

SEG Awards Level 2 Certificate in Essential Skills for Further Study in Science and Engineering

Qualification Guidance

Level 2 - 603/4785/5



About Us

Skills and Education Group Awards is a leading national awarding organisation which has a long-established reputation for developing and awarding high quality vocational qualifications. We are committed to developing qualifications, which help learners and organisations, by cultivating the relevant skills for learning, skills for employment and skills for life.

We work with hundreds of centres nationally and thousands of learners achieve our qualifications each year.

Skills and Education Group Awards has an on-line registration system to help customers register learners on our qualifications, units and exams. In addition it provides features to view exam results, invoices, mark sheets and other information about learners already registered.

The system is accessed via a web browser by connecting to our secure website using a username and password: [Skills and Education Group Online Registration System](#)

Sources of Additional Information

The Skills and Education Group Awards website www.skillsandeducationgroupawards.co.uk provides access to a wide variety of information.

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Issue	Date	Details of change
1.0	01/01/20	New Qualification Guide
1.1	11/10/19	Unit summaries added
1.2	01/09/21	Updated review date
1.3	30/08/2024	Updated review date
1.4	14/07/2025	Updated review date to 31/08/2028

This guide should be read in conjunction with the Indicative Content document **version 1.1** which is available on our secure website using the link above.

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This is a live document and as such will be updated when required. It is the responsibility of the approved centre to ensure the most up-to-date version of the Qualification Guide is in use. Any amendments will be published on our website and centres are encouraged to check this site regularly.

Introduction

The SEG Awards Level 2 Certificate in Essential Skills for Further Study in Science and Engineering is a nationally recognised qualification primarily designed to enable learners with few or no formal or appropriate qualifications to gain the knowledge and skills they need to progress on to Level 3.

This qualification has been endorsed by Open College Network Yorkshire and Humber Region and has been recognised as an entry route onto a Skills and Education Group Access to HE Diploma and as a first step academic progression route into higher education.

The SEG Awards Level 2 Certificate in Essential Skills for Further Study in Science and Engineering is a regulated qualification.

Pre-requisites

This qualification is designed for learners who are returning to study after a period of time outside of formal education, that wish to progress to Level 3. The qualification is small enough that up to two GCSEs can be studied alongside, where learners are hoping to eventually progress to a HE course that requires GCSEs.

Aims

The SEG Awards Level 2 Certificate in Essential Skills for Further Study in Science and Engineering is aimed primarily at learners who wish to pursue a career in one of the Science or Engineering professions which require academic study at university, but who are not yet ready to study at Level 3. This may be because of gaps in their skills or knowledge, perhaps because their schooling was interrupted or disrupted, or because they are returning to study after bringing up a family. Learners who may be in this position include those who need to:

- build a foundation of knowledge and understanding in an unfamiliar academic area
- prepare for higher level study after some time away from formal education
- build the confidence, skills, knowledge and understanding required to progress on to Level 3
- achieve an appropriate formal qualification in order to progress to Level 3 study such as A-Levels, Scottish Highers or an Access to HE Diploma

Target Group

This qualification is designed for learners who are returning to academic study after a period of time outside of formal education, that wish to progress to Level 3. The qualification is small enough that up to two GCSEs can be studied alongside, where learners are hoping to eventually progress to a HE course that requires GCSEs (for example Science/ Engineering).

Typical progression routes after this qualification include:

- Access to HE Diploma, then University
- A-Level study
- Access to HE Diploma, then a Higher Apprenticeship
- Scottish Highers

Skills and Education Group Awards expects approved centres to recruit with integrity on the basis of a learner's ability to contribute to and successfully complete all the requirements of a unit(s) or the full qualification.

This qualification is for learners who are 16+.

Content Overview

The SEG Awards Level 2 Certificate in Essential Skills for Further Study in Science and Engineering is made up of 25 credits so learners will need to study for approximately 200 hours. All units are at Level 2.

Learners will choose a selection of units from Group A and Group B.

Group A consists of units designed to build learner confidence in using a range of generic study skills that they will require if they are to succeed in Access to HE.

Group B contains units designed to help learners develop the skills, knowledge and understanding they will need in order to progress to the Skills and Education Group Access to HE Diplomas (Science or Engineering).

The SEG Awards Level 2 Certificate in Essential Skills for Further Study in Science and Engineering is assessed by a variety of tasks which learners will complete and build into a portfolio of work as their learning progresses. These may include essays, reports, experiments, tests, presentations or research projects in order to give learners experience of the range of methods that will be used to assess their performance when they progress to the Access to HE course. Tasks used to assess learning in non-academic units will be contextualised wherever possible, to ensure that the assessment is relevant.

This qualification is not available in an apprenticeship and is not primarily designed to lead directly to employment. However, it will support learners who are starting on their journey to

a career in a range of science or engineering professions, which is likely to increase their prospects of gaining employment in the future. Examples include chemistry, civil or electrical engineering, electronics, environmental science, mathematics, mechatronics, physics and structural engineering.

Qualification Structure and Rules of Combination

Rules of Combination: Level 2 Certificate in Essential Skills for Further Study in Science and Engineering

To achieve this qualification learners must achieve a minimum of 25 credits. All units in this qualification are at Level 2.

Learners will choose a selection of units from Group A and Group B.

A maximum of 5 credits **must** be taken from Group A.

The remainder of the credits **must** come from Group B.

Unit	Unit Number	Level	Credit Value	GL
Group A				
Academic Writing Skills	A/507/0728	2	3	24
Building a Personal Career Portfolio	T/504/7495	2	3	24
Critical Thinking	M/504/7592	2	2	16
Improving Own Learning and Performance	A/504/8275	2	3	24
Information Literacy	D/505/1976	2	3	24
Managing your Own Learning	K/505/8915	2	3	24
Organisation and Evaluation of Study	T/507/0744	2	3	24
Plagiarism	F/505/2117	2	1	7
Practical Presentation Skills	M/504/8659	2	3	24
Research Skills	L/504/8202	2	3	24
Researching and Understanding Opportunities for Study in HE	K/507/0742	2	3	24
Working in a Group	A/505/2164	2	3	24

Unit	Unit Number	Level	Credit Value	GL
Group B				
Aspects of Energy	Y/504/8767	2	3	24
Chemistry in Society	F/507/0732	2	3	24
Chemistry of Life	J/507/0733	2	6	48
Chemistry: Structure and Changes	Y/504/9482	2	3	24
Co-ordination of the Human Body	K/507/0739	2	3	24
Data Handling and Algebra	M/507/0743	2	3	24
Design Project	R/617/6628	2	3	24
Electric Circuits and Electromagnetism	T/617/6654	2	3	24
Enabling Calculations for Engineering	Y/617/6629	2	6	48
Exploring Waves and Optics	T/617/6704	2	3	27
Fundamentals of Physics	D/504/8768	2	3	24
Health and Safety in an Engineering Environment	L/617/6708	2	1	8
Human Life Processes	L/507/0748	2	3	24
Human Physiology	M/504/9763	2	6	48
Human Sex and Reproduction	F/507/0746	2	3	24
Introduction to Engineering	K/617/6635	2	3	24
Introduction to Physical Science	T/617/6637	2	3	24
Life Processes and Living Things	Y/505/4682	2	3	24
Materials and Their Properties	H/505/4684	2	3	24
Newtonian Dynamics	F/617/6639	2	3	24
Numeracy in Context – Planning a Mathematical Project	A/505/4030	2	3	24

Unit	Unit Number	Level	Credit Value	GL
Group B				
Physical Processes	T/505/4687	2	3	24
Physics	H/617/6651	2	4	36
Physiology and Exercise	K/504/9759	2	6	48
Resources for Nursing	T/504/9702	2	3	24
Shape Using Pythagoras and Trigonometry	J/505/5374	2	3	24
Skeleton and Muscles	T/504/9764	2	3	24
Understanding the Physical Development of Children and Young People	D/504/8589	2	3	24
Work Experience	A/504/9362	2	1	8

Assessment

The SEG Awards Level 2 Certificate in Essential Skills for Further Study in Science and Engineering is assessed by a variety of tasks which learners will complete and build into a portfolio of work as their learning progresses. These may include essays, reports, experiments, tests, presentations or research projects in order to give learners experience of the range of methods that will be used to assess their performance when they progress to the Access to HE course. Tasks used to assess learning in non-academic units will be contextualised wherever possible, to ensure that the assessment is relevant.

Internal assessment, internal and external moderation. Specific requirements and restrictions may apply to individual units within qualifications. Please check unit and qualification details for specific information.

Practice Assessment Material

Skills and Education Group Awards confirm that there is no practice assessment material for this qualification.

Teaching Strategies and Learning Activities

Centres should adopt a delivery approach which supports the development of all individuals. The aims and aspirations of all the learners, including those with identified special needs or

learning difficulties/disabilities, should be considered and appropriate support mechanisms put in place.

