5AJ Modern Manufacture, Sustainability & Industry 4.0	□	□	□	□	□	□	□	□	□	□	□	□	■	□	■
ENG53F Renewable energy engineering	□	□	□	■	□	□	□	□	□	□	□	□	■	□	□
ENG5AM Project (feasibility study)	■	□	□	□	□	□	□	□	□	■	■	■	■	□	■
ENG6AE Managing Workforce, Engagement & Commitment	□	□	□	□	□	□	□	□	□	□	□	■	□	□	□
ENG6AF Product Design	□	■	□	■	■	■	■	■	■	■	□	□	■	□	■
ENG6AD Maintenance & Safety System	■	□	□	□	□	□	□	□	□	□	□	□	■	□	■
ENG6AG Project	■	■	□	■	■	■	■	■	■	■	■	□	■	■	■
ENG60H Advanced Renewable Technology	□	□	□	■	□	□	□	□	□	□	□	□	□	□	■

26 Work based/placement learning statement

Within the three-year part time apprenticeship programmes, students are expected to be in a relevant full-time position and to apply relevant learning to their work-place through applied projects and utilising real-world examples within their assessments.

Throughout the programme, applied projects and assignments are agreed in partnership with the employer and the apprentice to ensure that they enable improved productivity, innovation and business growth for each employer. This provides a clear return on investment for the employer and to ensure that the apprentice can evidence the required skills and competencies within their job role and for their organisation. In each academic year, at least 30% of the modules within the programme will be based

on and assessed by the application and evaluation of real-world, work-place problems and their solutions.

Alongside the assessed components of the programme, apprentices are encouraged to complete a portfolio of skills and competencies based on the Degree Apprenticeship Framework. This portfolio enables the apprentices to recognise the skills and abilities they have developed both through the programme of study and the work-based activities undertaken during their learning journey. The portfolio is not required to pass the academic qualification, but is a requirement to meet the Degree Apprenticeship Framework. Students are given regular support with completing the portfolio.

27 Welsh medium provision

Students are entitled to submit assessments in the medium of Welsh. When a student elects to submit the assessment in the Welsh language and no appropriate Welsh speaking tutor/assessor is available, the written assessment will be translated into English. This translation will be conducted by University qualified translators.

The University is committed to supporting its learners to use incidental Welsh during reviews and conversations relating to their programme as well as providing additional professional development opportunities to develop conversational and professional Welsh. The University has a number of Welsh speaking advisors/managers who can fully conduct the review process through the medium of Welsh. During the enrolment process and induction, this support is highlighted and resources are given to learners to encourage them to learn and use Welsh in the workplace.

For those students who wish to learn Welsh or to improve their Welsh, there are a range of courses available. Further, the Second Language Learning Centre can help those whose first language is not English.

28 Assessment strategy

The programmes provide opportunities for formative, diagnostic and summative feedback. The assessment methods used reflect the needs of the student group and allows for the knowledge and learning outcomes of the programme to be tested as well as allowing for the development and assessment of practical and transferable skills.

Where assessed group work is undertaken, students will be expected, through the production of meeting notes and action plans, to demonstrate that they have contributed equally to the task. This element of personal contribution will determine the individual's overall module assessment. i.e. not all students within a group should expect the same mark.

The Degree Apprenticeship framework in Wales has no separate EPA, with the achievement of the overall framework based on assessment of the qualification success and achievement of the relevant module learning outcomes in the credit and qualification.

Consistent with the QAA expectations for Assessment of Students and the Recognition of Prior Learning in Wales, Degree Apprenticeships are required to comply with QAA expectations for assessment of taught provision and for the recognition of prior learning.

Assessment Methods

All assessment is underpinned by ALF and students will get the opportunity to demonstrate their academic skills in a variety of methods, with flexibility and accessibility being key factors.

Formal Written Examinations

These have been defined as being at a maximum length of 3 hours for a module which has no assignment element. The examinations are formally defined and centrally conducted via Glyndŵr University's Assessment Office. It should be noted that exams can take different forms (e.g. online exams) and not all will be at the maximum 3 hour length.

