

DIPLOMA GUIDE



Access to Higher Education Diploma (Engineering Science and Mathematics)

Access to HE

Apprenticeships

Digital

Employability & Enterprise

English & Maths

ESOL

Personal & Social Development

Professional Development

Vocational

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This qualification guide covers the following qualification:

Qualification Number	Learning Aim Code	Diploma Title	Validation Period
QAAQ004764	40014848	Access to Higher Education Diploma (Engineering Science and Mathematics)	1 August 2024 – 31 July 2029

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About this Access to HE Diploma Guide

This Access to HE Diploma Guide is intended for Tutors, Assessors, Internal Quality Assurers, Quality Managers and other staff working at or affiliated with Gateway Qualifications' Access to HE approved providers or prospective providers.

It sets out what is required of the learner in order to achieve the Access to HE Diploma. It also contains information specific to managing and delivering the Access to HE Diploma including specific quality assurance requirements.

The guide should be read in conjunction with the Gateway Qualifications Access to HE Provider Handbook and other publications available on the Gateway Qualifications website, which contain more detailed guidance on assessment and verification practice.

In order to deliver this Access to HE Diploma, your organisation must be a Gateway Qualifications recognised provider and approved to offer this Access to HE Diploma.

If your organisation is not yet recognised, or approved for this, please contact our Development Team to discuss.

Telephone: 01206 911211

Email: enquiries@gatewayqualifications.org.uk

Website: <https://www.gatewayqualifications.org.uk/advice-guidance/delivering-our-qualifications/become-recognised-centre/>

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1. Diploma Information

1.1 Overview of the Access to HE Diploma

The Access to Higher Education (Access to HE) Diploma (the Diploma) is a nationally recognised qualification with common requirements relating to the description of a learner's achievement. The Diploma is:

- a level 3 qualification, regulated by the Quality Assurance Agency for Higher Education (QAA)
- a unitised qualification, based on units of assessment which are structured in accordance with the Access to Higher Education unit specification
- a credit-based qualification, operated in accordance with the terms of the Access to Higher Education Diploma Specification
- a graded qualification, as determined by the Access to Higher Education Grading Scheme.

Details of the credit framework and requirements relating to the award of credit are provided within the Quality Assurance Agency Recognition Scheme for Access to Higher Education: The Access to Higher Education Diploma Specification 2024. The specification for the achievement of the Access to HE Diploma states that:

- the total credit achievement is 60 credits
- of these 60 credits, 45 must be achieved at level 3 from graded units containing academic subject content
- the remaining 15 credits may be achieved at level 2 or 3 from ungraded units.

Individual named Diplomas are identified by separate titles and are validated by Gateway Qualifications as an Access Validating Agency (AVA) recognised by the Quality Assurance Agency for Higher Education (QAA). Each Diploma has its own approved set of units of assessment, governed by rules of combination, which are appropriate to the subject of the particular Diploma. The common grading requirements apply to all individual Diplomas.

1.2 About this Diploma

The Diploma provides learners with a wide choice of units to support progression into Engineering Science and Mathematics degree programmes. The mandatory group of units ensures that learners have a good understanding of themes relevant to Engineering Science and Mathematics including key topics in Engineering Mathematics and Fundamental Physics for Engineering.

In addition to the graded units, learners must choose from a selection of mandatory and optional ungraded units to support underpinning skills for work within the sector and for further academic study.

1.3 Purpose

The primary purpose of Access to HE Diploma is to provide Higher Education progression opportunities for adults who, because of social, educational or individual circumstances, may have achieved few, if any, prior qualifications.

1.4 Aims

The qualification aims to:

- reintroduce learners to education, recognising prior skills and experience and the particular needs of those returning to learning
- offer learners a responsive, supportive return to learning at a level appropriate for entry to Higher Education
- develop the appropriate skills, such as study skills, necessary to enable learners to succeed in their Higher Education career
- address issues of widening participation and social inclusion
- raise learner awareness of the opportunities that a return to study and lifelong learning can bring.

1.5 Objectives

The objective of the Diploma is to enable learners to:

- satisfy the general academic requirements for entry to Higher Education
- prepare for Higher Education level study generally and in subject areas appropriate to an intended Higher Education course destination
- demonstrate appropriate levels of competence in subject-specific skills and knowledge
- demonstrate practical, transferable and academic skills
- develop their confidence and ability to cope with a return to education at an advanced level
- enhance personal and career opportunities
- develop as independent and lifelong learners.

1.6 Sector Subject Area

4.1 Engineering.

1.7 Target Groups

The target groups of this Diploma are as follows:

- Adults who, because of social, educational or individual circumstances, may have achieved few, if any, prior qualifications and wish to progress to Higher Education.
- Adults who have gone straight into industry (perhaps following apprenticeship routes) who wish to progress to Higher Education.

These specified target groups are appropriate to the proposed Diploma because it offers the following:

- Strong academic study skills that are built into the design of the Diploma and provide a thorough grounding to support progression.
- A lean delivery model in terms of units so learners are not overwhelmed.
- Ability to study a range of subjects as A-level learners do prior to choosing a focus for Higher Education.

The Diploma will address the learning needs of these target groups with underpinning skills to support academic study and provide a level 3 qualification linked to their proposed Higher Education study. A broad range of knowledge will be acquired to support an understanding of Engineering Science and Mathematics including, a range of topics such as, creating and understanding robots and control systems, engineering dynamics, electronics, statistics and engineering mathematics, ensuring that the learner is fully prepared for progression onto the relevant degrees.

1.8 Delivery Methods

Delivery methods for the Access to Higher Education Diploma (Engineering Science and Mathematics) can include:

- Face to face
- Blended learning.

It is recommended that if learners undertake the Creating Robots and Control Systems unit, they should complete Understanding Robots and Control Systems unit first.

It is strongly recommended that learners undertake the ungraded unit Study Skills for Higher Education as this will give learners the opportunity to develop skills which they will need to succeed at university or in further study.

Depending on the choice of units, assessment methods could include: academic poster, report, written questions and answers, open and closed book exams, worksheets, investigation, project, presentation, creation of programmes, short answer questions, practical activities, case study analysis, essay, SWOT analysis, controlled assessment, literature review or a portfolio of evidence.

1.9 Achievement Methodology

The Diploma will be awarded to learners who successfully achieve an approved combination of units through a Portfolio of Evidence that has been successfully verified and monitored through Gateway Qualifications' quality assurance process.

The qualification is therefore determined by successful achievement of all required unit assessments with no further requirement for additional/terminal assessment.

Learners will complete a planned, balanced and coherent programme of study, through which they will be able to acquire subject knowledge and develop academic skills that are relevant to the intended progression route(s). The units include a balance of units that allow the learners to study a broad range of topics until they have fully decided on their preferred route at degree level. The ungraded units have been chosen to support both progression into Higher Education and also allow learners to develop skills relevant to the subject area.

1.10 Geographical Coverage

This qualification has been approved for delivery in England. If a provider based in Wales would like to offer this qualification, please contact Gateway Qualifications.

1.11 Progression Opportunities

The rules of combination include both mandatory and optional units. Stakeholders including Access to HE providers, subject experts and Higher Education Institute (HEI) representatives have reviewed and provided feedback on the appropriateness and coherency of the rules of combination, including the balance and mix of mandatory and optional units, for the intended progression route(s). All units are subject to the unit review process as part of the Diploma development process, this includes as a minimum a review by a subject expert in terms of the academic challenge of the level and content and a review to ensure the unit meets QAA format specifications. Monitoring of standards will be managed through the quality assurance and moderation process.

Following successful completion of the Access to Higher Education Diploma (Engineering Science and Mathematics) learners may progress to the following:

- BEng (Hons) Automotive Engineering
- BEng (Hons) Aeronautic Engineering
- BEng (Hons) Biomedical Engineering
- BEng (Hons) Electrical and Electronic Engineering
- BEng (Hons) Electronic and Communication Engineering including a foundation year (4 years)
- BEng (Hons) Electronic Engineering
- BEng (Hons) General Engineering
- BEng (Hons) Mechanical Engineering
- BSc (Hons) Data Science
- BSc (Hons) Engineering (Electrical and Electronic) (Top-Up)
- BSc (Hons) Mathematics
- MMath (Hons) Mathematics

Learners may also progress onto an apprenticeship course such as:

- Aerospace Engineer
- Manufacturing Engineer (integrated degree)
- Product Design and Development Engineer (integrated degree)
- Rail and Rail Systems Senior Engineer (integrated degree)

The qualification does not provide guaranteed entry to UK Higher Education.

