

Jersey Progression Qualification in Mechanical Engineering and Welding Studies



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Highlands
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Section A

Qualification

Context and

Regulations

Introduction

The Jersey Progression Qualification (JPQ) was introduced at Highlands College in September 2016 as a pilot project. The development of this qualification at level 2 has significantly improved the life chances of young people by ensuring that a greater proportion of school leavers progress from level 1 achievement at school to level 2 courses in the college. In 2014, 20.4% of full-time students were enrolled on level 1 or entry level qualifications. In 2017, since the introduction of the Jersey Progression Qualification, this has reduced significantly to 5.9% of full-time students on level 1/entry courses.

The Jersey Progression Qualification provides a coherent framework for teaching, learning and assessment that will inspire and motivate young people, post 16, who have not met the minimum school leaving attainment level of GCSE grade C or grade 4 or above in five subjects (or an equivalent pass or higher in a comparable level 2 vocational qualification). For the majority of jobs in occupations which require a technical qualification, the minimum requirement is a level 2 technical qualification. For higher education and those occupations requiring a general qualification, the minimum requirement is a level 3 general qualification.

The primary purpose of the **Jersey Progression Qualification** is to enable young people aged 16-18 to develop the knowledge and skills, commensurate with the school leaving threshold of level 2, that will enable them to progress to the industry standard qualifications in a technical, professional or academic subject area. Students that have yet to achieve a result at level 2, continue with English and maths at GCSE level alongside the Jersey Progression Qualification.

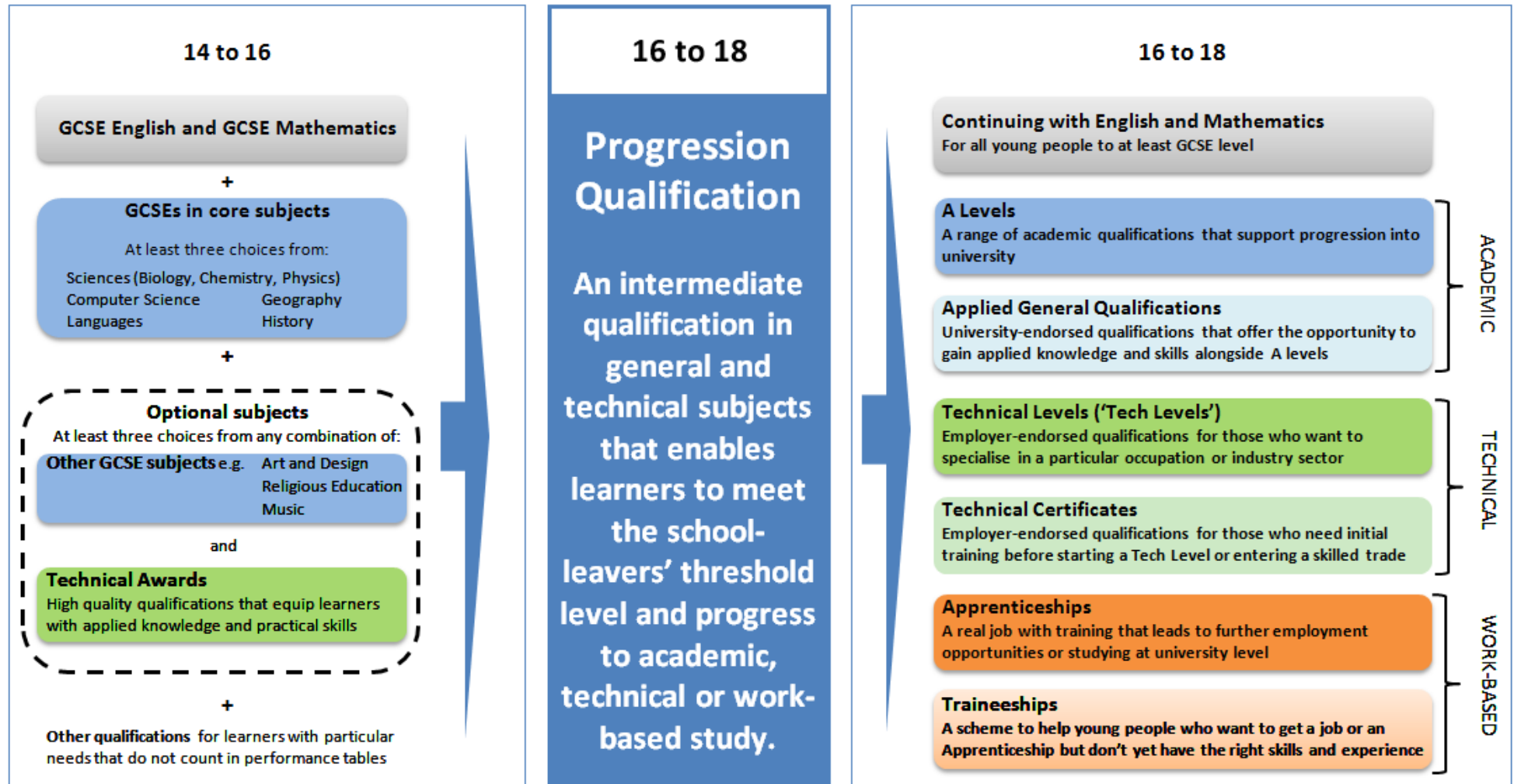
The Jersey Progression Qualification is designed as a ‘bridging course’, between school leaving qualifications and recognised post-16 qualifications, that have transportability, both on and off the island, to further training, employment or higher education. The development and implementation of the **Jersey Progression Qualification** pre-empted the recommendation of the Sainsbury Report into Technical Education ¹ to introduce a *transition year* that will serve a very similar purpose in England from 2020. At Key Stage 4, the Jersey Curriculum has adopted and adapted the English National Curriculum and this approach has followed through into Key Stage 5.