Progression Opportunities

The SEG Awards Level 2 Certificate in Essential Skills for Further Study in Science and Engineering is primarily designed to enable learners with few formal or appropriate qualifications to progress to the Skills and Education Group Awards Access to HE Diplomas (Science or Engineering).

From this they can progress to a range of science or engineering courses at university, such as Civil Engineering, Dietetics, Electronical or Electrical Engineering etc.

The qualification was developed in consultation with a number of colleges that offer the Access to Higher Education Diplomas, in order to ensure it would provide learners with the relevant skills, knowledge and understanding to be able to progress. By careful selection of appropriate units, learners will be able to pursue a personalised programme to help them to prepare effectively for the Skills and Education Group Access to HE Diplomas (Science or Engineering), even if they have significant gaps in their prior knowledge and understanding, or have been out of education for some time.

This qualification is not available in an apprenticeship and is not primarily designed to lead directly to employment. However, it will support learners who are starting on their journey to a career in a range of science or engineering professions, which is likely to increase their prospects of gaining employment in the future. Examples include chemistry, civil or electrical engineering, electronics, environmental science, mathematics, mechatronics, physics and structural engineering.

Centres should be aware that Reasonable Adjustments which may be permitted for assessment may in some instances limit a learner's progression into the sector. Centres must therefore inform learners of any limits their learning difficulty may impose on future progression, if applicable.

Resource Requirements

There are no special resources needed for this qualification although appropriate teaching and learning and resources will be made available by providers.

Tutor/Assessor Requirements

We require those involved in the assessment process to be suitably experienced and/or qualified. In general terms, this usually means that the assessor is knowledgeable of the subject/occupational area to a level above that which they are assessing.

Assessors should also be trained and qualified to assess or be working towards appropriate qualifications.

Those responsible for Internal Quality Assurance (IQA) must be knowledgeable of the subject/occupational area to a suitable level to carry out accurate quality assurance practices and processes.

Language

These specifications and associated assessment materials are in English only.

Qualification Summary

Qualification								
Level 2 Certificate in Essential Skills for Further Study in Science and Engineering								
Qualification Purpose	Prepare for further learning or training and/or develop knowledge and/or skills in a subject area							
Age Range	Pre 16		16-18	✓	18	✓	19+	✓
Regulation	The above qualifications are regulated by Ofqual							
Assessment	<ul style="list-style-type: none"> Internal assessment Internal and external moderation 							
Type of Funding Available	See FaLA (Find a Learning Aim)							
Qualification/Unit Fee	See the Skills and Education Group Awards website for current fees and charges							
Grading	Pass To achieve a Pass, learners must complete all units as stated in the rule of combination (RoC)							
Operational Start Date	01/09/2019							
Review Date	31/08/2028							
Operational End Date								
Certification End Date								
Guided Learning (GL)	200 hours							
Total Qualification Time (TQT)	250 hours							
Skills and Education Group Awards Sector	Science and Engineering							
Ofqual SSA Sector	2.1 Science							
Support from Trade Associations								
Administering Office	See the Skills and Education Group Awards website							

Unit Details

PAL2U01 - Academic Writing Skills

Unit Reference	A/507/0728
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit will enable learners to demonstrate their ability to interpret specific questions and structure their responses.
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria (1.1 to 4.3) <i>The learner can</i>
1. Be able to interpret specific questions (e.g. essay or research question).	1.1. Interpret either essay title, essay or research question, considering the following: <ul style="list-style-type: none"> a. instructional words b. topic words c. any particular focus required d. any additional factors to be considered
2. Be able to structure a written response.	2.1. Develop a plan for a written response. 2.2. Use the plan to develop a structured response, maintaining logical argument.
3. Be able to present the response appropriately for audience and purpose.	3.1. Review and revise writing using academic conventions of: <ul style="list-style-type: none"> a. use of English language b. use of appropriate terminology
4. Understand how to organise and apply information in their academic writing.	4.1. Describe the appropriate referencing style for citations and reference lists in their academic work. 4.2. Describe different types of plagiarism. 4.3. Describe the consequences of plagiarising in academic work.

PAL2U02 - Building a Personal Career Portfolio

Unit Reference	T/504/7495
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit will enable learners to demonstrate their ability to build a personal career portfolio, including a CV and personal goals.
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria 1 to 4.3) <i>The learner can</i>
1. Know about own skills, abilities, experience, knowledge and personal qualities.	<p>1.1. Describe how personal qualities, skills, abilities, experience and knowledge can help in achieving personal goals.</p> <p>1.2. Describe in detail own:</p> <ul style="list-style-type: none"> a. personal qualities b. skills c. experience d. knowledge <p>1.3. Identify different types of information that can be used to evidence own:</p> <ul style="list-style-type: none"> a. personal qualities b. skills c. experience d. knowledge <p>1.4. Select information that can be used to establish current relevance, adequacy and/or validity of own:</p> <ul style="list-style-type: none"> a. personal qualities b. skills c. experience d. knowledge

<p>2. Be able to build a portfolio of information to evidence achievements and qualities.</p>	<p>2.1. Identify personal, educational and career opportunities for which a portfolio can be used.</p> <p>2.2. Assemble a portfolio to evidence own achievements and qualities.</p>
<p>3. Be able to produce a Curriculum Vitae (CV).</p>	<p>3.1. Identify the essential elements of a CV.</p> <p>3.2. Produce a structured general CV which includes key information.</p> <p>3.3. Modify own CV for a specific purpose.</p>
<p>4. Know how to plan to achieve personal goals.</p>	<p>4.1. Identify personal goals.</p> <p>4.2. Explain personal goals.</p> <p>4.3. Develop an action plan to show how own personal goals are going to be achieved.</p>

PAL2U03 - Critical Thinking

Unit Reference	M/504/7592
Level	2
Credit Value	2
Guided Learning (GL)	16 hours
Unit Summary	This unit will enable learners to demonstrate their ability to understand the concepts and applications of critical analysis.
Learning Outcomes (1 to 2) <i>The learner will</i>	Assessment Criteria (1 to 2.2) <i>The learner can</i>
1. Understand basic concepts of critical analysis.	1.1. Identify differing types of arguments. 1.2. Give examples of simple explanatory arguments. 1.3. Give examples of arguments which justify decisions about action. 1.4. Give examples of commonly held: <ul style="list-style-type: none"> a. assumptions b. stereotypes c. biases 1.5. Describe why different standards are applied to evaluating arguments.
2. Understand the application of critical analysis to concepts, ideas and opinions.	2.1. Present an argument in a clear, logical, coherent way. 2.2. Identify critical analysis in a group discussion.

PAL2U04 - Improving Own Learning and Performance

Unit Reference	A/504/8275
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit will provide learners with an understanding of different learning styles and will enable them to identify which applies to them. Using own strengths they will be able to set learning targets and use the plan to demonstrate achievement.
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria (1.1 to 4.3) <i>The learner can</i>
1. Know about different ways and areas of learning which reflect own likes and/or dislikes.	1.1. Describe different ways of learning. 1.2. Give reasons why they like or dislike different ways of learning. 1.3. Identify areas of learning which they enjoy and / or they feel that they are good at. 1.4. Describe the identified areas of learning.
2. Be able to use own strengths, aptitudes and skills to determine learning targets.	2.1. Describe how the achievement of learning targets can be supported by: <ul style="list-style-type: none"> a. own strengths b. own aptitudes c. own skills 2.2. Select short term learning targets based on existing: <ul style="list-style-type: none"> a. strengths b. aptitudes c. skills
3. Be able to plan how to achieve learning targets.	3.1. Produce an action plan showing how the learning targets can be achieved. 3.2. Identify possible obstacles to learning.

<p>4. Be able to review own performance against action plan</p>	<p>4.1. Use feedback from others to aid progress towards learning targets.</p> <p>4.2. Describe the progress made in implementing the action plan.</p> <p>4.3. Revise the action plan after reviewing progress.</p>
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PAL2U05 - Information Literacy

Unit Reference	D/505/1976
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit will enable learners to demonstrate their ability in knowing what information is needed and how and where to find it and present it.
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria (1 to 4.3) <i>The learner can</i>
1. Know about information sources.	1.1. Identify available information sources for specific purposes. 1.2. Describe the tools which can be used to find information. 1.3. Describe the benefits and limitations of different sources of information for specific purposes.
2. Be able to prepare for gathering information for a specific purpose.	2.1. Use techniques to clarify what information is required. 2.2. Use techniques to search relevant information from different sources. 2.3. Produce an action plan breaking down tasks and actions to be taken. 2.4. Prepare criteria against which to assess the relevance of information.
3. Be able to gather required information.	3.1. Search information sources with reference to information required for specific purposes. 3.2. Assess located information against own devised criteria.