1.12 Equity, Diversity and Inclusion

At Gateway Qualifications we aim to create an environment which celebrates differences and strives for equitable opportunities and outcomes for all. More than a mere commitment, this Equity, Diversity, and Inclusion Policy stands as a framework, informing every aspect of the work we do. It is our aim to support our staff and learners, including apprentices, of all abilities, ensuring the development, delivery, and awarding of qualifications in a fair and inclusive manner.

For full details please see the [Equity, Diversity and Inclusion Policy](#).

2. Learner Entry Requirements

2.1 Age

The course is designed to meet the needs of adults who have been out of full-time education for a significant period of time and who have not achieved some or any formal qualifications. Generally, this would apply to learners over the age of 19.

2.2 Prior Qualifications

There is no requirement for learners to have achieved prior qualifications or units before undertaking this qualification.

Providers may ask learners for a pass in GCSEs, normally Maths and English, as a mark of ability at level 2 as an appropriate entry requirement to a level 3 course. This also establishes HEI destination qualifications for Nursing, teaching, etc. where these are required as part of the HEI application.

2.3 Prior Skills/Knowledge/Understanding

There is no requirement for learners to have prior skills, knowledge or understanding. However, learners would be expected to be able to demonstrate the skills and ability to study at level 3.

2.4 Access to Qualifications for Learners with Disabilities or Specific Needs

Gateway Qualifications and recognised providers have a responsibility to ensure that the process of assessment is robust and fair and allows the learner to show what they know and can do without compromising the rigour of the assessment used to evidence the criteria.

Gateway Qualifications has a duty to permit a reasonable adjustment where an assessment arrangement would disadvantage a learner with a disability, medical condition or learning need.

The following adaptations are examples of what may be considered for the purposes of facilitating access, as long as they do not impact on any competence standards being tested or provide an unfair advantage:

- adapting assessment materials
- adapting the physical environment for access purposes
- adaptation to equipment
- assessment material in an enlarged format or Braille
- permitting readers, signers, scribe, prompter, practical assistant
- changing or adapting the assessment method
- extra time, e.g. assignment extensions
- transcript

- use of assistive software where the software does not influence the learner's ability to demonstrate the skills, knowledge or understanding, e.g. use of spellchecker in an English assessment
- using assistive technology
- use of closed-circuit television (CCTV), coloured overlays, low vision aids
- use of a different assessment location
- use of information and communications technology (ICT)/responses using electronic devices.

It is important to note that not all the adjustments (as above) will be reasonable, permissible or practical in particular situations. The learner may not need, nor be allowed the same adjustment for all assessments.

Learners should be fully involved in any decisions about adjustments/adaptations. This will ensure that individual needs can be met, whilst still bearing in mind the specified assessment criteria for a particular qualification.

A reasonable adjustment for a particular learner may be unique to that individual and may not be included in the list of available adjustments specified above.

Details on how to make adjustments for learners is set out in the Reasonable Adjustments and Special Considerations Policy and Procedures.

2.5 Additional Requirements/Guidance

Learners must have a UK, including the Channel Islands and Isle of Man, address (including BFO) to be registered on an Access to HE Diploma.

2.6 Integrity in Learner Recruitment

It is vital that providers recruit with integrity. Providers must ensure that learners have the correct information and advice on their selected qualification(s) and that the qualification(s) will meet their needs.

The recruitment process must include the provider undertaking an assessment of each potential learner and making justifiable and professional judgements about the learner's potential to successfully complete the course and achieve the qualification. Such an assessment must identify, where appropriate, the support that will be made available to the learner to facilitate access to the qualification.

3. Achieving the Access to HE Diploma

3.1 Qualification Specification

The generic requirements for the Access to HE Diploma are that:

- learners must achieve a total of 60 credits, of which 45 credits must be achieved at level 3 from graded units that are concerned with academic subject content and the remaining 15 credits can be achieved at level 2 or level 3 from units which are ungraded.
- all learners must register for at least one 6-credit or one 9-credit unit as part of their programme of study; this can be a graded or ungraded unit.
- the maximum number of credits that can be made up from 6-credit or 9-credit units is 30 credits; this can be from graded and ungraded 6-credit and 9-credit units.

The approved rules of combination for this Diploma are detailed below.

Where there is a selection of optional units within the permitted rules of combination, the selection of units to be used to form the Diploma course must be made before the learners are registered. Learners must be registered with Gateway Qualifications within 6 weeks (42 days) of starting their course, and units must be selected within 12 weeks from starting their course.

3.2 Rules of Combination

The structure sets out the units required to achieve the Access to HE Diploma, consisting of:

- Graded Academic Subject Content mandatory units – level 3
- Graded Academic Subject Content optional units – level 3
- Research Graded Academic Subject Content units – level 3
- Ungraded units – level 2/3.

Learners must achieve a total of 60 credits, of which 45 credits must be achieved at level 3 from graded units which are concerned with academic subject content and the remaining 15 credits must be achieved at level 3 from units which are ungraded. All learners must register for at least one 6-credit or one 9-credit unit as part of their programme of study; this can be a graded or ungraded unit. The

maximum number of credits that can be made up from 6-credit or 9-credit units is 30 credits; this can be from graded and ungraded 6-credit and 9-credit units.

Mandatory Units: Graded Academic Subject Content

Learners must complete 15 credits from the mandatory graded units.

Unit Code	Unit Title	Level	Credits	Content	Suggested Assessment Methods	Assessment Volume
QU034958	Engineering Mathematics	3	9	Academic	Exam x 3	2 hours closed book x 3
QU034966	Fundamental Physics for Engineering	3	6	Academic	Exam x 2	2 hours closed book x 2

Optional Units: Research Graded Academic Subject Content

Learners must achieve 6 credits from this group.

Unit Code	Unit Title	Level	Credits	Content	Suggested Assessment Methods	Assessment Volume
QU035909	Research: Practical Investigation Project for Engineering Science	3	6	Academic	Risk assessment Project diary Project proposal Research review Report Evaluation	250 words 500 words 250 words 500 words 1250 words 250 words
QU035070	Research: Practical Investigation Project for Engineering Science and Maths	3	6	Academic	Risk assessment Project diary Project proposal Research review Report Evaluation	250 words 500 words 250 words 500 words 1250 words 250 words

Unit Code	Unit Title	Level	Credits	Content	Suggested Assessment Methods	Assessment Volume
QU035046	Research Skills for Engineering Science	3	6	Academic	Proposal Report Evaluation	500 words 2000 words 500 words
QU035048	Research Skills for Engineering Science and Maths	3	6	Academic	Proposal Report Evaluation	500 words 2000 words 500 words

Optional Units: Graded Academic Subject Content

Learners must achieve 24 credits from this group.

Unit Code	Unit Title	Level	Credits	Content	Suggested Assessment Methods	Assessment Volume
QU034892	Advanced Calculus	3	3	Academic	Exam	2 hours closed book
QU034870	Creating Robots and Control Systems	3	3	Academic	Project - plan, create, test and evaluate a robot and control system	800 - 1000 words plus simple working robot and control system
QU034942	Digital Electronics	3	3	Academic	Exam	2 hours closed book
QU034950	Electric Circuits	3	3	Academic	Exam	2 hours closed book
QU034952	Electronics	3	6	Academic	Scientific practical and accompanying report	1500 words and experiments

Unit Code	Unit Title	Level	Credits	Content	Suggested Assessment Methods	Assessment Volume
QU034954	Engineering Design: CAD	3	3	Academic	Portfolio of evidence containing - 2D and 3D designs to include printouts/screen shots of completed work with annotation to clearly show the process followed to complete the tasks. Report	Portfolio of evidence 500 words 250 words
QU034956	Engineering Dynamics	3	3	Academic	Exam	1.5 hours open book
QU034960	Engineering Materials	3	3	Academic	Report Engineering diagram	1000 words 250 words
QU034962	Engineering Statics and Structures	3	3	Academic	Exam	1.5 hours open book
QU034608	Fundamental Chemistry	3	6	Academic	Investigation with report Exam	1500 words 1.5 hours open book
QU034968	Further Engineering Mathematics	3	6	Academic	Exam x 2	2 hours closed book x 2
QU035979	Introduction to Computer Programming	3	3	Academic	Creation of program x 2 with developmental diary	Program x 2 and 500 words
QU035092	Statistics	3	3	Academic	Exam	2 hour closed book
QU035094	Structural Mechanics in Construction and Civil Engineering	3	6	Academic	Practical project and report	Practical project with a 500 word report and containing mathematical and graphical calculations
QU034858	Understanding Robots and Control Systems	3	3	Academic	Report	1500 words

Mandatory Units: Ungraded

Learners must achieve 3 credits from this group.

Unit Code	Unit Title	Level	Credits	Content	Suggested Assessment Methods	Assessment Volume
QU034710	Preparation for Higher Education	3	3	Other	Research Application form and personal statement Prepared Q&A	Review of research, course and decision 500 words Application form and personal statement 750 words* Prepared Q&A 250 words (*4000 characters or roughly 450 word UCAS limit for personal statement)

Optional Units: Ungraded

Learners must achieve 12 credits from this group.