Coursework

This is a single task given to the student in the form of a 'brief' defining the assignment requirements at or near the beginning of the module. This may require the student to carry out investigations and literature searches in their own time and under their own initiative or it may require independent problem solving based on work covered in the lectures/tutorials. The work is normally required in the form of a formal report submitted by a given deadline. Sometimes a presentation, either individually or as a group forms part of the assessment.

Portfolio

This is a term referring to a collection of small, and perhaps diverse, exercises whose individual marks are brought together in a single folder to form a single in-course mark. Examples are where a series of laboratory exercises form part of the module. Feedback is given after each exercise (called formative assessment) so that a student is aware of progress made on an on-going basis.

Continuous Assessment

Some modules use continuous assessment whereby a set of progressive exercises are used to build up to the achievement of a major task. Each exercise is given a mark (called summative assessment) and feedback given, usually during class, in order to help with the next stage. The final mark is a combination of these marks. It is also the preferred method of assessment for the project, as the student project develops there are interim points for assessment which are inclusive of VLE quizzes, presentations, logbooks, and staged formal reports. The feedback to the student is thus also continuous and assists the students to achieve their potential.

Case Study

For some modules, a case study might be the most appropriate form of assessment whereby the student would investigate a scenario, software programme or an

instrumentation system. They would analyse the 'subject' and convey their critical opinions, this could be verbally (oral presentation) or a short report. Frequently the student is given three or four scenarios to consider simultaneously, thereby enabling comparison of advantages and disadvantages.

Plagiarism

Where practicable, Turnitin will be used a tool to support students to develop their academic writing style as well as to detect plagiarism or collaboration.

Double Marking and Moderation

All module assessments will be internally verified (apart from level 4) with a sample being moderated by the external examiner in accordance with Glyndŵr University's Regulatory Requirements. All level 6 honours projects will be double marked.

Extenuating Circumstances and Deadlines for Submission

Students will be given a schedule of assessment submission dates for the year. They will be informed of the penalties which apply for non-submission. Students will be made aware of the procedure relating to extenuating circumstances and will be encouraged to work closely with their tutors should they require support and guidance on this matter.

Feedback to students

Formative assessment is essential to learning in its aim is to give appropriate and timely feedback to students on their learning, and to help them to improve their future work.

Feedback, both formal and informal is given to students throughout the programme. Feedback may be verbal, given during tutorials or lab exercises, where both student and lecturer can identify problems and steps can be taken to improve future work. Feedback is presented as part of a continuous assessment plan, such as the development of Journals or Learning Logs; this may be verbal or written feedback, or it may be formal written feedback, as in the case of assignment marking with comments.

In addition, progress review updates are required between employer, apprentice and provider no less than every 61 days. This ensures a near constant feedback and communication cycle during the delivery of the apprenticeship.

It should be noted that much of the feedback, not only identifies problems along with suitable guidance, but also highlights the student's achievements. This approach usually works better than simply "must try harder".

In some cases, 'progressive feedback' is the most suitable approach, particularly when there are many problems with an individual student's work. i.e. do not try to mend everything all at once, as this can lead to the student becoming demoralised, but rather work on the most important aspects first, whilst introducing other improvements later.

The following diagram provides an overview of module assessments and indicative submission dates.