<p>4. Be able to communicate information according to purpose and audience.</p>	<p>4.1. Combine and summarise information, ideas and data for specific purposes.</p> <p>4.2. Use an appropriate referencing system to acknowledge information sources.</p> <p>4.3. Communicate summarised information in a format suitable for audience and purpose.</p>
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PAL2U06 - Managing your Own Learning

Unit Reference	K/505/8915
Level	2
Credit Value	3
Guided Learning	24 hours
Unit Summary	This unit will provide learners with an understanding of own learning goals and the ability to plan, achieve and review their learning programme.
Learning Outcomes (1 to 6) <i>The learner will</i>	Assessment Criteria (1.1 to 6.2) <i>The learner can</i>
1. Know own learning goals.	<p>1.1. Describe an important:</p> <ul style="list-style-type: none"> a. personal achievement and explain how it was achieved b. personal skills and explain how it was learned c. personal interest and explain how it was pursued <p>1.2. Select a personal goal and explain why it connects to own interests, skills and achievements.</p> <p>1.3. Select a learning goal from a range of options and explain how it will help achieve a personal goal.</p>
2. Understand opportunities and practical issues involved in pursuing learning goals.	<p>2.1. Select a learning opportunity from a range of options and explain how it will help to achieve a learning goal.</p> <p>2.2. Assess the learning opportunity in relation to the following factors:</p> <ul style="list-style-type: none"> a. cost b. duration c. attendance d. travel e. effect on other commitments <p>2.3. Assess the learning opportunity with reference to any support needed in the following areas:</p> <ul style="list-style-type: none"> a. finance b. study skills c. literacy

	<ul style="list-style-type: none"> d. numeracy e. language f. childcare g. special needs h. dealing with personal matters i. information technology
3. Be able to plan a programme to achieve learning goals.	<p>3.1. Describe possible content of the learning programme taking into account the following factors:</p> <ul style="list-style-type: none"> a. mode of learning b. the way in which he/she prefers to learn c. assessment and accreditation procedures d. availability and compatibility of chosen opportunities <p>3.2. Describe sources of assistance and support required to complete the learning programme.</p> <p>3.3. Describe own personal goals(s) and record:</p> <ul style="list-style-type: none"> a. a summary of the goals b. learning goal(s) c. the content and sequence of the learning programme d. a date for reviewing goals
4. Understand the learning environment.	<p>4.1. Describe key features of the learning environment with reference to, for example, teaching methods, support systems, location, facilities, assessment and accreditation procedures, rights and responsibilities, structure, staff roles, methods of enrolment, payment and health and safety procedures.</p>
5. Be able to follow the learning programme and review progress.	<p>5.1. Follow the learning programme.</p> <p>5.2. Assess any actions taken during the programme and describe how difficulties in following the programme were dealt with.</p> <p>5.3. Identify and describe any progress made on the learning programme, and identify any learning achievements and generic skills developed as a result.</p>

<p>6. Be able to review the learning programme.</p>	<p>6.1. Assess progress made to date towards a personal goal(s) as a result of the learning programme.</p> <p>6.2. Review goals and identify further activities to be taken towards next personal goal(s).</p>
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PAL2U07 - Organisation and Evaluation of Study

Unit Reference	T/507/0744
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit will enable learners to demonstrate their ability to plan and monitor their own workloads.
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria (1.1 to 4.2) <i>The learner can</i>
1. Be able to monitor and record own work.	1.1. Demonstrate how to monitor and record own work.
2. Be able to manage study time and organise own work.	2.1. Use a plan to order and prioritise tasks to meet set deadlines.
3. Be able to identify and describe own learning style.	3.1. Describe a range of learning styles. 3.2. Identify own learning style. 3.3. Describe ways to improve own learning and performance.
4. Be able to review own work.	4.1. Describe own strengths and weaknesses. 4.2. Use feedback from others to plan improvements or adapt work.

PAL2U08 - Plagiarism

Unit Reference	T/507/0744
Level	2
Credit Value	1
Guided Learning (GL)	7 hours
Unit Summary	This unit will enable learners to demonstrate their ability to understand what plagiarism is and how it impacts on their own work.
Learning Outcomes (1 to 6) <i>The learner will</i>	Assessment Criteria (1.1 to 6.1) <i>The learner can</i>
1. Understand definitions of plagiarism.	1.1. Describe different definitions of plagiarism. 1.2. Describe the difference between plagiarism and copyright infringement.
2. Understand how plagiarism may be used in different contexts.	2.1. Give examples of contexts in which work might be plagiarised.
3. Understand what constitutes plagiarism.	3.1. Describe the types of activity that plagiarism includes. 3.2. List different types of plagiarism.
4. Understand terms used in relation to plagiarism and its avoidance.	4.1. Describe the meaning of terms used in relation to plagiarism and its avoidance.
5. Know how plagiarism can be avoided in own work.	5.1. Describe ways in which plagiarism can be avoided in own work.
6. Be able to avoid plagiarism in own work.	6.1. Use correct and appropriate citation methods in own work.

PAL2U09 - Practical Presentation Skills

Unit Reference	M/504/8659
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit will provide an understanding of the skills required to plan and prepare a presentation and will enable learners to demonstrate their ability to deliver and review their performance, identifying any areas for improvement.
Learning Outcomes (1 to 5) <i>The learner will</i>	Assessment Criteria (1.1 to 5.3) <i>The learner can</i>
1. Understand the skills involved in preparing and delivering presentations.	<p>1.1. Give reasons why presentations may be necessary.</p> <p>1.2. Describe the most common delivery styles and structures for presentations.</p> <p>1.3. Explain the importance of:</p> <ul style="list-style-type: none"> a. preparation b. planning c. presentation d. performance <p>1.4. Describe the main elements that make up each of the above.</p>
2. Be able to use different visual aids and delivery styles in presentations.	<p>2.1. Select a variety of visual aids for use within given presentations.</p> <p>2.2. Give reasons for selection of the visual aids used.</p> <p>2.3. Use a selected delivery style for given presentations.</p> <p>2.4. Give reasons for using delivery style chosen.</p>

<p>3. Be able to plan a presentation.</p>	<p>3.1. Identify sources of information.</p> <p>3.2. Select different sources of information relevant to the topic of presentation.</p> <p>3.3. Follow a given structure to plan a presentation for a given task.</p>
<p>4. Be able to deliver a presentation.</p>	<p>4.1. Introduce topic clearly.</p> <p>4.2. Speak audibly, using tone and register appropriate to the audience and level of formality.</p> <p>4.3. Present material logically, linking ideas together.</p> <p>4.4. Explain key concepts.</p> <p>4.5. Use appropriate evidence to support the ideas, arguments and opinions presented.</p> <p>4.6. Present an effective conclusion.</p>
<p>5. Be able to assess performance and identify areas for improvement.</p>	<p>5.1. Assess own performance.</p> <p>5.2. Obtain feedback from audience.</p> <p>5.3. Identify areas for own improvement.</p>

PAL2U10 - Research Skills

Unit Reference	M/504/8659
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit will enable learners to demonstrate their ability to know the different types of research methodology and how to plan, report on and evaluate a research piece for a particular topic.
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria (1.1 to 4.1) <i>The learner can</i>
1. Understand different types of research methods and their uses.	1.1. Describe the methodology of research methods. 1.2. Describe how different methods can be used for research purposes.
2. Know how to plan a piece of research.	2.1. Describe how to identify research aims for a relevant topic of research. 2.2. Describe how to plan a research design model.
3. Know how to report on a piece of research.	3.1. Describe how to produce a research report that: <ul style="list-style-type: none"> a. uses a standard format b. presents information c. describe findings in relation to the research aims 3.2. Describe how to use an accepted method of referencing for source material.
4. Know how to evaluate a piece of research.	4.1. Describe the process for evaluating the outcomes of research.

PAL2U11 - Researching and Understanding Opportunities for Study in HE

Unit Reference	K/507/0742
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit will enable learners to research various options for studying at HE level and then demonstrate their ability to develop a basic application for entry onto chosen route.
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria (1.1 to 4.2) <i>The learner can</i>
1. Understand study opportunities available in Higher Education.	1.1. Assess information about Higher Education study opportunities which relate to own interests and aspirations.
2. Understand the advantages and disadvantages of choosing a particular Higher Education course.	2.1. Compare the advantages and disadvantages of a course in relation to own personal development, career aspirations and circumstances.
3. Be able to produce an action plan for the development of graduate career related abilities and skills.	3.1. Identify the abilities and skills to access a chosen graduate career path. 3.2. Produce an action plan to develop the abilities and skills to access a chosen graduate career path.
4. Understand the importance of broader life experiences and transferable skills in relation to progression to Higher Education.	4.1. Assess the importance of life experiences and transferable skills to progress to Higher Education. 4.2. Develop an outline application for entry into a Higher Education institution.