Unit Code	Unit Title	Level	Credits	Content	Suggested Assessment Methods	Assessment Volume
QU034692	Academic Writing Skills	3	3	Other	Notes from a range of sources Essay plan Essay	300 words 200 words 1000 words
QU035154	Chemistry for Engineering	3	3	Other	Exam	1.5 hours open book

Unit Code	Unit Title	Level	Credits	Content	Suggested Assessment Methods	Assessment Volume
QU034696	Communication - Speaking and Listening	3	3	Other	Oral presentation Group discussion Self evaluation	15 minutes 15-20 minutes and supporting materials 500 words 200 words
QU034700	Computer Data Protection	3	3	Other	Structured questions Case study analysis	750 words 750 words
QU034702	Developing Professional Attributes	3	3	Other	SWOT analysis Professional development plan Essay	200 words 300 words 1000 words
QU035158	Electricity and Magnetism	3	3	Academic	Exam	2 hours closed book
QU035160	Fluid Mechanics	3	3	Academic	Exam	2 hours closed book
QU034708	Optimising Examination Performance	3	3	Other	Examination preparation plan Examination paper from another unit Reflective journal	500 words 1-2 hours 800 words
QU035172	Physics for Engineering	3	3		Exam	1.5 hours open book
QU034714	Presenting Information Using ICT	3	3	Other	Notes from a range of sources Presentation Presentation lecture notes and handouts	300 words Presentation 200 words

Unit Code	Unit Title	Level	Credits	Content	Suggested Assessment Methods	Assessment Volume
QU034716	Problem Solving in the Workplace	3	3	Other	Project - analyse and propose solutions to at least two workplace problems including justification for selected solution	1500 words
QU034718	Professional Interpersonal Behaviours	3	3	Other	SWOT analysis Case study Reflective account	250 words 750 words 500 words
QU034720	Promoting Wellbeing and Building Resilience	3	3	Other	Report	1500 words
QU034722	References and Reliability of Sources	3	3	Other	Literature review	1500 words including recognised form of referencing and bibliography
QU034726	Spreadsheets	3	3	Other	Portfolio of evidence	Spreadsheet and 500 words supporting notes
QU034730	Study Skills for Higher Education	3	3	Other	Report Summary Samples of notes Study timetable Revision timetable Essay in controlled conditions Presentation	500 words Approx. 150 words Samples of notes x 2 To cover 2 weeks To cover 2 weeks 1.5 hrs 10 minutes including visual aids and appropriate resources

Unit Code	Unit Title	Level	Credits	Content	Suggested Assessment Methods	Assessment Volume
QU034732	Sustainability Project	3	3	Other	Project plan Report Reflection	250 words 1000 words 250 words
QU034734	The Fundamentals of Environmental Sustainability	3	3	Other	Report	1500 words
QU035184	Thermodynamics	3	3	Academic	Exam	2 hours closed book
QU035186	Understanding Customer Needs in Engineering	3	3	Academic	Report Potential design solutions with evaluation x 2	750 words 250 words
QU034736	Writing Reports	3	3	Other	Report plan Presentation of report plan Report	Plan 2-3 minutes 1000 words

3.3 Additional Completion Requirements

Learners will probably require a pass in Maths and English at GCSE level or Functional Skills at level 2 to progress onto a degree course. Providers should guide learners to ensure they are aware of Higher Education course entry requirements.

3.4 Recognition of Prior Learning

Recognition of prior learning is a process that considers if a learner can meet the specified assessment requirements through knowledge, understanding or skills that they already possess and that can contribute towards the attainment of the qualification they wish to undertake.

For further information, please refer to Annex C, Access to Higher Education Diploma Specification:

[The Access to Higher Education Diploma Specification, July 2023 \(gaa.ac.uk\) - Applicable to new students registering from 1 August 2024](https://www.gaa.ac.uk/ahed-specification)

3.5 Credit Accumulation and Transfer

A maximum of 30 credits will be permitted to be exempted from this Diploma on the basis of relevant prior certificated achievement; a maximum of 30 credits at level 2 (where applicable) or level 3 may be awarded through the accreditation of prior experiential learning.

3.6 Credit Values and Notional Learning Hours

The credit value of a unit indicates the number of credits that may be awarded to a student for the successful achievement of all the learning outcomes of that unit. The determination of the credit value of a unit is a matter of professional judgement for AVAs, exercised within their validation processes. These judgements are made on the basis of 'notional learning hours', where one credit represents those learning achievements that can be demonstrated in 10 notional learning hours. The concept of 'notional learning hours' therefore takes into account all learning which may be relevant to the achievement of the learning outcomes, including directed and private study, practical and project work, assignments and assessment time.

4. Access to HE Units of Assessment

4.1 Unit Specification

A common unit specification applies to all units within Access to HE Diplomas. The unit specification follows a standard template covering the following elements:

- title
- level
- credit value
- unit code
- learning outcomes
- assessment criteria
- type of unit (academic subject content or not).

The units of assessment for this Access to HE Diploma are contained within this Access to HE Diploma Guide.

4.2 Academic Subject Content

A unit is classified as having academic subject content if the knowledge and skills covered within the unit are directly related to the subject of the name of the Access to HE Diploma. Units will not meet the academic subject content requirement if they are principally concerned with personal development, generic English or maths, or study skills.

4.3 Graded and Ungraded Units

Graded Academic Subject Content units

Grading operates at unit level and only applies to units that have been approved by Gateway Qualifications within a named Access to HE Diploma. Learner achievement for graded units is recorded as pass, merit or distinction for each unit, as set out in the QAA Access to Higher Education Grading Scheme, 2024 (available via the link below) - Applicable to new learners registering from 1 August 2024. Graded units will also satisfy the criteria of academic subject content.

There is a common set of broad, generic grading standards which are used as the basis for all grading judgements on all courses. The three grading standards relate to different aspects of performance that are relevant to the assessment of a learner's readiness for higher education:

1. Knowledge and Understanding
2. Subject Specific Skills
3. Transferable Skills

All three grading standards are used with every graded unit and across every assignment within a graded unit.

Each of the three grading standards includes a set of more detailed component items which describe types of performance associated with the standard. For each component item there are parallel statements at merit and distinction, which describe increasingly demanding standards of achievement. (The distinction grade does not introduce new or 'higher level' capabilities or skills compared with merit.) When tutors use the standards for the grading of a particular unit, they select the most appropriate sub-components of the standards. In the case of Grading Standard 3 (Transferable Skills), tutors also choose at least two out of the three components, before selecting the relevant sub-components. All three sub-components must be used across the Diploma, and component b (see The Access to HE Grading Scheme Section B: The Grading Standards) must be used for all research project units. This allows the generic framework to be tailored to the specific nature of different subjects.

Grading standards and units

- In units with more than one assignment it is not permissible to award a grade to each assignment; grading takes place at the level of the unit only.
- In units with more than one assignment, it is not permissible to use individual assignments to grade individual grading standards (for example, assignment one cannot be used to grade only Knowledge and Understanding with assignment two used to grade both Subject skills and Transferable skills).
- The choice of sub-components at unit level is normally made during the construction of the unit assessment plan and should be appropriate to cover the range of individual assignments. Therefore, the sub-components are not assigned when a unit is validated.
- Only when all assignments for an individual unit are assessed and the tutor has determined that the learner has met all the Learning Outcomes and Assessment Criteria for all unit assignments (and therefore has passed the unit) will grading of the unit take place. Grades for individual assignments must not be awarded.
- A grade indicator for each grading standard is awarded at pass, merit or distinction. The tutor will review all assignments associated with the individual unit and determine if the learner has demonstrated the standard for the grades of merit or distinction or whether the outcome remains as a pass.
- The tutor must record in writing their justification for the grade indicator awarded for each grading standard.
- The tutor reviews the three grade indicators that have been awarded for the unit and determines the overall grade for the unit. The overall grade is a recommendation to the awards board, where it will be considered and confirmed by the Board.

The full grading standards specification can be accessed via the following link, which also provides detailed information on grading:

[Access to Higher Education Diploma Specification and Grading Scheme 2024 \(gaa.ac.uk\)](https://www.gaa.ac.uk)

Ungraded Units

Ungraded units are either achieved or not achieved. Ungraded units will satisfy the criteria of study skills or academic subject content and will be level 2 or level 3 units.

4.4 Revisions to Access to HE Units of Assessment

Gateway Qualifications reserves the right to review and amend units of assessment and will issue providers notification of the changes to the units of assessment. Gateway Qualifications undertakes regular unit reviews to ensure currency of units; providers are required to use updated versions where units are replaced.