Module code & title	Assessment type and weighting	Assessment loading	Indicative submission date
ENG495 Analytical Engineering Techniques	50% Coursework 50% Exam	2500 Words 2Hr.	Wk. 6, Tri 1 Wk. 12, Tri 2
ENG493 Energy Systems and Sustainability	50% Exam 50% Portfolio	2Hr. 2000 Words	Wk. 12, Tri 1 Wk. 8, Tri 2
ENG496 Design & CAD	50% Coursework 50% Portfolio	2500 Words 1500 Words	Wk. 5, Tri 1 Wk. 12, Tri 2
ENG498 Engineering Standard, Business & Operations Management	50% Report 50% Portfolio	2500 Words 2500 Words	Wk. 8, Tri 2 Wk. 10, Tri 3
ENG449 Project (Environmental Audit Case Study)	100% Case Study	5000 Words	Wk. 12, Tri 3
ENG5AA Analytical Control Techniques	50% Assignment 50% Exam	2500 Words 2Hr.	Wk. 5, Tri 1 Wk. 12, Tri 2
ENG5AJ Modern Manufacture, Sustainability & Industry 4.0	50% Report 50% Case Study	2500 Words 2500 Words	Wk. 7, Tri 1 Wk. 12, Tri 2
ENG53F Renewable Energy Engineering	100% Group Coursework	8000 Words	Wk. 6, 9 &12, Tri 2
ENG5AM Project (Feasibility Study)	100% Case Study	5000 words	Wk. 10, Tri 3
ENG6AE Managing Workforce, Engagement & Commitment	60% Portfolio 40% Group Project	4000 Words 2000 Words	Wk. 6, Tri 1 Wk. 12, Tri 2
ENG6AF Product Design	100% Portfolio	4000 Words	Wk. 11, Tri 2
ENG6AD Maintenance & Safety System	100% Portfolio	4000 Words	Wk. 12, Tri 2
ENG6AG Project	80% Report 20% Presentation	10,000 Words 10 Minutes	Wk. 12, Tri 3
ENG60H Advanced Renewable Technology	100% Exam	3Hrs	Wk. 12, Tri 2

29 Assessment and award regulations

Derogations

A derogation from academic regulations has been approved for these programmes which means that whilst the pass mark is 40% overall, each element of assessment (where there is more than one assessment) requires a minimum mark of 30%.

External Examiners should review and approve all coursework and examination papers which contribute to the overall degree classification and which contribute more than 30% to the overall module mark.

Failure may be compensated at the time of attempted level completion, up to a maximum of 30 credits across all levels of the programme. Major individual and group based project modules must not be compensated.

Non-credit bearing assessment

N/A

Borderline classifications (for undergraduate programmes only)

In considering borderline cases the Assessment Board shall raise the classification to the next level if all of the following criteria are met:

- At least 50% of the credits at level 6 fall within the higher classification.
- All level 6 modules must have been passed at the first attempt. (If failure has been compensated in accordance with Paragraph 10 above in respect of a Level 6 module, this module will not qualify as a pass at the first attempt and consequently, the borderline criteria will not be met);

The mark achieved for the level 6 Project module is within the higher classification

Ordinary Degree (for undergraduate programmes only)

N/A

Restrictions for trailing modules (for taught masters programmes only)

N/A

Prerequisites for proceeding to the research component (for MRes programmes only)

N/A

30 Quality Management

The Programme Leader will take overall responsibility for quality assurance and enhancement in line with the expectations detailed within the University's Programme Leaders Handbook. They will be supported by the associate dean with overall responsibility for engineering.

Each module will be assigned to a named module leader who will take responsibility for the delivery of the learning, teaching and assessment of the module. In keeping with the policies and procedures agreed by the University, the key mechanism for quality control and enhancement at programme level will be the processes and procedures associated with the annual monitoring cycle which is formalised through the production of the Annual Monitoring Report (AMR). The AMR evaluates the programme delivery drawing on feedback from students, professional bodies, external examiners and employers. The outcomes of the AMR are scrutinised and agreed at Programme Level with subsequent monitoring and review being formalised though the Faculty Board and the Learning and Teaching Quality Committee. Specific methods used for consulting students include the completion of Module Evaluation Questionnaires, Student Voice Forum and end of year group feedback sessions.

Feedback will be provided to students in the following ways:

- Via online student module evaluations (SEMs).
- Minutes and responses to Student Voice Forum (SVF) will be posted on the VLE.
- External Examiner reports and any associated actions arising will be presented to students in the November SVF.
- An overview of the draft AMR and associated actions will be presented to the SVF in November.
- An update on achievement of AMR Action plans will be provided in the March SVF.

The Programme team meet monthly in order to monitor programme performance. Issues discussed include recruitment and retention, student feedback, assessment calendars, approaches to teaching and learning, coordination of site visits and guest lecture plans. Peer observation is undertaken; this includes classroom-based observation as well as peer review of marking, assessment and feedback.

Whilst the Programme Leader is responsible for day to day management of the programme, Personal Tutors will ensure the welfare and development of each student on the programme throughout their period of study.