PAL2U12 - Working in a Group

Unit Reference	A/505/2164
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit will enable learners to understand the different characteristics that make up an effective working group. Learners will be able to demonstrate their ability to plan and carry out a group activity and then to review their performance.
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria (1.1 to 4.3) <i>The learner can</i>
1. Understand characteristics of groups.	1.1. Describe, with examples, characteristics of effective groups. 1.2. Describe possible advantages and disadvantages of working in a group. 1.3. Give examples of roles played by members of a group.
2. Be able to plan work with a group.	2.1. Use team working skills to plan group activities. 2.2. Negotiate own role and contribution to group work. 2.3. Negotiate the roles and contribution of group members. 2.4. Negotiate ground rules when planning activities with a group.
3. Be able to work in a group.	3.1. Work to a plan to carry out group activities. 3.2. Respond appropriately to feedback on own contribution and group activity. 3.3. Support others during group activities. 3.4. Coordinate own work with that of others to complete group activities.

<p>4. Be able to review own group working experience.</p>	<p>4.1. Assess the activities completed by own group.</p> <p>4.2. Assess the performance of own group.</p> <p>4.3. Assess own performance as a group member.</p>
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SEL2U01 - Aspects of Energy

Unit Reference	Y/504/8767
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	Learners should be able to demonstrate their understanding of different types of energy. They will have the opportunity to build circuits and gain knowledge to enable them to explain the energy conversion process.
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria (1.1 to 4.2) <i>The learner can</i>
1. Understand a range of optical phenomena.	1.1. Describe reflection, refraction and dispersion. 1.2. Give examples of their use. 1.3. Distinguish between the properties of converging and diverging lenses.
2. Understand the relationship between temperature and heat.	2.1. Describe simple kinetic theory. 2.2. Distinguish between temperature and heat. 2.3. Measure temperature and specific heat capacity.
3. Understand simple electrical circuits.	3.1. Build circuits involving cells, bulbs and switches and comment on the brightness in terms of current. 3.2. Outline the meaning of potential difference, current and resistance using correct units. 3.3. Perform simple calculations involving $V=IR$ and $P=IV$ to determine resistance and current.
4. Know that the principle of conservation of energy controls conversion processes.	4.1. State the types of energy that exist in the physical world. 4.2. State the principle of conservation of energy and use it to explain energy conversion processes.

SEL2U02 - Chemistry in Society

Unit Reference	F/507/0732
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	To enable learners to demonstrate their ability to recognise different types of chemistry and how it is used in everyday life.
Learning Outcomes (1 to 3) <i>The learner will</i>	Assessment Criteria (1.1 to 3.1) <i>The learner can</i>
1. Understand an aspect of the history of chemistry.	1.1. Describe the development over time of a topic in chemistry.
2. Understand the importance of chemistry in modern life.	2.1. Describe the chemistry of substances used in everyday life (e.g., fabrics, plastics, pharmaceuticals, cleaning agents, toiletries, cosmetics, fuels). 2.2. Describe the chemistry behind a recent news story.
3. Understand the use and occurrence of an element in modern life.	3.1. Describe the occurrence and use of an element in modern life.

Unit Reference	J/507/0733
Level	2
Credit Value	6
Guided Learning (GL)	48 hours
Unit Summary	To enable learners to demonstrate their ability to understand the make-up of various chemical elements.
Learning Outcomes (1 to 6) <i>The learner will</i>	Assessment Criteria (1.1 to 6.1) <i>The learner can</i>
1. Understand basic atomic structure.	1.1. Describe the electron configuration of the major organic elements.
2. Understand the major chemical elements in organisms.	2.1. Identify the chemicals of greatest importance in organisms.
3. Understand structures and bonds in the polymerisation of macromolecules.	3.1. Describe the structures and bonds in the polymerisation of macromolecules including their associated monomers.
4. Understand the biological role of macromolecules.	4.1. Identify the occurrence and use of macromolecules in organisms.
5. Understand the "lock and key" hypothesis of enzyme function.	5.1. Describe factors which affect normal enzyme action with reference to enzyme structure.
6. Understand the role of enzymes in metabolic pathways.	6.1. Identify the role of enzymes in metabolic pathways using an example such as respiration.

SEL2U03 - Chemistry: Structure and Changes

Unit Reference	Y/504/9482
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit will enable learners to demonstrate their ability to understand the physical structures of various chemical elements, including the periodic table.
Learning Outcomes (1 to 5) <i>The learner will</i>	Assessment Criteria (1.1 to 5.2) <i>The learner can</i>
1. Understand the structure of the atom and the arrangement of electrons.	1.1. Using a given mass and atomic number, state the number of protons, neutrons and electrons in atoms and ions up to calcium. 1.2. Construct electron shell diagrams for atoms up to calcium.
2. Know about patterns in the periodic table.	2.1. Describe trends in physical properties in groups 0, 1 and 7. 2.2. Explain typical reactions of the elements of groups 1 and 7 and their compounds.
3. Know about types of chemical reactions.	3.1. Define the characteristics of a chemical reaction. 3.2. Define the characteristics of the following types of reaction: a. redox b. acid-base c. combustion d. precipitation 3.3. Explain the factors which affect the rate of a chemical reaction.

<p>4. Understand pH, acids, alkalis, indicators and neutralisation.</p>	<p>4.1 Describe acids and alkalis in terms of ions formed, pH and the effects on indicators.</p> <p>4.2 Describe the reactions of dilute acids with metals, alkalis and carbonates.</p>
<p>5. Use symbols to represent molecules and equations to represent chemical reactions.</p>	<p>5.1. Construct simple formulae for molecules.</p> <p>5.2. Construct a balanced equation for types of chemical reaction.</p>

HSL2U03 - Co-ordination of the Human Body

Unit Reference	Y/504/8767
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit will enable learners to demonstrate their ability to understand and explain how the eyes and ears are structured and how they function in relation to the nervous system.
Learning Outcomes (1 to 3) <i>The learner will</i>	Assessment Criteria (1.1 to 3.2) <i>The learner can</i>
1. Understand the structure and function of the nervous system.	1.1. Describe the structure and function of sensory, relay and motor neurons and their role in a simple spinal reflex. 1.2. Identify the main parts of the human nervous system including the brain. 1.3. Describe the nerve impulse in terms of generation of action potential and changes in membrane permeability. 1.4. Outline the mechanism of transmission at the synapse. 1.5. Describe the role of neurotransmitters.
2. Understand the structure and function of the eye.	2.1. Describe the structure and function of the main parts of the eye. 2.2. Describe the transmissive and refractive properties of the eye. 2.3. Illustrate the role of the rods and cones in monochromatic and trichromatic vision. 2.4. Describe how visual acuity is affected.

<p>3. Understand the structure and function of the ear.</p>	<p>3.1. Illustrate the structure and function of the main parts of the ear.</p> <p>3.2. Describe the transmission and recognition of sound waves.</p>
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SEL2U04 - Data Handling and Algebra

Unit Reference	M/507/0743
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit will enable learners to understand the basic concepts of obtaining, presenting and interpreting data.
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria (1.1 to 4.2) <i>The learner can</i>
1. Understand the basic concepts of data handling.	1.1. Use a range of statistical terms appropriately. 1.2. Use appropriate methods to obtain data. 1.3. Use appropriate methods to organise and present data of different types, i.e., discrete and continuous. 1.4. Calculate or estimate measures of central tendency and spread for different types of data. 1.5. Interpret and draw conclusions from statistical diagrams and results.
2. Understand the basic concepts of probability.	2.1. Use the vocabulary of probability. 2.2. Find and interpret the probabilities of events in simple cases.
3. Understand the basic concepts of algebra.	3.1. Use letters to represent variables. 3.2. Recognise a number pattern and make a generalisation. 3.3. Represent a functional relationship on a graph. 3.4. Construct, manipulate and solve equations.

<p>4. Be able to apply appropriate data handling methods.</p>	<p>4.1. Select and use data handling methods to collect, process, represent, and interpret a variety of situations.</p> <p>4.2. Select and use algebraic methods to communicate and solve problems.</p>
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SEL2U05 - Design Project

Unit Reference	R/617/6628
Level	2
Credit Value	2
Guided Learning (GL)	16 hours
Unit Summary	This unit will enable learners to establish a design from a brief and adjust the design to best meet the requirements set out in the original brief.
Learning Outcomes (1 to 2) <i>The learner will</i>	Assessment Criteria (1.1 to 2.4) <i>The learner can</i>
1. Be able to prepare a design specification for an engineered product, from a given design brief.	1.1. Establish customer requirements. 1.2. Explain the major design requirements. 1.3. Obtain design information from appropriate sources.
2. Be able to produce alternative design solutions for an engineered product.	2.1. Produce conceptual design solutions. 2.2. Prepare an analysis of the possible design solutions. 2.3. Outline the potential of the alternative concepts. 2.4. Select and justify the optimum design solution.