The Jersey Progression Qualification has been developed with the support of the States of Jersey Department of Education and in partnership with the awarding body NCFE. It is intended to develop transferable skills and knowledge through an applied subject and with reference to a realistic working environment. The qualification will provide the means by which young people can develop the level of knowledge, skills and understanding necessary in order to progress to one of the recognised further education routes outlined in the diagram on the following page.

1

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/536046/Report_of_the_Independent_Panel_on_Technical_Education.pdf

New Routes to University, an Apprenticeship or Employment



About this qualification

The Level 2 Jersey Progression Certificate and Jersey Progression Diploma is regulated by the States of Jersey Education Department and accredited by the NCFE awarding body.

- The Progression Certificate has been benchmarked at Level 2. It contains 240 guided learning hours.
- The Progression Diploma has been benchmarked at Level 2. It contains 480 guided learning hours.

The Jersey Progression Qualification has fourteen subject lines which are in:

- 1) Automotive Studies
- 2) Art and Design
- 3) Building Services
- 4) Building Trades
- 5) Business
- 6) Childcare and Education
- 7) Computing
- 8) Culinary Skills and Restaurant Service
- 9) Hair and Beauty
- 10) Health and Social Care
- 11) Mechanical Engineering and Welding Studies
- 12) Media
- 13) Performing Arts
- 14) Sport.

Qualification purpose

The Jersey Progression Qualification enables learners to develop skills, knowledge and understanding in a technical or general vocational subject area. It is for learners who are motivated and challenged by learning through hands-on experiences. The qualification will allow learners to gain practical skills in one of 14 subject areas as well as gain and interpret knowledge of that subject area. It is aimed at school leavers, with an interest in the subject, as a way of extending their general level of education and motivating them to succeed as independent learners.

The Jersey Progression Qualification provides an introduction to an industry-related sector and enables learners to acquire, develop and apply the skills and knowledge required for further academic and/or technical study. Transferable skills that prepare young people for satisfying working and social lives are a core component in the way that the qualification is delivered. Throughout the course learners will be:

- reviewing their own and others' work
- developing and honing their communication skills
- gaining valuable work experience
- developing their personal and social skills
- planning and experimenting with ideas
- working collaboratively with others
- fully aware of health and safety requirements.

The Jersey Progression Qualification is designed so that learners can improve their level of general qualification through a work-related subject. It will enhance their cognitive skills and develop their practical skills so that they are more likely to be successful in achieving level 2/3 technical qualifications or level 3 general qualifications when they progress. Learners without at least a grade C or grade 4 in maths and English at GCSE will take these subjects alongside the Progression Qualification.

Entry guidance

There are no specific recommended prior learning requirements for this qualification. It should be accessible for post-16 learners who are able to demonstrate an aptitude for and an interest in the particular technical and professional area. An indicator for learners likely to achieve the Diploma within one year is prior achievement in at least 5 GCSEs at grades E to C (or 2 to 4) and/or level 1 (120 guided learning hours) vocational equivalent qualifications. Learners with a mixture of GCSE grades from D to G are more likely to achieve the Certificate in one year.

Qualification structure

The Jersey Progression Certificate and **Jersey Progression Diploma** reflect the range and depth of subject matter and skills that need to be taught at pre-technical level or pre-advanced general level.

The Jersey Progression Qualification is structured so that the smaller **Jersey Progression Certificate** is 'nested' within the larger **Jersey Progression Diploma**.

The Jersey Progression Certificate requires learners to achieve **five units**, **two** of which must be **core** units and **the Jersey Progression Diploma** requires learners to achieve a further **five units**, **two** of which must be **core** units.

The Jersey Progression Certificate is a standalone five-unit qualification. **The Jersey Progression Diploma** is a ten-unit qualification which has the Jersey Progression Certificate 'nested' within it.

The sequencing of units is at the discretion of the course team, but the synoptic units (units 1 and 3) should normally be taught and assessed subsequent to the teaching and assessment of the other units.

The content and assessment of a unit is designed to be covered in 48 guided hours. **The Jersey Progression Certificate**, structured around five units, requires **240 guided hours** of teaching and assessment. There is an assumption that a further **160 hours of learning** will take place in addition to the 240 hours of teaching and assessment in the form of research, private study, workshop practice, rehearsals and assignment or project preparation and writing.

The Jersey Progression Diploma builds on the five-unit structure of the Jersey Progression Certificate and requires a further **240 guided hours** of teaching and assessment. There is an assumption that a further **160 hours of learning** will take place in addition to the 240 hours of teaching and assessment in the form of research, private study, workshop practice, rehearsals and assignment or project preparation and writing.

JERSEY PROGRESSION QUALIFICATION STRUCTURE							
1 or 3	CORE UNIT	48 hours	P L U S	1 or 3	CORE UNIT	48 hours	
2 or 4	CORE UNIT	48 hours		2 or 4	CORE UNIT	48 hours	
5	Any THREE option units	48 hours		8	Any THREE option units	48 hours	
6		48 hours		9		48 hours	
7		48 hours		10		48 hours	
Total Guided Hours		240			Total Guided Hours		240
JERSEY PROGRESSION CERTIFICATE					JERSEY PROGRESSION DIPLOMA		

The assessment opportunities in the **Jersey Progression Certificate** and **Jersey Progression Diploma** are designed to enable learners to demonstrate that they:

- have acquired the taught skills to an expected minimum level
- have gained sufficient practical and theoretical knowledge of the technical and professional area
- can demonstrate their understanding of the subject content
- are aware of what is required by the sector in which they are interested
- can behave appropriately when working within the specific technical and professional area.

To be awarded the **Level 2 Jersey Progression Certificate**, learners are required to successfully complete **two core units** and **three option units**. Learners must successfully demonstrate their achievement of all learning outcomes in the required units as detailed in this qualification specification. Unit certificates can be awarded to learners who have not achieved the full qualification, but who have achieved at least one unit.