Feedback from students

Student Representatives will be elected from the student group and will attend the SVF meetings to provide a student input. The representative will also be able to bring urgent matters to the Programme Leader's attention by a direct approach.

Individual Progress review updates are required no less than every 61 days as part of the Degree Apprenticeship Programme. This facilitates individual feedback from both employer and apprentice throughout the programme.

Industrial Meetings

Regular meetings take place with industry's training managers, chief engineers, factory/site managers and regional managers. This gives an opportunity for their current and future training needs to be discussed and developed. Regular site visits

are undertaken in the context of the Faculty's part time students; however, this also contributes to our full-time provision.

Open Door Policy

Staff operate an open-door policy, whereby students may 'pop in' to have a chat about anything they may be concerned about or need some help with. The feedback from the students, indicate that this is the most useful method of communicating and usually resolves any issues immediately. There are now effective mechanisms for this to take place online (e.g. using MS teams).

Whilst the Programme Leader is responsible for day to day management of the programme, Personal Tutors will ensure the welfare and development of each student on the programme throughout their period of study.

31 Learning support

Institutional level support for students

The University has a range of departments that offer the support for students as:

- Library & IT Resources
- The Assessment Centre
- Disability Support Team
- Irlen Centre
- Careers Centre and Job Shop
- Zone Enterprise hub
- Chaplaincy
- Counselling & Wellbeing
- Student Funding and Welfare
- International Welfare
- Student Programmes Centre
- Glyndŵr Students' Union

Faculty support for students

All students at Wrexham Glyndŵr University are allocated a Personal Tutor whose main responsibility is to act as the first point of contact for their personal students and to provide pastoral and academic support throughout their studies at the University. It is a vital role to support student engagement and retention, and to help every student to success to the best of his or her ability.

Programme specific support for students

On the individual level, students will be supported in their learning in the following ways:

•Students will be provided with a programme handbook which details their programme of study and signposts them to University level support mechanisms, policies and regulations.
•Student academic support needs will be met in the following ways.

i. Individual tutorials with academic tutors to identify individual learning needs and aspirations which will then be monitored throughout the programme.
ii. Following confirmed assessment of learning needs, the team will make reasonable adjustments to assessments in order to reflect the needs of students with support needs.
iii. Tutors will use the VLE as a repository for course material and are actively engaging in developing opportunities to use this to provide feedback to students, promote online discussion and promote a VLE academic community.
iv. Pastoral support will be provided by a named personal tutor who will remain with them for the duration of their study. Should a student wish to change their personal tutor during their period of study this can be accommodated.
v. The University study skills tutor will be available to support and guide students for on-going individual and/or small group support on a self-referral basis throughout the year including the summer period.
vi. Induction programmes will include Study Skills and IT and the VLE.
vii. Each programme of study will have arrangements in place for a programme student representative. This representative will be invited to attend SVF meetings and where appropriate, relevant Institutional meetings.
viii. Each apprentice is assigned an industry mentor who will support the apprentice and their employer to identify relevant and appropriate projects as well as ensure that both the employer and apprentice needs are met.
ix. Tutorials/progress reviews are an embedded feature within the programme and will encourage the engagement of the employer within the programme ensuring an open three-way dialogue between the provider, employer and apprentice with regular feedback on technical and professional skills and competencies.
x. The relationship between the employer, apprentices and industry mentor is overseen by a member of the Work-Related Learning Unit within the Enterprise Office. This oversight provides an objective, non-academic and non-employer linked support facility for students.
xi. Where necessary the work-related learning unit will work with the employers to ensure that the employers are supported and trained to provide the best experience and support to their apprentices. The University provides complimentary mentoring, professional supervision and coaching courses to expand the skills of apprentice supervisors and managers to ensure that the learning that is applied to the workplace is effective and impactful.

32 Equality and Diversity

Glyndŵr University is committed to providing access to all students and promotes equal opportunities in compliance with the Equality Act 2010 legislation. This programme complies fully with the University's Equality and Diversity Policy https://www.glyndwr.ac.uk/en/AboutGlyndwrUniversity/EqualityandDiversity/ ensuring that everyone who has the potential to achieve in higher education is given the chance to do so.