SEL2U06 - Electric Circuits and Electromagnetism

Unit Reference	T/617/6654
Level	2
Credit Value	6
Guided Learning (GL)	48 hours
Unit Summary	This unit introduces the basic principles of electric circuits and electromagnetism. Learners will understand simple theory, simple circuits and understand basic electromagnetic theory.
Learning Outcomes (1 to 6) <i>The learner will</i>	Assessment Criteria (1.1 to 6.1) <i>The learner can</i>
1. Be able to identify a range of electrical components.	1.1. Identify common electronic components and their associated circuit symbols.
2. Be able to construct electrical circuits.	2.1. Create series circuits from given circuit diagrams and take appropriate readings. 2.2. Create parallel circuits from given circuit diagrams and take appropriate readings. 2.3. Identify and use units appropriate to the readings taken. 2.4. Use appropriate SI (International System of Units) prefixes.
3. Understand D.C. electrical theory including Ohm's Law.	3.1. Recall $Q=It$ (or $I = \Delta Q/\Delta t$), $V=IR$ and $P=IV$. 3.2. Apply $Q=It$ (or $I = \Delta Q/\Delta t$), $V=IR$ and $P=IV$. 3.3. Perform circuit calculations correctly. 3.4. Recall Ohms Law. 3.5. Apply Ohms Law. 3.6. Calculate the combined resistance for two or more resistors in series and/or parallel.

<p>4. Be able to apply electrical concepts to domestic electricity.</p>	<p>4.1. Describe the use of protective devices in mains circuits.</p> <p>4.2. Calculate a suitable fuse rating from given data.</p> <p>4.3. Calculate energy costs from given data of appliance characteristics, duration of use and unit costs.</p>
<p>5. Understand the concept of magnetic fields and be able to recall the shape of magnetic fields in a variety of situations.</p>	<p>5.1. Describe uniform and radial electric fields.</p> <p>5.2. Draw uniform and radial electric fields.</p> <p>5.3. Describe the magnetic fields of a current-carrying straight wire and a solenoid.</p> <p>5.4. Illustrate the magnetic fields of a current-carrying straight wire and a solenoid.</p>
<p>6. Understand electromagnetic theory including Fleming's Rules.</p>	<p>6.1. Describe the interaction between Magnetism and Electricity, including:</p> <ul style="list-style-type: none"> a. current carrying conductors in magnetic fields, b. Fleming's Left-Hand Rule, c. the Motor Effect and d. the Right Hand Rule

SEL2U07 - Enabling Calculations for Engineering

Unit Reference	Y/617/6629
Level	2
Credit Value	6
Guided Learning (GL)	48 hours
Unit Summary	This unit introduces mathematical calculations for problems in engineering. Learners will be able to identify formulae, calculate solutions and produce graphs.
Learning Outcomes (1 to 5) <i>The learner will</i>	Assessment Criteria (1.1 to 5.4) <i>The learner can</i>
1. Understand a range of mathematical processes and conventions to perform and present calculations.	1.1. Perform calculations to solve problems using a range of mathematical processes and conventions. 1.2. Apply checks to mathematical processes and solutions. 1.3. Demonstrate mathematical solutions using accepted conventions.
2. Understand a range of algebraic and graphical techniques to solve problems involving no more than three terms and two operations.	2.1. Perform transformations and substitutions to solve equations involving no more than three terms. 2.2. Demonstrate using graphical methods. 2.3. Demonstrate information when solving problems. 2.4. Perform calculations using algebra.
3. Understand a range of linear, geometric and trigonometric techniques to solve problems.	3.1. Perform calculations to solve linear problems. 3.2. Demonstrate how to solve problems using geometry. 3.3. Demonstrate how to solve problems using trigonometry.

<p>4. Understand a range of mensuration processes to determine areas and volumes to solve problems.</p>	<p>4.1. Apply appropriate formula for given problems.</p> <p>4.2. Calculate areas and volumes for given problems.</p> <p>4.3. Apply close-approximation techniques in order to solve irregular areas and volumes.</p>
<p>5. Understand basic statistical processes and conventions.</p>	<p>5.1. Identify appropriate sampling methods for given situations including grouped data.</p> <p>5.2. Calculate percentages, deciles, and quartiles.</p> <p>5.3. Perform calculations to determine the central values of mean, median and mode for given data.</p> <p>5.4. Apply standard deviation techniques to experimental, tests, or other data.</p>

SEL2U08 - Exploring Waves and Optics

Unit Reference	T/617/6704
Level	2
Credit Value	3
Guided Learning (GL)	27 hours
Unit Summary	This unit encourages learners to consider the science behind waves, both mechanical and electromagnetic. Learners will understand key quantities, such as frequency and wavelength.
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria (1.1 to 4.1) <i>The learner can</i>
1. Understand concepts associated with waves.	<p>1.1. Describe wave motion in terms of the displacement of particles over a time; and in terms of the displacement of adjacent particles at a given time.</p> <p>1.2. Distinguish between transverse and longitudinal waves, and between mechanical and electromagnetic waves.</p> <p>1.3. Define and use quantities associated with waves:</p> <ul style="list-style-type: none"> a. frequency, f b. wavelength, λ c. amplitude, A d. period, T e. velocity, v <p>1.4. Use $v = f \lambda$ and $f = (1/T)$.</p>
2. Understand simple optics.	<p>2.1. Describe reflection and refraction phenomena, including total internal reflection.</p> <p>2.2. State the laws of reflection and refraction.</p>

<p>3. Understand the electromagnetic spectrum.</p>	<p>3.1 List the main types of electromagnetic waves and give approximate wavelengths for each.</p> <p>3.2 Describe basic properties of the types of electromagnetic wave.</p> <p>3.3 Explain simple associated applications.</p>
<p>4. Understand the properties of sound waves.</p>	<p>4.1 Describe the properties of sound waves.</p>

SEL2U09 - Fundamentals of Physics

Unit Reference	D/504/8768
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit introduces the key fundamentals of studying physics, including structure and matter, motion and acceleration, and forces. Learners will learn the correct SI symbols for physics calculations.
Learning Outcomes (1 to 5) <i>The learner will</i>	Assessment Criteria (1.1 to 5.2) <i>The learner can</i>
1. Understand the nature of physical quantities and how they are expressed.	1.1. State the meaning of relevant terms and give examples, e.g. mass, density and force. 1.2. Give units and symbols for quantities and SI units. 1.3. Convert to subunits and use exponential notations. 1.4. Distinguish between scalar and vector quantities.
2. Understand the structure of matter.	2.1. Describe models of the atom including the nucleus. 2.2. Describe nuclear fission and nuclear fusion.
3. Understand simple motion with uniform acceleration.	3.1. Describe simple situations using the terms 'velocity' and 'acceleration' appropriately. 3.2. Interpret velocity to time and displacement to time graphs. 3.3. Determine the acceleration of a body moving under a constant force.

<p>4. Understand the concept of density.</p>	<p>4.1. Define density and carry out calculations of density accurately and in relevant units.</p> <p>4.2. Experimentally determine the density of regular and irregular solids.</p>
<p>5. Understand the effects of a force on a rigid body.</p>	<p>5.1. State Newton's Laws and describes simple situations where they are applicable.</p> <p>5.2. Determine the net force of no more than two forces acting on a small rigid body and describe its effect.</p>

SEL2U10 - Health and Safety in an Engineering Environment

Unit Reference	L/617/6708
Level	2
Credit Value	1
Guided Learning (GL)	8 hours
Unit Summary	This unit introduces health and safety and risk management for learners considering a career in construction.
Learning Outcomes (1 to 2) <i>The learner will</i>	Assessment Criteria (1.1 to 2.3) <i>The learner can</i>
1. Understand Health and Safety requirements, procedures and equipment relevant to the candidates endorsed subject area.	<p>1.1. Explain the purpose of relevant, current health and safety requirements, for example Health and Safety at Work Act, or the Control of Substances Hazardous to Health Regulations.</p> <p>1.2. Describe the correct procedures for reporting accidents and potential hazards.</p> <p>1.3. Explain the correct response to two emergency situations.</p> <p>1.4. Describe the location of emergency equipment, for example fire/emergency alarm and first aid box.</p>
2. Be able to recognise and manage risk by following safe working practices within the candidates endorsed subject area.	<p>2.1. Evaluate the potential risks of a given situation.</p> <p>2.2. Explain the purpose and use of safety equipment and/or clothing to minimise risk in particular tasks.</p> <p>2.3. Demonstrate the following of relevant health and safety procedures, for example by selecting and using appropriate personal protective equipment or using correct manual handling techniques.</p>

HSL2U10 - Human Life Processes

Unit Reference	L/507/0748
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit introduces basic human life processes, including the circulatory and digestive systems. Learners will consider the make-up of a human cell and its main functions.
Learning Outcomes (1 to 3) <i>The learner will</i>	Assessment Criteria (1.1 to 3.3) <i>The learner can</i>
1. Understand life processes and cellular organisation in humans.	1.1. Describe the characteristics of living organisms. 1.2. Describe the structure of a human cell. 1.3. Describe the main functions of a human cell.
2. Understand the features of blood and the human circulatory system.	2.1. Outline the main constituents of human blood. 2.2. Describe the functions of the main constituents of human blood. 2.3. Describe the features of the human circulatory system.
3. Understand the human digestive process.	3.1. Describe the features of the human digestive system. 3.2. Explain how proteins, fats and carbohydrates are broken down. 3.3. Describe how proteins, fats and carbohydrates are absorbed.