5. Assessment and Quality Assurance

5.1 Provider Requirements

Providers must be approved by Gateway Qualifications and are required to ensure that:

- the main base is in the UK, including the Channel Islands and Isle of Man,
- systems are in place to ensure that only learners with a UK address (including BFO) are registered for an Access to HE Diploma
- there are clear arrangements for the day-to-day operational management and coordination of Access to HE Diploma delivery
- there are appropriate facilities and resources at each site, and for each mode of delivery
- staff have the professional competence and skills necessary to teach and assess the units available on the Diploma
- arrangements for providing pre-course guidance to applicants and criteria for selection and admission to Access to HE courses, which are consistent with QAA's requirements with respect to admissions
- the expertise and resources to provide information, advice and guidance on higher education applications and progression opportunities are available
- systems are in place for maintaining secure records of individual learners' registration and achievement
- internal moderation arrangements meet Gateway Qualifications' requirements
- arrangements are in place for internal course monitoring and self-evaluation and feedback
- procedures and criteria for the recognition of prior learning meet Gateway Qualifications' requirements
- quality assurance procedures are in place relating to the delivery of provision, including transparent processes for handling appeals and complaints.

Providers should refer to the Gateway Qualifications Access to Higher Education Provider Handbook for further information on providers requirements.

5.2 Staffing Requirements

Providers are required to ensure that:

- staff have the professional competence and skills necessary to teach and assess the units available on the Diploma
- staff have the expertise required to provide information, advice and guidance on higher education applications and progression opportunities.

5.3 Facilities and Resources

Learners will require access to a science laboratory for science units and computers with relevant software for CAD, graphs and charts and other engineering units.

5.4 Assessment

Recommended assessment methods for each unit within a Diploma are identified in section 3.2 Rules of Combination. To provide greater flexibility for providers to develop an assessment strategy that meets the needs of their individual learners, providers can select an alternative assessment method for the unit(s) within the Diploma using the equivalence guidance published on the Gateway Qualifications website.

The guidance includes the expected assessment volume for different assessment methods and should enable providers to choose alternatives whilst ensuring that the same rigour of assessment is maintained in comparison to any other three-credit or six-credit unit.

Through the Diploma guides, standardisation activities and moderation, Gateway Qualifications will provide information about unit content, delivery and assessment methods to ensure the required standards of achievement are fulfilled, whenever and wherever the Diploma is delivered.

5.5 Quality Assurance Requirements

Gateway Qualifications applies a Quality Assurance model to the Access to HE Diploma of:

- internal assessment and internal verification by the provider
- moderation by Gateway Qualifications consisting of provider moderation and sampling.

These processes are set out within the Quality Assurance section of the Gateway Qualifications Access to Higher Education Provider Handbook.

5.6 Additional Requirements/Guidance

There are no additional requirements that learners must satisfy in order for assessment to be undertaken and the unit/qualification to be awarded.

6. Unit Details

Mandatory Units: Graded Academic Subject Content

Access to HE Diploma Unit

Title:	Engineering Mathematics		
Unit Code:	QU034958		
Unit Level:	Level 3	Credit Value:	9
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 5 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand pure maths in Engineering.	1.1. Explain the importance of algebra, logarithms and trigonometry in calculus.
	1.2. Explain the importance of calculus in Engineering.
2. Be able to use algebra.	2.1. Simplify algebraic expressions.
	2.2. Expand bracketed expressions.
	2.3. Manipulate algebraic fractions.
	2.4. Re-arrange algebraic expressions.
	2.5. Solve inequalities.
	2.6. Solve problems involving the Factor theorem.
	2.7. Solve problems involving the remainder theorem.
3. Be able to use logarithms and exponentials.	3.1. Solve problems involving common logarithms.
	3.2. Solve problems involving exponentials.
4. Be able to solve problems with trigonometry.	4.1. Solve problems involving SOHCAHTOA.
	4.2. Solve problems involving the sine rule.
	4.3. Solve problems involving the cosine rule.
	4.4. Solve problems involving radian measure.

	4.5. Solve problems involving trigonometric identities.
	4.6. Solve trigonometric equations.
5. Be able to use calculus.	5.1. Differentiate a polynomial function.
	5.2. Differentiate a trigonometric function.
	5.3. Differentiate an exponential function.
	5.4. Solve problems involving tangents.
	5.5. Solve problems involving the normal to a curve.
	5.6. Solve problems involving stationary points.
	5.7. Solve problems involving indefinite integration.
	5.8. Solve problems involving definite integration.

Access to HE Diploma Unit

Title:	Fundamental Physics for Engineering		
Unit Code:	QU034966		
Unit Level:	Level 3	Credit Value:	6
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 4 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Know about mechanics.	1.1. Explain how Newton's laws of motion can be applied to physical objects and systems.
	1.2. Solve problems involving linear motion.
	1.3. Solve problems involving forces.
	1.4. Solve problems involving momentum.
	1.5. Solve problems involving work.
	1.6. Solve problems involving power.
2. Know about matter and heat.	2.1. Describe properties of solids, liquids and gases in terms of the particle model of matter.
	2.2. Solve problems involving specific heat capacity.
	2.3. Explain the variation of gas pressure, with volume and temperature, in terms of a model of molecular motion and collisions.
	2.4. Solve problems involving the Ideal gas equation.
	2.5. Solve problems involving thermal expansion.
3. Know about waves and light.	3.1. Define a wave.
	3.2. Compare the differences between transverse and longitudinal waves.
	3.3. Explain the trends and patterns shown by the main features of an electromagnetic spectrum.

	3.4. Solve problems involving the wave formula $C=f \times \lambda$.
	3.5. Solve problems involving the lens formula $\frac{1}{f} = \frac{1}{u} \pm \frac{1}{v}$.
4. Know about electricity and atomic physics.	4.1. Explain the differences between alpha, beta and gamma radiation.
	4.2. Solve problems involving radioactive decay.
	4.3. Solve problems involving direct current.
	4.4. Solve problems involving alternating current.
	4.5. Solve problems involving electronic circuits.

Optional Units: Research Graded Academic Subject Content

Access to HE Diploma Unit

Title:	Research: Practical Investigation Project for Engineering Science		
Unit Code:	QU035909		
Unit Level:	Level 3	Credit Value:	6
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 4 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Be able to plan a practical investigation project.	1.1. Identify and agree a practical investigation project, located within a knowledge domain relevant to the named Diploma.
	1.2. Produce a hypothesis and clear aims for the investigation project.
	1.3. Identify any ethical, practical or safety issues and how these will be managed/overcome.
	1.4. Produce a risk assessment.
	1.5. Maintain a record of project progress through all stages of research, development and completion.
2. Be able to undertake a practical investigation.	2.1. Carry out research from a wide range of sources.
	2.2. Develop an appropriate investigation.
	2.3. Identify the variables and explain how they can be controlled, where necessary.
	2.4. Carry out the investigation safely, using appropriate practical skills and techniques.
	2.5. Analyse the results of the investigation with reference to relevant theory.
3. Know how to present the project.	3.1. Present the body of work in a style appropriate to the knowledge domain with clear conclusions.

	3.2. Use appropriate technical terminology fluently.
	3.3. Reference all findings using a recommended style of referencing.
4. Be able to evaluate own research project.	4.1. Reflect on the design and methodology of the project.
	4.2. Evaluate the body of work in relation to aims and hypothesis.
	4.3. Identify recommendations for the future.

Access to HE Diploma Unit

Title:	Research: Practical Investigation Project for Engineering Science and Maths		
Unit Code:	QU035070		
Unit Level:	Level 3	Credit Value:	6
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 4 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Be able to plan a practical investigation project.	1.1. Identify and agree a practical investigation project, located within a knowledge domain relevant to the named Diploma.
	1.2. Produce a hypothesis and clear aims for the investigation project.
	1.3. Identify any ethical, practical or safety issues and how these will be managed/overcome.
	1.4. Produce a risk assessment.
	1.5. Maintain a record of project progress through all stages of research, development and completion.
2. Be able to undertake a practical investigation.	2.1. Carry out research from a wide range of sources.
	2.2. Develop an appropriate investigation.
	2.3. Identify the variables and explain how they can be controlled, where necessary.
	2.4. Carry out the investigation safely, using appropriate practical skills and techniques.
	2.5. Analyse the results of the investigation with reference to relevant theory.
3. Know how to present the project.	3.1. Present the body of work in a style appropriate to the knowledge domain with clear conclusions.
	3.2. Use appropriate technical terminology fluently.

	3.3. Reference all findings using a recommended style of referencing.
4. Be able to evaluate own research project.	4.1. Reflect on the design and methodology of the project.
	4.2. Evaluate the body of work in relation to aims and hypothesis.
	4.3. Identify recommendations for the future.