To be awarded the **Level 2 Jersey Progression Diploma**, learners are required to successfully complete a further **two core units** and a further **three option units**. Learners must successfully demonstrate their achievement of all learning outcomes in the required units as detailed in this qualification specification.

Grading

The Jersey Progression Certificate and Diploma are graded qualifications. The grades for individual units are recorded on the final certificate, but there is **one** overall grade of Pass, Merit, Distinction, or Distinction* awarded for the Certificate and a **second** overall grade of Pass, Merit, Distinction, or Distinction* awarded for the Diploma. The grade of Distinction* is awarded if all the units are achieved at Distinction level.

Grading descriptors for each learning outcome and each unit have been included in this qualification specification. Assessors must be confident that all the learning outcomes have been evidenced and met by the learner in order to pass the unit. Assessors will judge the evidence produced by the learner to determine the grade for the unit.

Pass, Merit and Distinction Grades are awarded for the **Jersey Progression Certificate** at unit level and these are converted to **one** overall grade for the five units (2 core and 3 option) that contribute to the award of this qualification.

Similarly, Pass, Merit and Distinction Grades are awarded for the remaining five units that make up the **Jersey Progression Diploma** at unit level and these are converted to a **second** overall grade for the qualification for the remaining five units (2 core and 3 option) that contribute to the award of this qualification.

The Jersey Progression Certificate is awarded with **one** overall grade of Pass, Merit, Distinction or Distinction*.

The Jersey Progression Diploma is awarded with the **one** overall grade of Pass, Merit, Distinction or Distinction* achieved through the units that make up the Certificate and a **second** overall grade of Pass, Merit, Distinction or Distinction* achieved through the remaining units that make up the Diploma.

Distinction* is only awarded where all units are achieved at Distinction level.

Unit grading

The grading descriptors for each unit are included in the qualification specification. Grading descriptors are written for each assessment criterion in a unit. Assessors must be confident that, as a minimum, all assessment criteria have been evidenced and met by the learner. Assessors must make a judgement on the evidence produced by the learner to determine the grading decision for the unit. Grading is initially carried out at the learning outcome level.

Assessors must firstly be confident that all the Pass descriptors have been met for a learning outcome.

For example:

Pass:	LO1: Describes some characteristics and benefits of good customer service and some elements of legal requirements
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Assessors can then move on to decide if the Merit descriptors have been met for the learning outcome.

For example:

Merit:	LO1: Describes a range of good customer service characteristics and benefits citing some examples and a range of legal requirements
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If the Assessor is confident that all the Merit descriptors have been met, they can decide if the Distinction descriptors have been met for the learning outcome.

For example:

Distinction:	LO1: Describes a wide range of good customer service characteristics, benefits and legal requirements citing examples for each one
---------------------	--

Each unit has three grades which are equally weighted. If the learner has insufficient evidence to meet the Pass criteria, a grade of Not Yet Achieved (NYA) must be awarded for the unit.

Overall unit grade

The overall unit grade is determined by the highest average grade across the three learning outcomes. The overall unit grade will be determined from the following table:

LO1	LO2	LO3	Overall
P	P	P	P
P	P	M	P
P	P	D	M
P	M	P	P
P	M	M	M
P	M	D	M
P	D	P	M
P	D	M	M
P	D	D	M
M	P	P	P
M	M	M	M
M	M	P	M
M	M	D	M
M	D	D	D
M	P	M	M
M	P	D	M
M	D	D	D
D	P	P	M
D	M	M	M
D	M	P	M
D	M	D	D
D	D	M	D
D	D	D	D
D	P	M	M
D	P	D	M

Pass is a minimum requirement for all learning outcomes

Pass only criteria

When a learning outcome is **PASS** only, for example LO1, the criterion for LO1 applies to MERIT and DISTINCTION and the grade for LO1 defaults to the highest grade achieved for LO2 or LO3 in order to determine the overall unit grade.

For example:

	PASS	MERIT	DISTINCTION	Grade awarded
LO1	PASS ONLY	PASS ONLY	PASS ONLY	Defaults to DISTINCTION
LO2			Meets Distinction Criterion	DISTINCTION
LO3		Meets Merit Criterion		MERIT
LO1 = D; LO2 = D; LO3 = M (DDM = D)				DISTINCTION

A further example, where LO3 is pass only:

	PASS	MERIT	DISTINCTION	Grade awarded
LO1		Meets Merit Criterion		MERIT
LO2		Meets Merit Criterion		MERIT
LO3	PASS ONLY	PASS ONLY	PASS ONLY	Defaults to MERIT
LO1 = M; LO2 = M; LO3 = M (MMM = M)				MERIT

Qualification grading

The final grade for the qualification is based on the unit grades - Pass, Merit, and Distinction. It is arrived at according to the table below which shows how the combination of unit grades is aggregated to form the overall qualification grade for the Certificate and the Diploma.

An awarding panel will meet before the final grades are submitted to NCFE to consider special considerations and extenuating circumstances.

The **highest** possible grade is determined first. Units 1, 2, 3 and 4 are the **core** units of the qualification. Units 1 and 3 contain synoptic elements, unit 2 contains essential knowledge and skills and unit 4 is the **Working in the Industry** unit which is common to all subject strands. Units 5 and above are all option units. The **highest** overall grade is determined by:

1. Selecting the highest grade achieved for unit 1 or 3
2. Selecting the highest grade achieved for unit 2 or 4
3. Selecting the **three** highest grades achieved from the option units.