Unit Reference	M/504/9763
Level	2
Credit Value	6
Guided Learning (GL)	48 hours
Unit Summary	This unit introduces the main body systems in the human body. Learners will understand homeostasis and the regulation of body processes.
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria (1.1 to 4.1) <i>The learner can</i>
1. Understand the organisation of the body.	1.1. Identify the levels of organisation in the human body. 1.2. Name the main body systems.
2. Know about the structure and functions of the digestive system.	2.1. Describe the role of the main components of a balanced diet. 2.2. Describe the effects of nutritional deficiencies on health. 2.3. Identify the components of the digestive system. 2.4. Describe the process of peristalsis. 2.5. Outline how carbohydrates, fats and proteins are broken down during digestion. 2.6. Describe the process of absorption.
3. Know about homeostasis.	3.1. Outline the control of body temperature. 3.2. Describe the control of water in the body. 3.3. Outline the effects and treatment of kidney failure.

4. Know about the role of hormones in controlling body processes.	4.1. Describe the regulation of blood glucose by the pancreas.
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HSL2U12 - Human Sex and Reproduction

Unit Reference	F/507/0746
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit allows learners to understand the human reproductive systems. Learners will also understand contraception and consider contemporary issues associated with human reproduction.
Learning Outcomes (1 to 5) <i>The learner will</i>	Assessment Criteria (1.1 to 5.1) <i>The learner can</i>
1. Understand the structures and functions of male and female reproductive systems.	1.1. Outline the structure and function of the human male and female reproductive systems.
2. Understand the human menstrual cycle.	2.1. Describe the human menstrual cycle.
3. Understand the main stages involved in gametogenesis and fertilisation.	3.1. Describe the process of production of haploid gametes. 3.2. Compare similarities and differences between male and female systems. 3.3. Outline the process of fertilisation.
4. Understand methods of contraception.	4.1. Describe a range of contraception methods.
5. Understand contemporary issues in human reproduction.	5.1. Describe contemporary issues in human reproduction.

SEL2U11 - Introduction to Engineering

Unit Reference	K/617/6635
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit gives an introduction into engineering. Learners will be required to understand engineering, its purpose and impact. Learners will also consider how engineering can be helped by computers and the impact of safety on engineering.
Learning Outcomes (1 to 6) <i>The learner will</i>	Assessment Criteria (1.1 to 6.1) <i>The learner can</i>
1. Understand what engineering is.	1.1. Describe what is meant by engineering. 1.2. Describe different fields of engineering.
2. Understand the purpose of engineering.	2.1. Describe the purpose of engineering. 2.2. Describe how engineering research may be applied in practice.
3. Understand how engineering may impact on the environment.	3.1. Describe ways engineering may affect the environment.
4. Know methods engineers use to test designs prior to production.	4.1. Describe methods used by engineers to test designs prior to production.
5. Understand what is meant by safety factors in engineering.	5.1. Describe what is meant by safety factors in engineering. 5.2. Describe how safety factors may affect efficiency.

6. Know how computers are used in engineering.	6.1. Describe different ways computers are used in engineering.
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SEL2U12 - Introduction to Physical Science

Unit Reference	T/617/6637
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit allows learners to consider physical science, its purpose, applications and approaches to research in physical science. Learners will consider what careers may be open to physical scientists.
Learning Outcomes (1 to 6) <i>The learner will</i>	Assessment Criteria (1.1 to 6.1) <i>The learner can</i>
1. Understand what is meant by physical science.	1.1. Describe what is meant by physical science.
2. Know the fields within physical science.	2.1. Describe different fields within physical science.
3. Understand the purpose of physical science.	3.1. Describe the purpose of physical science.
4. Understand approaches to research in physical science.	4.1. Describe approaches to research in different fields in physical science.
5. Know applications of physical science.	5.1. Describe applications of physical science.
6. Know careers open to physical science.	6.1. Describe careers open to physical scientists.

HSL2U16 - Life Processes and Living Things

Unit Reference	Y/505/4682
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit encourages learners to consider plant, animal and bacterial cells and systems. Learners will consider how organisms interact with their environment and the basic principles of inheritance.
Learning Outcomes (1 to 6) <i>The learner will</i>	Assessment Criteria (1.1 to 6.1) <i>The learner can</i>
1. Understand the nature of biological science.	1.1. Define key attributes of living organisms. 1.2. Describe growth and reproductive strategies of selected organisms.
2. Know about animal, plant and bacterial cells.	2.1. Describe the structure and function of typical animal, plant and bacterial cells. 2.2. Describe the principles of diffusion, osmosis and active transport. 2.3. Define the principles of enzyme action.
3. Understand inheritance.	3.1. Describe the process of monohybrid inheritance. 3.2. Describe the principles of natural and artificial selection.
4. Understand how organisms interact with the environment and each other.	4.1. Define a range of key ecological terms. 4.2. Describe energy flow through a simple food chain. 4.3. Describe a selected example of evolution. 4.4. Describe the role of micro-organisms in nutrient recycling.

5. Understand the structure and function of a key plant system.	5.1. Describe the structure and function of a key plant system.
6. Understand the structure and function of a key animal system.	6.1. Describe the structure and function of a key animal system.

SEL2U13 - Materials and their Properties

Unit Reference	H/505/4684
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit ensures learners understand the key concepts in chemistry including chemical reactions, atomic structure and bonding and the periodic table.
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria (1.1 to 4.2) <i>The learner can</i>
1. Understand the nature of chemistry and the main types of chemical reaction.	1.1. Describe several chemical processes. 1.2. Use simple balanced chemical equations to represent reactions. 1.3. Describe the changes taking place in oxidation and reduction in terms of addition and removal of a non-metal. 1.4. Assess the pH of a solution. 1.5. Describe the process of neutralisation. 1.6. Describe the use of thermal decomposition within industry.
2. Understand atomic structure and bonding.	2.1. Describe the structure of the atom in terms of relative atomic mass and charge. 2.2. Describe the difference between elements, compounds and mixtures. 2.3. Define and give an example of ionic bonding. 2.4. Define and give an example of covalent bonding.

<p>3. Know about the periodic table.</p>	<p>3.1. Describe the general trends and patterns within the periodic table.</p> <p>3.2. Differentiate common elements from their proton number or chemical symbol.</p> <p>3.3. Describe the properties of elements of Groups one and seven.</p> <p>3.4. Use the reactivity series of metals to predict the results of simple experiments.</p>
<p>4. Understand rates of reaction.</p>	<p>4.1. Describe the progress of reaction in terms of kinetic theory.</p> <p>4.2. Describe factors affecting the rate of reaction.</p>

SEL2U14 - Newtonian Dynamics

Unit Reference	F/617/6639
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit introduces Newton's laws of motion. Learners will use SI units to perform simple calculations.
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria (1.1 to 4.1) <i>The learner can</i>
1. Be able to apply and derive correct S.I. (Le Système international d'unités) terminology to physical problems.	1.1. Demonstrate the use of S.I. prefixes and standard form in representing numerical values. 1.2. Demonstrate the use of appropriate S.I. units for quantities. 1.3. Convert non-S.I. units to S.I. units. 1.4. Demonstrate how units may be deduced from equations. 1.5. Distinguish between scalar and vector quantities.
2. Understand uniform and non-uniform motion.	2.1. Draw and interpret velocity to time and displacement to time graphs representing uniform motion from given data. 2.2. Draw and interpret velocity to time and displacement to time graphs representing non-uniform motion from given data.
3. Understand, and use, Newton's laws of motion.	3.1. Summarise forces acting on objects in given situations. 3.2. Describe the motion of an object falling in a fluid medium in terms of the forces acting on it. 3.3. Recall and demonstrate the use of Newton's 2 nd Law in the form $F = ma$.