Access to HE Diploma Unit

Title:	Research Skills for Engineering Science		
Unit Code:	QU035046		
Unit Level:	Level 3	Credit Value:	6
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 5 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand research methods and their uses.	1.1. Explain the use of different research methods for a specific research purpose.
2. Be able to plan a research project.	2.1. Establish research aims related to the research topic.
	2.2. Produce a detailed research proposal with specific timescales and milestones for completion of the research.
	2.3. Justify its relevance for the subject area.
3. Be able to carry out a research project.	3.1. Carry out research that adheres to: <ul style="list-style-type: none"> a) the research proposal b) ethical guidelines c) agreed timescales.
4. Be able to produce a report on research using a standard format.	4.1. Report on research using a standard format.
	4.2. Evaluate findings in relation to the research aims.
	4.3. Use an accepted method of referencing source material.
5. Be able to evaluate a research project.	5.1. Evaluate a research proposal and its procedures.
	5.2. Evaluate methods used to research the subject area.

Access to HE Diploma Unit

Title:	Research Skills for Engineering Science and Maths		
Unit Code:	QU035048		
Unit Level:	Level 3	Credit Value:	6
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 5 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand research methods and their uses.	1.1. Explain the use of different research methods for a specific research purpose.
2. Be able to plan a research project.	2.1. Establish research aims related to the research topic.
	2.2. Produce a detailed research proposal with specific timescales and milestones for completion of the research.
	2.3. Justify its relevance for the subject area.
3. Be able to carry out a research project.	3.1. Carry out research that adheres to: <ul style="list-style-type: none"> a) the research proposal b) ethical guidelines c) agreed timescales.
4. Be able to produce a report on research using a standard format.	4.1. Report on research using a standard format.
	4.2. Evaluate findings in relation to the research aims.
	4.3. Use an accepted method of referencing source material.
5. Be able to evaluate a research project.	5.1. Evaluate a research proposal and its procedures.
	5.2. Evaluate methods used to research the subject area.

Optional Units: Graded Academic Subject Content

Access to HE Diploma Unit

Title:	Advanced Calculus		
Unit Code:	QU034892		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand the use of advanced integration and differentiation in engineering.	1.1. Explain, by giving examples, how differentiation can be used to help solve problems in an engineering context.
	1.2. Explain, by giving examples, how integration can be used to help solve problems in an engineering context.
2. Be able to use advanced differentiation.	2.1. Differentiate from first principles.
	2.2. Perform differentiation using the laws of logarithms.
	2.3. Solve problems involving parametric equations.
	2.4. Solve problems involving implicit functions.
3. Be able to use advanced integration.	3.1. Integrate a product.
	3.2. Perform integration using partial fractions.
	3.3. Use integration to find the area under a curve.
	3.4. Solve problems involving differential equations.

Access to HE Diploma Unit

Title:	Creating Robots and Control Systems		
Unit Code:	QU034870		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand how robot and control systems can be used in business.	1.1. Explain how robots and control systems can support a business to improve productivity.
2. Be able to design a robot and control system.	2.1. Analyse a given problem to identify a range of potential solutions using robotics and control.
	2.2. Select one of these solutions, justifying the choice of hardware and software to solve the problem.
	2.3. Design a clear specification for the chosen solution.
3. Be able to create, document and test a working model robot.	3.1. Use the design to create a simple working robot with a control system.
	3.2. Design a test plan for the robot and control system.
	3.3. Implement the test plan for the robot and control system.
	3.4. Review the finished product.

Access to HE Diploma Unit

Title:	Digital Electronics		
Unit Code:	QU034942		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand semiconductor theory.	1.1. Explain n-type and p-type silicon.
	1.2. Explain diodes.
	1.3. Explain types of transistors.
2. Understand logic gates and circuits.	2.1. Explain what Boolean logic is.
	2.2. Explain how logic gates work within a logic circuit.
3. Be able to use logic gates and circuits.	3.1. Solve problems involving truth tables.
	3.2. Solve problems involving Boolean algebra.
	3.3. Solve problems involving logic circuits.
	3.4. Solve problems involving combinational logic circuits.
	3.5. Solve problems involving K-maps.

Access to HE Diploma Unit

Title:	Electric Circuits		
Unit Code:	QU034950		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand direct and alternating currents.	1.1. Explain the difference between direct and alternating current.
	1.2. Explain why electrical energy is transmitted on the national grid by alternating current (AC) rather than direct current (DC).
2. Be able to solve problems related to direct current (DC).	2.1. Solve problems involving charge, current and potential difference.
	2.2. Solve circuit problems involving resistors in series and/or parallel.
	2.3. Solve problems involving electromotive force.
	2.4. Use Kirchhoff's laws to solve circuit problems.
	2.5. Solve circuit problems involving energy and power in DC circuits.
	2.6. Solve circuit problems involving capacitors.
3. Be able to solve problems relating to alternating current (AC).	3.1. Calculate inductive resistance of an inductor.
	3.2. Calculate the capacitive resistance of a capacitor.
	3.3. Solve problems involving resistance, inductance and capacitance.
	3.4. Calculate the impedance of an AC circuit.
	3.5. Solve problems involving power in AC circuits.

Access to HE Diploma Unit

Title:	Electronics		
Unit Code:	QU034952		
Unit Level:	Level 3	Credit Value:	6
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 5 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand concepts and devices appropriate to analogue and digital electronic systems.	1.1. Apply the correct terminology to describe semi-conductor n- and p- type materials.
2. Know how to carry out information searches on manufacturers' data sheets	2.1. Describe the operation and compare the characteristics of a range of electronic components on manufacturers' data sheets.
3. Be able to select appropriate devices for specified purposes.	3.1. Identify and select components from manufacturers' data sheets to design simple circuits.
4. Be able to test devices and systems against specifications.	4.1. Construct and test the circuits against the specification.
5. Be able to communicate test results effectively.	5.1. Report on the tests completed using correct terminology and technical terms.

Indicative Content:

AC 2.1: This may include: p-n junction diode, zener diode, bipolar transistor, unipolar transistor, class A small signal amplifier, transistor models, series voltage regulator, combinational logic gates.

AC 3.1: This may include simple direct current. power supply, series voltage regulator, simple transistor switching unit, single stage class A amplifier, simple combinational logic circuits.

Access to HE Diploma Unit

Title:	Engineering Design: CAD		
Unit Code:	QU034954		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand how CAD can be used to support the design process.	1.1. Explain benefits of using CAD within the 2D and 3D design process.
	1.2. Explain how CAD can be used to test and modify 2D and 3D designs.
2. Be able to use 2D design.	2.1. Produce 2D geometric objects.
	2.2. Produce 2D objects to given measurements.
	2.3. Perform editing techniques on 2D objects.
	2.4. Create a layout plan.
3. Be able to use 3D design.	3.1. Create symbols and link these to text using Computer-Aided Design.
	3.2. Create a plan with symbols repeated at least once.
	3.3. Create 3D objects.
	3.4. Produce drawing.

Indicative Content:

AC 3.4: For example: using layers, classes, sheets.

Access to HE Diploma Unit

Title:	Engineering Dynamics		
Unit Code:	QU034956		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand the difference between kinematics and kinetics.	1.1. Explain the meaning of the common terms, speed, velocity, acceleration, and simple harmonic motion used to define kinematics.
	1.2. Explain the meaning of the common terms, force and torque used to define kinetics.
2. Be able to solve problems related to kinematics.	2.1. Solve problems involving motion with constant acceleration.
	2.2. Solve problems involving motion with variable acceleration.
	2.3. Solve problems involving circular motion.
	2.4. Solve problems involving simple harmonic motion.
3. Be able to solve problems related to kinetics.	3.1. Solve problems involving forces acting on a single particle.
	3.2. Solve problems involving forces acting on connected particles.
	3.3. Solve problems involving linear momentum.
	3.4. Solve problems involving work and energy.

Access to HE Diploma Unit

Title:	Engineering Materials		
Unit Code:	QU034960		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Know the properties of common engineering materials.	1.1. Describe the properties of a range of different types of engineering materials.
	1.2. Explain how heat treatment processes alter the properties of ferrous materials.
	1.3. Interpret the results of mechanical tests on different engineering materials.
2. Be able to use engineering symbols and abbreviations.	2.1. Produce an engineering drawing using accurate engineering symbols and abbreviations.
3. Understand the importance of sustainable use of engineering materials.	3.1. Analyse the environmental impact of a given engineering product or activity.
	3.2. Evaluate how materials can be used sustainably in a given engineering product or activity.