For example:

This is a candidate grade profile for all 10 units:

1	2	3	4	5	6	7	8	9	10
P	M	M	D	P	M	P	D	D	M

1. Between units 1 and 3, the highest grade achieved is for Unit 3: **MERIT**
2. Between units 2 and 4, the highest grade achieved is for Unit 4: **DISTINCTION**
3. The **three** highest grades achieved from the option units are for Units 8, 9 and 6 or 10: **DISTINCTION; DISTINCTION; MERIT.**

The five **highest** grades achieved in this example (arranged in the order with lowest grades first) are:

A	B	C	D	E
M	M	D	D	D

The final **highest** overall grade is aggregated according to the table below:

Unit A	Unit B	Unit C	Unit D	Unit E	Final overall grade
P	P	P	P	P	P
M	M	M	M	M	M
D	D	D	D	D	D*
P	P	P	P	M	P
P	P	P	P	D	P
P	M	M	M	M	M
M	M	M	M	D	M
P	D	D	D	D	D
M	D	D	D	D	D
P	P	P	M	M	P
P	P	P	D	D	M
P	P	M	M	M	M
M	M	M	D	D	M
P	P	D	D	D	M
M	M	D	D	D	D
P	P	P	M	D	M
P	M	M	M	D	M
P	M	D	D	D	M
P	P	M	M	D	M
P	P	M	D	D	M
P	M	M	D	D	M

These two grade profiles are only one grade different from the higher grade and should be reviewed at awarding.

From the table above, the example of a grade profile of **MMDDD** works out as an overall grade of **Distinction**.

A	B	C	D	E	OVERALL GRADE
M	M	D	D	D	D

Where **five** appropriate units have been achieved but less than 10 units have been fully achieved, just the Jersey Progression Certificate is awarded and the highest grade (Distinction, in this example) will be recorded on the certificate. A unit certificate for any additional units above the five used to grade the Certificate but fewer than five to contribute towards a Diploma will be issued. Where fewer than five units overall have been achieved, just a unit certificate will be awarded for the units achieved.

Once the **highest** overall grade has been determined for the Jersey Progression Diploma, the remaining five units can be used to determine the **second overall grade** for the **Jersey Progression Certificate**. Using the example from above, the remaining unit grades that can be used to calculate the second overall grade are:

1	2	5	7	10
P	M	P	P	M

Rearranged in grade order, with the lowest first, gives a grade profile of **PPPM**. Using the final overall grade table from above, the **second overall grade** is a **Pass**.

Unit A	Unit B	Unit C	Unit D	Unit E	Final overall grade
P	P	P	M	M	P
These two grade profiles are only one grade different from the higher grade and should be reviewed at awarding.					

From the overall grade table, it will be noted that this particular profile is highlighted in red because it is a borderline grade. At the awarding stage there is an opportunity to review the grades for the units with a pass to ensure that the assessment is secure.

Where the learner has achieved ten units, as in the example above, they will receive **one overall grade** for the **Jersey Progression Certificate** and a **second overall grade** for the **Jersey Progression Diploma**. In the example above, the overall grades are Pass and Distinction. Where one grade is higher than the other, the lower grade should be assigned to the Jersey Progression Certificate (Pass) and the higher grade to the Jersey Progression Diploma (Distinction).

Distinction* (star) is awarded where all of the grades for the Diploma are Distinction. Double Distinction*(star) is awarded where all 10 units are graded Distinction.

Overall grading descriptors

Not Yet Achieved

The learner will not meet all the learning outcomes and will not have enough work or evidence of progress available to allow a valid judgement to be made.

Pass

To achieve a Pass grade the learner will meet all the requirements as set out in the assessment criteria for each unit. They will make some effort to apply knowledge, and have some understanding of key concepts, but may not be able to make links between them. The learner will have a general understanding of processes, resources, techniques and materials, but this may be uneven in application. Their evidence will show some degree of planning, organisational and investigatory skills, but may be lacking in structure.

The learner will have completed the tasks to the minimum standard for a level 2 qualification.

Merit

To achieve a Merit grade the learner will meet all the requirements as set out in the assessment criteria for each unit to the required standard. They will demonstrate a confident level of ability in their application of knowledge and skills and will have a clear understanding of key concepts, making some links between them and giving reasons for their choices. The learner will have a clear understanding of processes, resources, techniques and materials with few errors in application. Their evidence will show planning, organisation and investigatory skills in a clear and logical way.

The learner will have completed the tasks in a manner exceeding the minimum standard for a level 2 qualification.

Distinction

To achieve a Distinction grade the learner will meet all the requirements as set out in the assessment criteria for each unit to a high standard. They will demonstrate mastery of appropriate processes, resources, techniques and materials. The learner will demonstrate an ability to undertake relevant and wide-ranging research, analysing and evaluating information to make informed judgements. They will have a detailed understanding of processes, resources, techniques and materials showing independent ideas expressed with confidence and originality. Their evidence will be appropriately contextualised showing planning, organisation and investigatory skills in a well-structured and thorough way.

The learner will have shown a high degree of motivation, ability and commitment and will have completed the tasks effectively in a manner far exceeding the minimum standard for a level 2 qualification.

Distinction* (Star)

The learner will have achieved a Distinction grade for all units of the qualification demonstrating consistent work for a level 2 qualification.

How the qualification is assessed

Assessment is the process of measuring a learner's skill, knowledge and understanding against the standards set in a qualification. The assessment for the **Jersey Progression Qualification** is unit based. Each unit requires the learner to demonstrate that they have met the learning outcomes. Learning outcomes are assessed through a portfolio of evidence which can take a number of different forms. The assessment methods used are appropriate to the type of learning activity and tasks prescribed in the unit.

Assessment methods include:

- Assignments
- Project based work
- Written tests or examinations
- Practical tests or examinations
- Lecturer/assessor observation
- Audio/video recorded activities
- Interviews or a viva
- On-line assessment
- Portfolio of documentation
- Sketchbooks
- Video/audio diaries
- Workbooks
- Use of blogs or discussion forums
- Employer or customer/client feedback.