<p>4. Understand linear dynamics with constant acceleration ('suvat') equations.</p>	<p>4.1. Solve simple one-dimensional problems with constant acceleration.</p>
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SEL2U15 - Numeracy in Context- Planning a Mathematical Project

Unit Reference	A/505/4030
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit gives learners an opportunity to plan, execute and evaluate a project in mathematics. Learners will need to interpret results and draw a conclusion from their findings.
Learning Outcomes (1 to 5) <i>The learner will</i>	Assessment Criteria (1.1 to 5.2) <i>The learner can</i>
1. Be able to identify and agree a substantial mathematical project in practical context.	1.1. Clearly define the objectives of a coherent, substantial investigation, practical activity, problem or task in a practical context with guidance from the tutor.
2. Be able to plan the project.	2.1. Organise the work into a series of manageable tasks. 2.2. Select methods to use to complete the tasks.
3. Be able to implement the plan.	3.1. Collect information from different sources. 3.2. Successfully perform a variety of calculations, showing methods and checking all calculations by a different method. 3.3. Use mathematical language and notation throughout the activity. 3.4. Use diagrams, tables or graphs to present information. 3.5. Monitor and make adjustments as necessary.

4. Be able to interpret the results.	4.1. Interpret the results logically and concisely using mathematical language.
5. Be able to draw conclusions.	<p>5.1. Clearly state conclusions.</p> <p>5.2. Comment critically on the outcomes of the project, identifying how improvements could have been made.</p>

SEL2U16 - Physical Processes

Unit Reference	T/505/4687
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit gives learners an introduction to physical processes including the applications of the laws of physics. Learners will be able to understand energy transfer, electrical power, forces and motions and waves.
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria (1.1 to 4.4) <i>The learner can</i>
1. Understand the nature of physics and energy transfer.	1.1. Describe several physical processes. 1.2. Describe different forms of energy. 1.3. Apply the law of conservation of energy to simple situations. 1.4. Describe the processes of conduction, convection, evaporation and radiation. 1.5. Describe how these processes relate to: <ul style="list-style-type: none"> a. the regulation of body temperature b. energy conservation in the home
2. Understand electricity.	2.1. Define electrical energy and power. 2.2. Construct simple series and parallel circuits. 2.3. Use appropriate meters to measure voltage and current. 2.4. Define resistance. 2.5. Use Ohm's law in series circuits.

3. Understand forces and motion.	<p>3.1. Describe the forces acting on an object.</p> <p>3.2. Use Newton's laws to explain changes in motion in one direction.</p>
4. Understand waves.	<p>4.1. Define:</p> <ul style="list-style-type: none"> a. frequency b. wavelength c. amplitude d. period e. velocity <p>4.2. Describe the electromagnetic spectrum.</p> <p>4.3. Describe everyday uses of different regions of the spectrum.</p> <p>4.4. Describe the properties of sound waves.</p>

Unit Reference	H/617/6651
Level	2
Credit Value	4
Guided Learning (GL)	32 hours
Unit Summary	This unit gives learners a foundation for further study in physics. Learners will be able to use formulae and describe simple concepts.
Learning Outcomes (1 to 7) <i>The learner will</i>	Assessment Criteria (1.1 to 7.4) <i>The learner can</i>
1. Be able to calculate amounts of energy from given formulae.	1.1. Identify forms of energy. 1.2. State the principle of energy conservation. 1.3. Calculate power amounts using formulae corresponding to a particular form. 1.4. Calculate power as energy per second. 1.5. Use SI units (International System of Units) for energy. 1.6. Use SI units for power.
2. Understand the effect of gravity on masses.	2.1. Distinguish between mass and weight. 2.2. Use the SI units of weight. 2.3. Use the SI units of mass. 2.4. Use energy conservation arguments to explain the forms of energy involved when an object falls to earth. 2.5. Outline the effects of air resistance on a falling object.

3. Understand the concept of balanced and unbalanced forces.	3.1. Describe the effect of forces on the velocity of an object.
4. Understand the effect of resistance on electricity.	4.5. Construct a range of circuits. 4.6. Measure current and voltage in low voltage circuits. 4.7. Analyse the effect of changing resistance on the currents in a circuits. 4.8. Determine the correct value fuse for a piece of equipment.
5. Know about the concepts of magnetism.	5.1. Describe the interaction between poles of magnets. 5.2. Describe the effect of current passing through a conductor on its magnetism.
6. Know about properties of sound.	6.1. State how sound is caused by vibration and travels at different speeds in different materials. 6.2. Identify from a waveform the following sounds: <ul style="list-style-type: none"> a. loud b. quiet c. high pitch d. low pitch
7. Know about the properties of light.	7.1. State some properties of light waves. 7.2. Describe how light is reflected from surfaces. 7.3. Describe how an image is formed in a mirror. 7.4. Describe how the colour of an object depends on the wavelength of the light it scatters.

Unit Reference	K/504/9759
Level	2
Credit Value	6
Guided Learning (GL)	48 hours
Unit Summary	This unit gives an introduction into human physiology. Learners will learn about the human body and its key systems long-term responses to exercise.
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria (1.1 to 4.1) <i>The learner can</i>
1. Understand the structure and function of the skeleton and muscle tissue.	1.1. Describe the structure of the human skeleton. 1.2. Describe the role of different types of joints in movement. 1.3. Describe different types of muscle tissue. 1.4. List their properties. 1.5. Identify key muscles of the human body. 1.6. Describe the importance of the muscles identified in effective movement of the body. 1.7. Outline how skeletal muscles contract. 1.8. Describe how energy is produced in skeletal muscle. 1.9. List the joints and muscles used in different sporting movements.
2. Understand the structure and function of the respiratory system.	2.1. Describe the structure of the respiratory system. 2.2. Explain how the lungs are ventilated. 2.3. List the conditions necessary for effective gaseous exchange.

	<p>2.4. Measure lung volumes.</p> <p>2.5. Explain the importance of lung volume.</p> <p>2.6. Describe the short term responses of the respiratory system to exercise.</p>
3. Understand the structure and function of the cardiovascular system.	<p>3.1. Describe the structure of the heart.</p> <p>3.3. Describe the cardiac cycle.</p> <p>3.4. Outline the structure of arteries, veins and capillaries.</p> <p>3.5. Describe the function of arteries, veins and capillaries.</p> <p>3.6. Describe the short term responses of the cardiovascular system to exercise.</p>
4. Understand the long term adaptations of the body to exercise.	<p>4.1. List the effects of different types of training on:</p> <ul style="list-style-type: none"> a. the respiratory system, b. the cardiovascular system, c. the muscular/skeletal system

Unit Reference	T/504/9702
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit gives an introduction to maths for learners considering a career in nursing. Learners will perform simple calculations, and produce and interpret graphical data.
Learning Outcomes (1 to 6) <i>The learner will</i>	Assessment Criteria (1.1 to 6.1) <i>The learner can</i>
1. Know the basic formulae used in a nursing context	1.1. Give the appropriate formula to calculate the volume of a required dose. 1.2. Give the appropriate formula to calculate the number of tablets required. 1.3. Give the appropriate formulae to calculate dose for weight.
2. Be able to use graphs relating to conversions for nursing	2.1. Graphically produce conversion tables. 2.2. Calculate conversions between the following: <ul style="list-style-type: none"> a. centigrade/fahrenheit b. imperial/metric 2.3. Interpret the relevant data found in graphs and charts.
3. Be able to calculate solution strengths	3.1. Calculate the solution strengths from a given ratio. 3.2. Calculate the solution strengths from a given percentage. 3.3. Make dilution calculations based upon a given strength.

<p>4. Know how to make drug calculations</p>	<p>4.1. Calculate the number of capsules/tablets in a stated dosage.</p> <p>4.2. Calculate the volume of a given liquid in stated dosage.</p>
<p>5. Know how to calculate infusion rates.</p>	<p>5.1. Calculate the drip and flow rates over a specified time period.</p>
<p>6. Be able to apply basic mathematical calculations relevantly within the nursing field.</p>	<p>6.1. Perform basic mathematical calculations.</p>

SEL2U18 - Shape Using Pythagoras and Trigonometry

Unit Reference	J/505/5374
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit requires learners to understand Pythagoras theorem and to understand basic geometry.
Learning Outcomes (1 to 4) <i>The learner will</i>	Assessment Criteria (1.1 to 4.4) <i>The learner can</i>
1. Understand properties of angles.	1.1. Measure angles using a protractor. 1.2. Draw accurately angles using a protractor. 1.3. Use the angle properties of shapes to solve problems. 1.4. Identify different types of triangle. 1.5. Give properties of the triangles identified. 1.6. Identify regular polygons. 1.7. Calculate the internal and external angles of the identified regular polygons in 1.4. 1.8. Identify regular shapes which will tessellate. 1.9. Use three figure bearings to describe directions/positions and solve problems.
2. Be able to create basic constructions.	2.1. Draw circles using a pair of compasses. 2.2. Construct triangles using: <ul style="list-style-type: none"> a. compasses b. ruler c. protractor 2.3. Construct perpendicular bisector of straight line using compass and ruler.