Access to HE Diploma Unit

Title:	Engineering Statics and Structures		
Unit Code:	QU034962		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Know about statics.	1.1. Solve problems involving the equilibrium of a particle.
	1.2. Explain friction.
	1.3. Solve problems involving friction.
	1.4. Solve problems involving the moment of a force.
	1.5. Solve problems involving centre of mass.
2. Know about stress and strain	2.1. Explain the difference between direct stress and shear stress.
	2.2. Solve problems involving stress and strain.
3. Be able to solve problems using structures.	3.1. Solve problems involving forces in pin-jointed frames.
	3.2. Solve problems involving second moments of area.
	3.3. Solve problems involving the bending of a beam.

Access to HE Diploma Unit

Title:	Fundamental Chemistry		
Unit Code:	QU034608		
Unit Level:	Level 3	Credit Value:	6
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 6 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand chemical nomenclature both inorganic and organic.	1.1. Determine names by IUPAC nomenclature and formulae of inorganic compounds.
	1.2. Determine names by IUPAC nomenclature and formulae of organic compounds.
2. Understand the use of analytical techniques in chemical analysis.	2.1. Explain different types of spectroscopy and their applications.
	2.2. Explain chromatography and its uses.
3. Understand how to balance chemical equations.	3.1. Explain chemical equations and how to balance them.
4. Understand the basics of chemical bonding.	4.1. Explain different types of chemical bonding, relating them to the position of the elements in the Periodic Table.
5. Understand how to use chemical equipment.	5.1. Describe the use of a variety of equipment found in a chemistry laboratory.
	5.2. Analyse errors in an experiment to suggest ways of improvement.
6. Be able to relate chemistry to own life.	6.1. Analyse how chemistry is used in everyday situations such as the home or the body.

Access to HE Diploma Unit

Title:	Further Engineering Mathematics		
Unit Code:	QU034968		
Unit Level:	Level 3	Credit Value:	6
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 6 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Know about matrices.	1.1. Explain key terms in matrices.
	1.2. Use Cramer's rule.
	1.3. Multiply two matrices.
	1.4. Find the determinant of a matrix.
	1.5. Find the inverse of a matrix.
	1.6. Solve simultaneous equations using matrices.
2. Know about vectors.	2.1. Explain the application of vectors in Engineering.
	2.2. Solve problems involving vector arithmetic.
	2.3. Solve problems involving the Cartesian components of a vector.
3. Be able to use coordinate geometry.	3.1. Solve problems involving straight lines.
	3.2. Solve problems involving circles.
4. Be able to solve problems using series.	4.1. Solve problems involving arithmetic progressions.
	4.2. Solve problems involving arithmetic series.
	4.3. Solve problems involving a geometric series.
5. Be able to complete problems involving functions.	5.1. Find the value of a function.
	5.2. Solve problems involving composite functions.
	5.3. Solve problems involving inverse functions.

6. Be able to use complex numbers.	6.1. Perform arithmetic using complex numbers.
	6.2. Solve equations involving complex numbers.
	6.3. Find the modulus of a complex number.
	6.4. Find the argument of a complex number.

Access to HE Diploma Unit

Title:	Introduction to Computer Programming		
Unit Code:	QU035979		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand data.	1.1. Explain the meaning of variables and constants.
	1.2. Explain what a meaningful identifier is.
2. Be able to implement simple programs.	2.1. Declare and use meaningful variables and constants.
	2.2. Declare appropriate simple data types.
	2.3. Use meaningful identifiers.
	2.4. Write programs including arithmetic and simple input and formatted output statements.
	2.5. Use spaces, blank lines and indentation to make program easier to read and understand.
3. Be able to use program control structures.	3.1. Select appropriate relational operators.
	3.2. Use two selection statements.
	3.3. Use three iteration statements.

Access to HE Diploma Unit

Title:	Statistics		
Unit Code:	QU035092		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 4 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Be able to illustrate statistical data.	1.1. Construct a cumulative frequency curve.
	1.2. Construct a histogram.
2. Know how to perform statistical calculations.	2.1. Calculate the median from a cumulative frequency curve.
	2.2. Calculate the lower quartile from a cumulative frequency curve.
	2.3. Calculate the upper quartile from a cumulative frequency curve.
	2.4. Using a histogram calculate the median.
	2.5. Using a histogram calculate the mode.
3. Be able to perform calculations using grouped data.	3.1. Calculate the mean.
	3.2. Calculate the variance.
	3.3. Calculate the standard deviation.
4. Be able to perform correlation calculations.	4.1. Calculate the product-moment coefficient.
	4.2. Calculate the rank correlation coefficient.

Access to HE Diploma Unit

Title:	Structural Mechanics in Construction and Civil Engineering		
Unit Code:	QU035094		
Unit Level:	Level 3	Credit Value:	6
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Know how structural elements behave under load.	1.1. Explain the structural qualities and behaviour of materials used within construction.
	1.2. Analyse the behaviour of beams and columns under load.
2. Be able to solve structural mechanics problems.	2.1. Determine reactive forces and plot shear force and bending moment diagrams for: <ul style="list-style-type: none"> a) a simply supported beam b) a cantilever beam.
	2.2. Determine the forces acting in a determinate frame, using mathematical and graphical techniques.
	2.3. Determine the maximum stress in a short column under axial and eccentric loads.
3. Be able to design structures.	3.1. Produce suitable section sizes for: <ul style="list-style-type: none"> a) axially loaded columns b) simply supported beams subject to combined loading.
	3.2. Evaluate the benefits of using computer software in structural analysis and design.

Indicative Content:

AC 1.1: This must include, as a minimum, steel, timber and concrete and may also include other materials such as plastics, glass and composites.

AC 1.1 and 1.2: This includes: Explaining the significance and relationship between shear force and bending moments and explaining the significance of the point of contraflexure.

Access to HE Diploma Unit

Title:	Understanding Robots and Control Systems		
Unit Code:	QU034858		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Graded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Be able to analyse the effectiveness of different types of robotic devices and how they are used to complete routine tasks.	1.1. Compare and contrast different types of robotic devices, explaining their uses.
	1.2. Explain how different sensors are used to control a robot.
	1.3. Analyse the strengths and weaknesses of using a robot to complete routine tasks: <ul style="list-style-type: none"> • in the home • in manufacturing industry • in medical applications • in agricultural environments.
2. Understand legal and ethical issues related to the use of robots.	2.1. Identify legislation and guidance which is relevant to the development and use of robots and control systems.
	2.2. Discuss ethical issues which should be considered in the development and use of robots and control systems.
3. Understand how to design and create a robot and control system.	3.1. Describe equipment required to create a robot and control system.
	3.2. Discuss design tools which can be used to design a robot and control system.
	3.3. Explain the importance of creating a test plan for the robot and control system.

Mandatory Units: Ungraded

Access to HE Diploma Unit

Title:	Preparation for Higher Education		
Unit Code:	QU034710		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Other		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 4 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Be able to identify opportunities for Higher Education.	1.1. Use information sources to research Higher Education courses.
	1.2. Analyse processes and procedures necessary to gain entry to Higher Education.
	1.3. Analyse information on Higher Education courses and make appropriate realistic choices.
2. Be able to complete a Higher Education application form.	2.1. Complete an application form with attention to detail, meeting a given deadline.
	2.2. Summarise and evaluate personal experiences, achievements and goals, communicating these clearly in a personal statement.
3. Be able to prepare for the interview process.	3.1. Conduct further personal research into courses at relevant institutions in preparation for an interview.
	3.2. Prepare provisional answers to anticipated questions, making use of previous experience and recent study.
4. Be able to plan and prepare for the transition to Higher Education.	4.1. Analyse the personal and academic qualities needed for successful study in Higher Education.

	4.2. Explain likely practical problems and barriers in moving to Higher Education and seek strategies for overcoming these.
	4.3. Analyse the nature of study in Higher Education.

Optional Units: Ungraded

Access to HE Diploma Unit

Title:	Academic Writing Skills		
Unit Code:	QU034692		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Other		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Be able to analyse a specific question in the context of a particular subject area.	1.1. Interpret the meaning and implications of the specific question.
	1.2. Identify terms and concepts relevant to an understanding of the specific question.
2. Be able to produce a written response in an appropriate format.	2.1. Devise a detailed plan for a written response to the specific question.
	2.2. Use the plan to write a coherent and logical response to the specific question.
	2.3. Present the response in an appropriate format.
3. Be able to use language, style and conventions appropriate to academic writing.	3.1. Write accurately following accepted written language conventions.
	3.2. Use appropriate style and register showing an awareness of audience.
	3.3. Use accurately a standard form of referencing reflecting a range of sources.