Course-based assessment

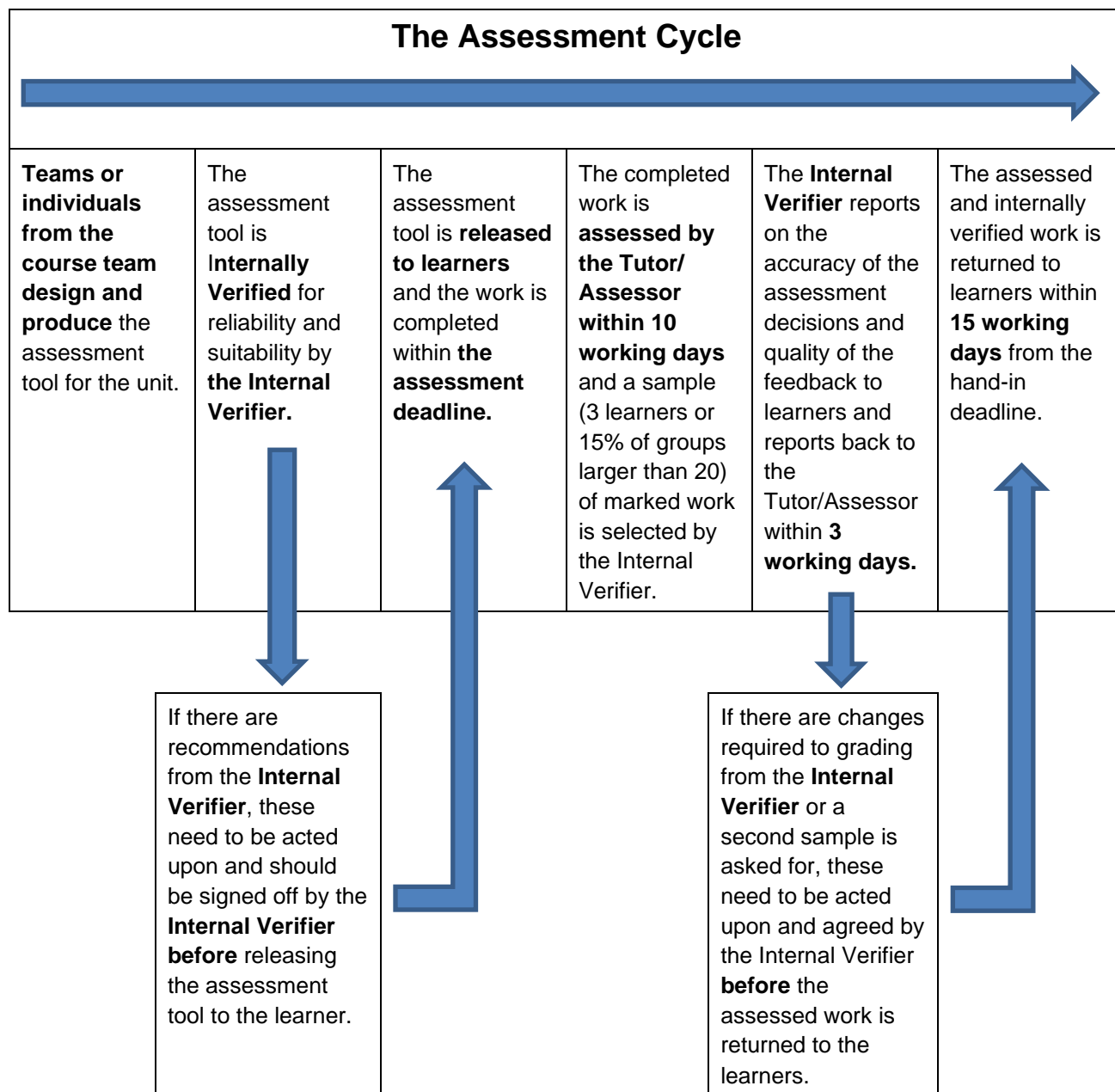
The assessment tool or activity for each unit is designed and set by each course team or an individual member of the team. A unit may have more than one assessment type to cover all of the learning outcomes but this will not *normally* exceed more than one per learning outcome. Where possible, a single assessment activity per unit is advised. Whilst **all** of the content of a unit must be taught, course teams can be **selective** about which aspects of the content may be assessed, particularly where assessment tests or assignments are unseen prior to the learner taking them.

Once the assessment tool is designed and written it is given to an **Internal Verifier** to verify prior to being released to learners. The **Internal Verifier** must be independent from the design and production process of the assessment tool. The role of the **Internal Verifier** is to check the reliability and appropriateness of the assessment tool. The Internal Verifier will complete a pro-forma and feedback to the assessment tool writer/designer who will act upon any recommendations or required changes before issuing the assessment tool to learners.

Each learner will complete the appropriate assessment task or tasks for each unit to a given deadline. On completion of each unit learners will declare that the work produced is their own unaided work (except in the case of examinations or tests taken under timed and supervised conditions). The tutor/assessor will countersign this declaration to confirm that the work carried out is the learner's own and unaided work. Learners may carry out research activities outside of the supervised sessions, but any work submitted for assessment must be authenticated and attributable to the learner. Learners should ensure that any work by others or research material used in their assessed work is properly referenced and the source acknowledged.

Learner work will be assessed by the tutor/assessor using the grading criteria from each unit. The **Internal Verifier** will sample the assessed work and feedback to

the tutor/assessor on the accuracy of their assessment decisions using an Internal Verification pro-forma. The Tutor/Assessor must act on the feedback from the Internal Verifier and amend their assessment decisions accordingly. A further sample may be asked for where there are inaccuracies in the marking. A minimum of **three** different learners' work or **15%** of the cohort (whichever is the greater) should be sampled by the Internal Verifier for each assessment task. Across all units, all learners should be sampled where possible.



Standardisation

To ensure that standards are maintained across the whole Jersey Progression Qualification and within each subject strand, a **Lead Internal Verifier** will sample at least **three** different internally verified Assessment Tools within each subject strand. The **Lead Internal Verifier** will provide each Course Team and their Internal Verifiers with a brief report that highlights areas of good practice and identifies any areas for improvement. The **Lead Internal Verifier** will also report to an annual **Jersey Progression Qualification Review Board** on the standard, quality and consistency of the assessment tools being used across the qualification and make recommendations for improvements year on year.