	2.4. Construct angle bisector using compasses and ruler.
3. Know about symmetrical properties of shapes.	3.1. Identify symmetrical properties of 2-D shapes. 3.2. Identify planes of symmetry of common 3-D shapes.
4. Be able to apply relationships in right-angled triangles.	4.1. Use Pythagoras theorem to find the missing lengths of sides in right-angled triangles. 4.2. Choose the correct trigonometrical ratios to find: <ul style="list-style-type: none"> a. a missing side b. an angle in right-angled triangles 4.3. Solve problems involving right-angled triangles. 4.4. Use Pythagoras/trigonometry to solve problems in context.

HSL2U21 – Skeleton and Muscles

Unit Reference	T/504/9764
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit allows learners to develop an understanding of the role and function of the human skeletal and muscular systems, including the importance of maintaining good skeletal and muscular health.
Learning Outcomes (1 to 3) <i>The learner will</i>	Assessment Criteria (1.1 to 3.3) <i>The learner can</i>
1. Know about the role of the human skeletal system.	1.1. Describe the structure of the human skeleton. 1.2. Outline the function of the human skeleton. 1.3. Describe types of joints. 1.4. Describe the properties of the joints described. 1.5. Describe the structure and function of a synovial joint. 1.6. Identify the properties and functions of: <ul style="list-style-type: none"> a. tendons b. ligaments c. cartilage
2. Understand the role of the human muscular system.	2.1. Describe the properties of different types of muscle. 2.2. Outline the sliding filament hypothesis of muscle contraction. 2.3. Outline how antagonistic muscles bring about extension and flexion of a joint.

<p>3. Understand the importance of maintaining the health of the muscular and skeletal systems.</p>	<p>3.1. List the effects of bad posture on the muscular and skeletal systems.</p> <p>3.2. Identify the effects of poor lifting techniques on the muscular and skeletal systems.</p> <p>3.3. Describe the effects of a skeletal disease on the healthy functioning of the skeletal system.</p>
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HSL2U23 - Understanding the Physical Development of Children and Young People

Unit Reference	D/504/8589
Level	2
Credit Value	3
Guided Learning (GL)	24 hours
Unit Summary	This unit introduces the physical development of children and young people to learners. Learners will understand how to promote physical development in children and young people.
Learning Outcomes (1 to 5) <i>The learner will</i>	Assessment Criteria (1.1 to 5.1) <i>The learner can</i>
1. Understand the physical growth and development of children and how this relates to other aspects of their development.	1.1. Describe the physical development of children and how this relates to other aspects of their development.
2. Understand the necessary requirements for promoting the physical development of children.	2.1. Describe with examples the requirements needed to promote the physical development of children.
3. Understand the difference between fine and gross motor skills and their development using a range of activities and different equipment.	3.1. Know different approaches and equipment which can be used to promote both fine and gross motor skills.
4. Understand the importance of maintaining a safe environment whilst promoting the physical development of children.	4.1. Describe how to maintain a safe environment whilst promoting the physical development of children.

<p>5. Understand ways of promoting physical development in children and young people without discriminating on grounds of gender, race, culture or disability.</p>	<p>5.1. Describe strategies which could be used to overcome stereotyping when promoting physical development in children and young people.</p>
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SSL2U33 - Work Experience

Unit Reference	A/504/9362
Level	2
Credit Value	1
Guided Learning (GL)	8 hours
Unit Summary	To enable learners to demonstrate their ability to understand what is needed when undertaking work experience.
Learning Outcomes (1 to 3) <i>The learner will</i>	Assessment Criteria (1.1 to 3.3) <i>The learner can</i>
1. Be able to plan their work experience.	1.1. Identify their expectations and goals for the work experience placement. 1.2. Describe their responsibilities in the work experience role and where these lie within the organisation.
2. Be able to work effectively in their role.	2.1. Work effectively with colleagues in the organisation. 2.2. Observe and apply appropriate organisational procedures and practices when working.
3. Be able to review their work experience placement.	3.1. Review their working practice. 3.2. Describe how the work experience relates to their original expectations and goals. 3.3. Identify ways in which the experience will contribute to their future learning and development.

Appendices

Recognition of Prior Learning (RPL), Exemptions, Credit Transfers and Equivalencies

Skills and Education Group Awards policy enables learners to avoid duplication of learning and assessment in a number of ways:

- Recognition of Prior Learning (RPL) – a method of assessment that considers whether a learner can demonstrate that they can meet the assessment requirements for a unit through knowledge, understanding or skills they already possess and do not need to develop through a course of learning.
- Exemption - Exemption applies to any certificated achievement which is deemed to be of equivalent value to a unit within Skills and Education Group Awards qualification but which does not necessarily share the exact learning outcomes and assessment criteria. It is the assessor's responsibility, in conjunction with the Internal Moderator, to map this previous achievement against the assessment requirements of the Skills and Education Group Awards qualification to be achieved in order to determine its equivalence.
- Any queries about the relevance of any certificated evidence, should be referred in the first instance to your centre's internal moderator and then to Skills and Education Group Awards.

It is important to note that there may be restrictions upon a learner's ability to claim exemption or credit transfer which will be dependent upon the currency of the unit/qualification and a learner's existing levels of skill or knowledge.

Where past certification only provides evidence that could be considered for exemption of part of a unit, learners must be able to offer additional evidence of previous or recent learning to supplement their evidence of achievement.

- Credit Transfer – Skills and Education Group Awards may attach credit to a qualification, a unit or a component. Credit transfer is the process of using certificated credits achieved in one qualification and transferring that achievement as a valid contribution to the award of another qualification. Units/Components transferred must share the same learning outcomes and assessment criteria along with the same unit number. Assessors must ensure that they review and verify the evidence through sight of:
 - Original certificates OR
 - Copies of certificates that have been signed and dated by the internal moderator confirming the photocopy is a real copy and make these available for scrutiny by the External Moderator.
- Equivalencies – opportunities to count credits from the unit(s) from other qualifications or from unit(s) submitted by other recognised organisations towards the place of mandatory or optional unit(s) specified in the rule of combination. The unit must have the same credit value or greater than the unit(s) in question and be at the same level or higher.

Skills and Education Group Awards encourages its centres to recognise the previous achievements of learners through Recognition of Prior Learning (RPL), Exemption, Credit Transfer and Equivalencies. Prior achievements may have resulted from past or present employment, previous study or voluntary activities. Centres should provide advice and guidance to the learner on what is appropriate evidence and present that evidence to the external moderator in the usual way.

Further guidance can be found in 'Delivering and Assessing SEG Awards ABC Qualifications' which can be downloaded from the Skills and Education Group Awards website.

Certification

Learners will be certificated for all units and qualifications that are achieved and claimed.

Skills and Education Group Awards policies and procedures are available on the Skills and Education Group Awards website.

Exemptions

This qualification contains no exemptions. For further details see Recognition of Prior Learning (RPL), Exemptions, Credit Transfers and Equivalencies.

Glossary of Terms

GL (Guided Learning)

GL is where the learner participates in education or training under the immediate guidance or supervision of a tutor (or other appropriate provider of education or training). It may be helpful to think – ‘Would I need to plan for a member of staff to be present to give guidance or supervision?’

GL is calculated at qualification level and not unit / component level.

Examples of Guided Learning include:

- Face-to-face meeting with a tutor
- Telephone conversation with a tutor
- Instant messaging with a tutor
- Taking part in a live webinar
- Classroom-based instruction
- Supervised work
- Taking part in a supervised or invigilated formative assessment
- The learner is being observed as part of a formative assessment

TQT (Total Qualification Time)

‘The number of notional hours which represents an estimate of the total amount of time that could reasonably be expected to be required, in order for a learner to achieve and demonstrate the achievement of the level of attainment necessary for the award of a qualification.’ The size of a qualification is determined by the TQT.

TQT is made up of the Guided Learning (GL) plus all other time taken in preparation, study or any other form of participation in education or training but not under the direct supervision of a lecturer, supervisor or tutor.

TQT is calculated at qualification level and not unit / component level.

Examples of unsupervised activities that could contribute to TQT include:

- Researching a topic and writing a report
- Watching an instructional online video at home/e-learning
- Watching a recorded webinar
- Compiling a portfolio in preparation for assessment
- Completing an unsupervised practical activity or work
- Rehearsing a presentation away from the classroom
- Practising skills unsupervised
- Requesting guidance via email – will not guarantee an immediate response