Access to HE Diploma Unit

Title:	Chemistry for Engineering		
Unit Code:	QU035154		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Other		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 4 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand chemical structure.	1.1. Explain patterns and trends in the periodic table.
	1.2. Explain the impact of electron repulsion on chemical structure.
	1.3. Explain structure in organic chemistry.
	1.4. Explain isomerism in organic chemistry.
2. Understand chemical bonding.	2.1. Explain ionic bonding.
	2.2. Explain covalent bonding.
	2.3. Explain metallic bonding.
3. Be able to complete chemical equations.	3.1. Balance chemical equations.
	3.2. Solve problems involving chemical formulae and equations.
4. Understand petroleum engineering.	4.1. Explain how crude oil is distilled.
	4.2. Explain the fractions obtained from crude oil.

Access to HE Diploma Unit

Title:	Communication - Speaking and Listening		
Unit Code:	QU034696		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Other		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Be able to give a short presentation about a straightforward subject.	1.1. Speak clearly using language, tone and style appropriately to the purpose, subject, audience and situation.
	1.2. Present information in a structured sequence so that ideas and concepts are easily followed by the audience.
	1.3. Use relevant supporting material to illustrate presentation.
	1.4. Respond sensitively to questions from the audience.
2. Be able to take part in discussions.	2.1. Give and obtain information and exchange ideas in discussion on both familiar and unfamiliar subjects.
	2.2. Organise contributions to match the demands of the discussion, use vocabulary precisely, deal with sensitive issues and take account of the audience, subject, situation and purpose of the discussion and own role in it.
	2.3. Take forward the discussion and create opportunities for others to contribute by asking follow-up questions, listening to and interpreting other points of view sensitively or inviting others to contribute their views.
	2.4. Respond appropriately to questions.

3. Be able to reflect on own performance in presentations and discussions.	3.1. Reflect on own performance: a) in the presentation b) in the discussion.
	3.2. Identify areas for improvement in speaking and listening activities.

Access to HE Diploma Unit

Title:	Computer Data Protection		
Unit Code:	QU034700		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Other		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Be able to analyse the application of current UK legislation relating to the use and protection of data.	1.1. Explain the purpose of legislation related to data protection.
	1.2. Explain current legislation relating to the use and protection of data when using computers.
2. Understand the need for control of data to ensure that it is accurate and secure.	2.1. Explain the need for control of data to ensure that it is accurate and secure.
	2.2. Use examples to examine when data should or should not be controlled.
3. Be able to analyse how data protection legislation is applied in different contexts.	3.1. Analyse examples of the application of current data protection legislation in: <ul style="list-style-type: none"> a) a work context b) a study context.

Access to HE Diploma Unit

Title:	Developing Professional Attributes		
Unit Code:	QU034702		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Other		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 4 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Be able to evaluate differences between positive and negative professional attributes.	1.1. Evaluate both positive and negative professional attributes. 1.2. Link positive attributes to the role of a professional.
2. Be able to reflect on own professional attributes and areas for development.	2.1. Produce a SWOT analysis of own professional attributes. 2.2. Evaluate SWOT analysis. 2.3. Produce an individual professional development plan linked to the SWOT analysis.
3. Be able to analyse which attributes are considered important by employers in a specific sector and are valued in the workplace.	3.1. Analyse which professional attributes are valued highly by employers within a specific sector. 3.2. Analyse why these professional attributes are important in a sector-specific workplace.
4. Be able to analyse the link between professional attributes and emotional intelligence.	4.1. Analyse the links between professional attributes and emotional intelligence.

Access to HE Diploma Unit

Title:	Electricity and Magnetism		
Unit Code:	QU035158		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Know about magnetism.	1.1. Describe the properties of permanent magnets.
	1.2. Sketch the lines of force around a wire carrying a current.
	1.3. Sketch the lines of force around a solenoid.
2. Be able to solve problems with magnetism.	2.1. Solve problems involving magnetism.
3. Be able to solve problems related to electricity.	3.1. Perform calculations involving resistors in series.
	3.2. Perform calculations involving resistors in parallel.
	3.3. Perform calculations involving current, voltage and power for a network of resistors.
	3.4. Solve problems involving direct current.
	3.5. Solve problems involving alternating current.

Access to HE Diploma Unit

Title:	Fluid Mechanics		
Unit Code:	QU035160		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand hydrostatics.	1.1. Explain the difference between fluid pressure and atmospheric pressure.
	1.2. Explain the Archimedes' principle.
2. Be able to solve problems related to hydrostatics.	2.1. Solve problems involving fluid pressure.
	2.2. Solve problems involving atmospheric pressure.
	2.3. Solve problems involving Archimedes' principle.
	2.4. Solve problems involving buoyancy.
	2.5. Describe pressure indicating devices.
3. Know about fluid flow.	3.1. Explain the types of fluid flow.
	3.2. Describe methods of measuring fluid flow.
	3.3. Describe the advantages and disadvantages of flowmeters.
	3.4. Solve problems involving Bernoulli's equation.

Access to HE Diploma Unit

Title:	Optimising Examination Performance		
Unit Code:	QU034708		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Other		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 4 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Be able to effectively prepare for an examination.	1.1. Produce an effective and realistic preparation plan.
	1.2. Identify priorities in the preparation plan.
	1.3. Reflect on the plan's effectiveness to identify future improvements.
2. Be able to complete competent answers, which demonstrate subject knowledge.	2.1. Follow all instructions accurately to complete the correct number and combination of questions.
	2.2. Include the salient aspects in answers, with the accuracy and detail required by the subject.
	2.3. Show in answers an in-depth understanding of the arguments/problems, as required by the subject.
	2.4. Apply knowledge or learning coherently in support of arguments and/or to resolve problems.
3. Know how to minimise common examination pitfalls.	3.1. Identify common pitfalls in examination performance.
	3.2. Evaluate potential strategies to avoid examination pitfalls.
4. Know how to minimise stress to enhance examination performance.	4.1. Recognise own stressors.
	4.2. Develop strategies to minimise own stressors.

Access to HE Diploma Unit

Title:	Physics for Engineering		
Unit Code:	QU035172		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Other		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Know about matter and energy.	1.1. Describe properties of solids, liquids and gases.
	1.2. Solve problems involving Hooke's law.
	1.3. Solve problems involving the ideal gas equations.
	1.4. Solve problems involving mechanical energy.
	1.5. Solve problems involving electrical energy.
2. Know about waves and light.	2.1. Explain transverse and longitudinal waves.
	2.2. Solve problems involving the wave formula.
	2.3. Explain the electromagnetic spectrum.
	2.4. Solve problems involving refractive index.
	2.5. Solve problems involving the lens formula.
3. Know about nuclear and medical physics.	3.1. Explain alpha, beta and gamma radiation.
	3.2. Solve problems involving radioactive decay.
	3.3. Explain medical applications of radiation.

Access to HE Diploma Unit

Title:	Presenting Information Using ICT		
Unit Code:	QU034714		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Other		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Be able to analyse ways of using ICT to present information.	1.1. Find and analyse examples of information presented through ICT.
	1.2. Explain which forms of presentation suit different types of information.
	1.3. Analyse examples of information presented with clear layout and style.
	1.4. Explain the importance of copyright when presenting information.
2. Be able to use a range of ICT software applications to present information.	2.1. Present text information for a given purpose using a variety of features in word processing software.
	2.2. Present information for a given purpose using a variety of features in spreadsheet software.
	2.3. Present information for a given purpose using a variety of features in presentation software.
3. Be able to integrate ICT software to present information.	3.1. Plan how to present integrated information using a range of ICT formats.
	3.2. Present information to meet a specific brief.
	3.3. Save information in a structured format so it can be found easily and justify choice.

Access to HE Diploma Unit

Title:	Problem Solving in the Workplace		
Unit Code:	QU034716		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Other		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand factors that may influence problem-solving in the workplace.	1.1. Explain factors which influence the choice of solution for problems.
2. Know how to solve problems in the workplace.	2.1. Analyse the nature of specific workplace problems.
	2.2. Explain the actions that need to be taken to solve the workplace problems.
	2.3. Analyse the potential consequences and impact of proposed actions.
3. Be able to apply solutions to workplace problems.	3.1. Select preferred solution to workplace problems.
	3.2. Justify the choice of solution.

Access to HE Diploma Unit

Title:	Professional Interpersonal Behaviours		
Unit Code:	QU034718		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Other		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Be able to analyse how verbal and non-verbal communication is used in a professional interpersonal interaction.	1.1. Analyse the verbal and non-verbal skills used in a range of contexts within a given profession.
2. Understand the importance of an awareness of cultural diversity for a given profession.	2.1. Explain the importance of an awareness of cultural diversity across a range of contexts for a given profession.
3. Be able to evaluate own interpersonal skills, analysing strengths and areas to develop.	3.1. Evaluate own interpersonal skills, analysing strengths and areas to develop.
	3.2. Evaluate ways of addressing areas to develop.