The **Lead Internal Verifier** will also sample at least **three** internally verified assessment decisions from each subject strand. They will compare standards across and between each subject strand. This will ensure that assessment and grading decisions are being arrived at consistently in terms of the types and quality of evidence being presented for assessment purposes and the application of grading descriptors. The **Lead Internal Verifier** will also carry out standardisation exercises within subject strands and between different subject strands. The **Lead Internal Verifier** will produce a brief report for each course team that highlights good practice and provides recommendations that will ensure consistency and fairness of marking. The **Lead Internal Verifier** will also report to an annual **Jersey Progression Qualification Review Board** on the reliability and consistency of assessment decisions within each programme and across the Jersey Progression Qualification as a whole.

External verification

To further assure the quality and consistency of assessment across all subjects of the Jersey Progression Qualification, there is an external verification process that mirrors that of the Lead Internal Verification process. External verification is carried out by an external verifier who is appointed, trained and monitored by NCFE. The external verifier is responsible for monitoring and sampling learners' evidence to ensure that assessment decisions are valid, reliable, fair and consistent. The issuing of certificates by NCFE is subject to the External Verifier reporting that all of the conditions of accreditation have been met.

Awarding

An annual **Award Board** is held in late June/early July once all of the assessments are completed across all subject areas and the grades for each student are verified and recorded. The College Registry is responsible for running these meetings and ensuring that the correct grades are recorded and reported to NCFE. **The Award Board** is made up of the Chair (normally a Registry representative), a member of the College Leadership Team, the Lead Internal Verifier and a Minutes Secretary.

Attendance at the Award Board

- The Head of Department or Director for the named qualification
- The Subject Co-ordinator for the named qualification
- The internal verifier(s) of all units for the named qualification
- Attendance of **unit assessors** at the awarding meeting is **optional**

Required documentation for the Award Board

- Copies of all completed Extenuating Circumstances forms (if any)
- Copies of all completed Candidate Appeals forms (if any)
- Copies of documentation related to compensation for missing marks (if any)
- Completed grading sheets for all candidates showing all unit grades and the proposed final overall grade for the Jersey Progression Certificate and for the Jersey Progression Diploma.

Agenda for the awarding meeting²

1. Welcome by the Chair and record of attendees made
2. Consideration of any Extenuating Circumstances
3. Decisions regarding individual candidates and extenuating circumstances documented and implemented **prior** to awarding³
4. Consideration of any Appeals
5. Decisions regarding individual appeals documented and implemented **prior** to awarding
6. Review of any candidates who have failed to complete the Certificate or the Diploma (or Unit 4: Working in the Industry) where there are no extenuating circumstances and/or an appeal has not been upheld
7. Chair records decisions related to non-completers which will be **one** of the following:
 - a. The candidate is allowed to resubmit work by a set date
 - b. The candidate is unable to resubmit work and achievement at unit only level will be recorded
8. Review of grade boundaries (at unit level for unit 4; at whole qualification level for named qualifications awarding).⁴
 - a. For unit 4: The Unit Leader will talk the panel through the Minimum Mark Setting Process for the unit and verify how the grade boundary decisions for the unit were reached. Comparison with the previous year's grade boundaries also to be taken into consideration.
 - b. All candidates with grades **PPMM** (which equates to an overall **Pass** grade) to be reviewed. This is to ensure that the team is satisfied that all of the units graded Pass are securely assessed. If any of the units graded at Pass are close to the Pass/Merit boundary, this work may be recommended for re-assessment. If one of the pass units is re-assessed at Merit, the overall grade to be awarded at **Merit**.

² Unit 4: Working in the Industry is common to all named qualifications. There will be a separate awarding meeting for this unit which will happen before the subject panels. The agenda for this meeting will relate solely to the unit and the decisions for this unit will be carried forward to each subject awarding meeting.

³ Where decisions related to Extenuating Circumstances and/or appeals cannot be resolved at this stage, the panel will reconvene to determine the outcomes for the individual candidates concerned. Decisions related to candidates where there are no appeals or extenuating circumstances will be made as part of items 6 and 7.

⁴ Where the Unit 4 result is the reason for a candidate's overall grade being on the Pass/Merit or Merit/Distinction grade boundaries and that candidate's unit 4 grade is within 1 mark of the learning outcome grades for the unit, their work will be reviewed.

- c. All candidates with grades **MMMDD** (which equates to an overall **Merit** grade) to be reviewed. This is to ensure that the team is satisfied that all of the units graded Merit are securely assessed. If any of the units graded at Merit are close to the Merit/Distinction boundary, this work may be recommended for re- assessment. If one of the Merit units is re-assessed at Distinction, the overall grade to be awarded at **Distinction**.
9. Confirmation of the award of the Jersey Progression Certificate and the Jersey Progression Diploma for each candidate in the named qualification pathway.
10. Summary of Actions from the meeting.
11. AOB.

The Chair will make it clear at the outset of each Awarding Meeting that the results remain confidential until the External Verifier has submitted their final report for the year.

Assessment regulations

To achieve the **Jersey Progression Qualification** learners will successfully pass the units associated with the qualification. The assessment schedule for each unit will be identified at the start of the course and may include a range of different tasks such as practical activities, skill tests, in-class tests, course work, written reports and formal examinations, amongst others. A submissions calendar for all assessed work will be made available at the beginning of the academic year.

Deadlines for assessment are an important part of the **Jersey Progression Qualification** as by meeting these, learners develop the important employability skill of good time management. It is also important not to advantage learners by accepting late work. This allows individuals extra time to complete assignments, which is unfair. If there are extenuating circumstances for late submission the learning needs to complete the appropriate form and submit it for consideration at the Award Board. Assessments which are not submitted by the original specified assessment deadline but are received within five working days afterwards will be marked but will only be able to receive a maximum grade of **Pass**. Late work will have limited written feedback.

Normally only one opportunity will be given to provide final formative assessment feedback on assessed work. Feedback will focus on enhancing the learners' understanding and knowledge to allow them to further develop their answers. It is not intended that tutors write or provide information that can be directly incorporated into an assessment.

Following formative assessment and feedback, learners are able to:

- Revisit work to add to the original evidence produced to consolidate a Pass grade or to enhance their work to achieve a higher grade
- Submit evidence for summative assessment and the final unit grade.

Summative assessment is a final assessment decision on an assessment task in relation to the assessment criteria of each unit. It is the definitive assessment and it is recorded on the learner's profile. Should the learner not achieve at least a Pass grade, the submitted work will be recorded as 'Not Yet Achieved'.

Reassessment

The decision on whether to offer the learner the opportunity for reassessment will be made by the Course Team, in consultation with the Lead Internal Verifier, prior to the Award Board. Reassessment can either be through:

- Resubmission – revision of the work originally submitted; or
- Retake – submission of a new piece of work.

Extenuating circumstances

The purpose of this policy is to outline the support available for learners who, during their studies, experience exceptional unforeseen circumstances beyond their control which severely affect their ability to successfully complete an assessment, meet an assignment deadline or sit an examination. The table below gives an indication of what might be considered valid extenuating circumstances and circumstances which would not be considered valid.

This list is not exhaustive and learners should not make assumptions regarding extenuating circumstances but should ask for advice from their tutor or staff from Student Life to confirm what might be an appropriate claim.

Each claim for extenuating circumstances must be accompanied by a completed Extenuating Circumstances Form (see Appendix I) and independent supportive evidence which is signed and dated by the appropriate individual, e.g. the doctor. Examples of corroborating evidence likely to be acceptable include an original copy of a medical certificate, the doctor's or counsellor's letter on headed paper, or a hospital appointment letter. Every claim for extenuating circumstances will be considered by the Course Team, in consultation with the Lead Internal Verifier, on a case by case basis.

Applications for extenuating circumstances should always be made as soon as possible **before** the assessment deadline. Claims made after the assignment is due will not normally be considered unless there are exceptional reasons for not doing so. Evidence and a completed claim form must be provided within five working days of the assessment deadline to support any such claims. If a claim is considered valid, an extension of a maximum of **ten working days** will normally be granted and the assessment must be submitted before this revised deadline. Any late submission of work for which there is no valid claim for extenuating circumstances but which is submitted within five working days of the initial deadline will receive a maximum grade of Pass.

Compensation

To be awarded the Jersey Progression Certificate it is expected that the learner achieves two core units and three option units and for the Jersey Progression Diploma a further two core units and three option units. However, it may be possible to award **compensation** for one incomplete unit in the Certificate and one incomplete unit in the Diploma if there are valid extenuating circumstances. This equates to a maximum of 20% compensation for each qualification. The decision to award compensation rests with the Award Board. Where a unit is compensated, this will be shown on a learner transcript.

Valid extenuating circumstances

Medical illness or serious injury which has a severe impact on work and can be evidenced by a GP/Doctor

Extreme personal problems

Bereavement of a close family member or close friend

Not valid

Coughs, colds, sore throats or other minor illnesses

Illness affecting relatives or friends would not be considered a valid reason unless it is serious or you are the main carer

Making personal arrangements such as holiday arrangements, medical appointments, etc., which conflict with the examination and assessment timetable

Transport problems

Computer problems including submission of the wrong file, computer malfunction, etc.

Alarm clock not going off

Misreading the timetable and/or failing to attend at the right time and in the right place

Non-submission of work

Lateness or absence from assessment sessions

Moving house

Sanctions imposed for being in breach of college regulations.

Student academic appeal procedure

If a learner disagrees with an assessment decision the procedure outlined below will be followed. Please note an appeal can only be based on the achievement/non-achievement of the specific criteria related to that assessment.

Stage One: Informal

If a learner disagrees with the assessment decision of an assessor, the learner must discuss this with the assessor within a period of five working days following the assessment decision. If the matter is unresolved then the issues should be documented on a Candidate Appeal Form (see Appendix II) before moving to Stage Two.

Stage Two: Formal

The internal verifier should review the assessment decision within five working days and notify the learner in writing. The learner agrees or disagrees with the outcome, in writing, within a period of five working days and if the matter is unresolved Stage Three takes effect.

Stage Three: Appeal Hearing

The College Registrar or their nominee will hear the appeal within a period of ten working days. The panel at the Appeal Hearing will also include the Head of Department, the original assessor and the internal verifier. The learner can choose to be accompanied by a friend, parent or guardian. The panel will inform the learner of the outcome of the hearing, both orally and in writing, within five working days.

Academic malpractice policy

Academic malpractice can be defined as any attempt to gain unfair advantage in the assessment process of a qualification and therefore manipulate the grades which might be achieved. Malpractice may be intentional or unintentional, however, the college policy on malpractice does not consider whether there is intention to deceive or not.

Examples of malpractice include:

- allowing someone else to complete the assignment;
- copying another learner's work (with or without their permission);
- copying anything from the internet or from an article or book without acknowledging the author; or
- failure to reference sources correctly.

All assessed work must be solely the own work of the learner and learners must sign an assessment cover sheet before submission to confirm this.

The College supports learners in the avoidance of malpractice by helping them to develop appropriate academic skills through the initial part of their studies. This includes tuition on how to carry out and record research, writing skills and referencing.

The College takes academic malpractice very seriously and has produced a full policy which outlines what is deemed as malpractice, the process the college will use to investigate its occurrence and the sanctions which may be imposed if malpractice is proven. The policy and guidelines relating to academic malpractice can be found on the College Intranet.