Access to HE Diploma Unit

Title:	Promoting Wellbeing and Building Resilience		
Unit Code:	QU034720		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Other		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 4 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand the physical and psychological impact of pressure and stress on mental wellbeing.	1.1. Explain the physical and psychological impact of pressure and stress on mental wellbeing.
2. Be able to analyse the connection between mental wellbeing and resilience.	2.1. Analyse the connection between mental wellbeing and resilience.
3. Understand the factors that can improve wellbeing and build resilience.	3.1. Explain factors that can improve wellbeing.
	3.2. Explain factors that can negatively affect wellbeing and how to avoid them.
	3.3. Explain the behaviours associated with resilience.
	3.4. Explain ways to build resilience.
4. Be able to explore how to manage an individual's mental wellbeing and the support available to them.	4.1. Evaluate the methods for managing and maintaining mental wellbeing and building resilience.
	4.2. Analyse the types of support available from different sources.

Access to HE Diploma Unit

Title:	References and Reliability of Sources		
Unit Code:	QU034722		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Other		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand the difference between primary and secondary sources.	1.1. Explain the difference between primary and secondary sources.
2. Be able to use a variety of primary source materials as evidence.	2.1. Analyse primary sources for a specific context.
	2.2. Evaluate the primary sources, taking into account: authorship, purpose, audience, and underlying values and beliefs.
3. Be able to evaluate the uses and limitations of secondary sources.	3.1. Compare and evaluate secondary sources considering the following: use of sources, 'facts', background material, interpretation.

Access to HE Diploma Unit

Title:	Spreadsheets		
Unit Code:	QU034726		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Other		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 7 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Know how to design and store a spreadsheet.	1.1. Design a spreadsheet appropriate to a user's requirements.
	1.2. Create and store the spreadsheet.
	1.3. Evaluate the spreadsheet in terms of meeting the user's needs.
2. Be able to retrieve and modify an existing spreadsheet.	2.1. Modify the spreadsheet design/content in response to user feedback.
3. Be able to print a spreadsheet.	3.1. Print or display whole or part spreadsheets/formulae with a variety of print layout options.
4. Be able to enhance user readability.	4.1. Use suitable formatting options for displaying text and numeric values.
	4.2. Define and use conditional formatting to limit input error and give suitable messages to users.
5. Be able to use spreadsheet functions.	5.1. Develop a spreadsheet solution using a range of mathematical functions.
6. Be able to use graphical facilities.	6.1. Use an appropriate graph type.
	6.2. Draw pie, bar, line graphs with appropriate labels attached.
7. Know how to use additional features within the spreadsheet environment.	7.1. Use advanced sorting, protecting and filtering facilities on a spreadsheet.
	7.2. Analyse data using pivot tables.

Access to HE Diploma Unit

Title:	Study Skills for Higher Education		
Unit Code:	QU034730		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Other		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 4 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Be able to manage and organise own study time.	1.1. Produce a personal schedule of study to accommodate own time constraints.
	1.2. Devise a strategy for prioritising and organising coursework to meet deadlines.
2. Know how to prepare for exams effectively.	2.1. Prepare a revision timetable for exams.
	2.2. Evaluate strategies to support effective revision based on own learning preferences.
3. Be able to retrieve information from reliable sources.	3.1. Retrieve information from a range of reliable written sources using a range of reading skills.
	3.2. Scan source material, evaluating information to create accurate and detailed notes to suit purpose.
	3.3. Demonstrate the use of a recognised referencing system for retrieved information.
4. Be able to present information using a range of approaches.	4.1. Present information using different formats for academic purposes.

Access to HE Diploma Unit

Title:	Sustainability Project		
Unit Code:	QU034732		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Other		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Be able to plan a project to promote sustainability within a specific sector.	1.1. Identify a project to promote sustainability within a chosen sector, justifying choice.
	1.2. Produce a project plan for own project including: <ul style="list-style-type: none"> • Aims and objectives • Ethical consideration • Timescales • Methods • Resources required • Any Health and Safety considerations.
2. Be able to carry out a sustainability project.	2.1. Carry out a sustainability project.
	2.2. Produce a report on the findings of the sustainability project.
3. Be able to review the success of a sustainability project.	3.1. Evaluate the extent to which the project has met the aims and objectives.

Access to HE Diploma Unit

Title:	The Fundamentals of Environmental Sustainability		
Unit Code:	QU034734		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Other		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 4 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand the importance of sustainability within a specific sector.	1.1. Explain what is meant by sustainability.
	1.2. Explain the importance of supporting environmental sustainability within a chosen sector.
2. Know how environmental sustainability can be supported within the chosen sector.	2.1. Describe environmental issues relevant to a chosen sector.
	2.2. Describe the impact of the chosen sector on the environment.
	2.3. Explain how these environmental issues could be minimised within a chosen sector.
	2.4. Analyse factors to consider when working towards environmental sustainability in a chosen sector.
3. Know how the 3 Rs of sustainability can be applied within the chosen sector.	3.1. Explain the 3 Rs of sustainability.
	3.2. Analyse ways that a chosen sector can implement the 3 Rs of sustainability.
4. Understand the importance of waste management within the chosen sector.	4.1. Explain the importance of having a waste management strategy within a chosen sector.
	4.2. Explain environmental hazards or risks that could be caused by poor waste management within a chosen sector.

Access to HE Diploma Unit

Title:	Thermodynamics		
Unit Code:	QU035184		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand heat energy and transfer.	1.1. Describe temperature measuring devices.
	1.2. Describe conduction, convection and radiation.
2. Be able to solve problems related to heat energy and transfer.	2.1. Solve problems involving specific heat capacity.
	2.2. Solve problems involving latent heat.
3. Know about thermal expansion.	3.1. Describe thermal expansion and contraction.
	3.2. Solve problems involving the coefficient of linear expansion.
	3.3. Solve problems involving the coefficient of superficial expansion.
	3.4. Solve problems involving the coefficient of cubic expansion.

Access to HE Diploma Unit

Title:	Understanding Customer Needs in Engineering		
Unit Code:	QU035186		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Academic Subject Content		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 3 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Understand customer requirements in engineering.	1.1. Explain the importance of meeting customer requirements when asked to provide an engineering solution.
	1.2. Identify and explain a range of societal, user and business considerations which should be explored when designing engineering solutions to meet customer requirements.
	1.3. Explain the importance of following internal policies and current legislation when designing engineering solutions.
2. Be able to analyse an engineering design brief to identify and meet customer requirements.	2.1. Analyse customer requirements in an engineering design brief.
	2.2. Identify risks related to design brief requirements.
	2.3. Explore how to mitigate risks related to design brief requirements.
3. Be able to design an engineering solution to meet a customer's brief.	3.1. Produce two potential engineering design solutions to meet the requirements of a design brief.
	3.2. Evaluate engineering design solutions in relation to the customer brief.

Indicative Content:

AC 1.2: This could include health and safety, diversity, inclusion, cultural, societal, environmental and commercial matters, codes of practice and industry standards.

Access to HE Diploma Unit

Title:	Writing Reports		
Unit Code:	QU034736		
Unit Level:	Level 3	Credit Value:	3
Grading Type:	Ungraded		
Academic Subject Content/Other:	Other		
Suggested Assessment Details:	Refer to Assessment Grid		

This unit has 5 learning outcomes.

LEARNING OUTCOMES	ASSESSMENT CRITERIA
The learner will:	The learner can:
1. Be able to use the report title to determine the content.	1.1. Analyse the requirements of the question or task.
	1.2. Analyse the main points which must be covered, omitting irrelevant detail.
2. Be able to plan and present the plan for a report.	2.1. Produce a plan for a report.
	2.2. Present the plan for the report.
3. Be able to structure a report.	3.1. Produce an introduction which sets out how the subject will be dealt with in the report.
	3.2. Use evidence and examples to strengthen information provided in the report.
	3.3. Use linking sentences in paragraphs to produce a cohesive report.
	3.4. Provide a conclusion which sums up the main findings of the report.
4. Be able to write in an appropriate style.	4.1. Write in a detached, balanced, and objective manner.
	4.2. Write formal English avoiding emotive language and colloquialisms.
5. Be able to use the conventions for acknowledging sources.	5.1. Acknowledge the work of other authors both during the report and in a list of references.
	5.2. Use recognised approaches for acknowledging sources.

7. What to do next

For existing Providers, please contact your named Development Manager.

For organisations not yet registered as a Gateway Qualifications Provider, please contact:

Tel: 01206 911211

Email: enquiries@gatewayqualifications.org.uk

8. Gateway Qualifications

Gateway Qualifications, a not-for-profit registered charity, is an Awarding Organisation and authorised Access Validating Agency based in Colchester.

We work with learning providers and industry experts to design and develop qualifications that benefit the learner and the employer.

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