Access arrangements and reasonable adjustments

The College takes its commitments under the Discrimination (Jersey) Law 2013 very seriously and works to create equal access for learners through the provision of information, advice, guidance and, where appropriate, additional support to meet individual needs and situations.

If you have a recognised learning need, medical condition or disability which affects your ability to study, complete assessments or sit examinations, you must bring this to the attention of your tutor. They will advise you on the best course of action in accordance with the Highlands College Special Educational Needs and Equality, Diversity and Inclusiveness policies. These College policies have been developed to take account of the published policies and regulations of the Joint Council for Qualifications. Under these policies you may qualify for access arrangements, reasonable adjustments or additional support when studying or undertaking assessed work. Any such claims must be made in a timely manner and supported by appropriate evidence and documentation.

Section B

Unit Content

and

Assessment

Guidance

Structure of the Jersey Progression Qualification in Mechanical Engineering and Welding

Unit No.	Unit Title	Core/Option
1	Safe Working Practices in Mechanical Engineering	Core
2	Mechanical Engineering Project 1	Core
3	Mechanical Engineering Project 2	Core
4	Working in the Industry	Core
<p>The Jersey Progression Certificate requires learners to achieve unit 1 or 3 and unit 2 or 4.</p> <p>The Jersey Progression Diploma requires learners to achieve the remaining two core units.</p>		
5	Common Processes in Mechanical Engineering	Option
6	Engineering Drawing	Option
7	Engineering Materials	Option
8	Plate Fabrication	Option
9	Scientific Principles used in Mechanical engineering	Option
10	Manual Metal Arc Welding	Option
11	Metal Arc Gas Shielded Welding	Option
12	Tungsten Arc Gas Shielded Welding	Option
<p>The Jersey Progression Certificate requires learners to achieve unit 1 or 3 and unit 2 or 4 and a further three option units.</p> <p>The Jersey Progression Diploma requires learners to achieve the remaining two core units and a further three different option units from those achieved for the Certificate.</p>		

Unit 1 Safe Working Practices in Mechanical Engineering

Unit summary	This unit provides you with the essential health and safety knowledge required to work safely in the mechanical engineering industry. The knowledge covered relates to work carried out in an engineering environment. This unit is synoptic and uses your knowledge from other units on the course.
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Guided learning hours	48 hours
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Level	2
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Learning outcome 1

The learner will: Understand the health and safety legislation and procedures required to work safely in the mechanical engineering industry

The learner must know about:

- Health and safety regulations (roles and responsibilities) in an engineering environment
- Common risks and hazards in an engineering environment.
- Working safely in an engineering environment.

Learning outcome 2

The learner will: Apply safe working practices and procedures when carrying out tasks related to the mechanical engineering industry.

The learner must demonstrate:

- The use of safe working practices and procedures when carrying out tasks in an engineering environment.
- Different lifting tasks using correct manual handling techniques
- The ability to identify hazards and record them on the appropriate paperwork.

Learning outcome 3

The learner will: Review the risks associated with particular tasks related to the mechanical engineering and welding industry.

The learner must consider:

- Appropriate health and safety regulations
- Risk assessments

Grading descriptors

Pass:

LO1: Understand the health and safety legislation and procedures required to work safely in the mechanical engineering industry

- Achieve a pass grade for the internally assessed 20-question exam.

LO2: Apply safe working practices and procedures when carrying out tasks related to the mechanical engineering industry.

- Competently use safe working practices and procedures when carrying out tasks in an engineering and welding environment.
- Competently select and use appropriate manual handling and access equipment for given scenarios.

LO3: Review the risks associated with particular tasks related to the mechanical engineering industry.

- Outline the risks associated with the practical tasks.
- Produce appropriate risk assessments.
- Identify hazards and record them on the appropriate paperwork competently.

Merit:

LO1: Understand the health and safety legislation and procedures required to work safely in the mechanical engineering industry

- Achieve a merit grade for the internally assessed 20-question exam.

LO2: Apply safe working practices and procedures when carrying out tasks related to the mechanical engineering industry.

- Use safe working practices and procedures with confidence when carrying out tasks in an engineering environment.
- Confidently select and use appropriate manual handling and access equipment for given scenarios.
- Confidently identify hazards and record them on the appropriate paperwork.

LO3: Review the risks associated with particular tasks related to the mechanical engineering industry.

- Describe the risks associated with the practical tasks.
- Produce risk assessments in some detail.

LO1: Understand the health and safety legislation and procedures required to work safely in the mechanical engineering industry

- Achieve a distinction grade for the internally assessed 20-question exam.

LO2: Apply safe working practices and procedures when carrying out tasks related to the mechanical engineering industry.

- Use safe working practices and procedures skilfully when carrying out tasks in an engineering environment.
- Skilfully select and use appropriate manual handling and access equipment for given scenarios.
- Skilfully identify hazards and record them on the appropriate paperwork.

LO3: Review the risks associated with particular tasks related to the mechanical engineering industry.

- Give a comprehensive description of the risks associated with the practical tasks.
- Produce detailed risk assessments.

Assessment

The assessment for this outcome consists of:

LO1 Successful completion of the multiple choice exam internally assessed 20 question exam.

LO2 The application of safe working practices and procedures when completing a series of practical tasks.

LO3 A review of the health and safety risks associated with the practical tasks and the completion of appropriate risk assessment that minimise the risk factor associated with a given task.

Types of evidence

LO1 Internally assessed 20 question exam, this will accompany a completed Health & Safety workbook.

LO2 Tutor observation of safe working practices and procedures when completing a series of practical tasks. The learner will be required to pass the assessments in order to be able to work safely in the construction industry.

LO3 A review of the health and safety risks associated with a practical task and the completion of appropriate risk assessment.

Delivery guidance

The unit will focus on health and safety legislation (U.K. and Jersey) and good practice in relation to hazardous situations, and access equipment in an engineering and welding environment. The delivery of the unit will focus on preparing the learners for the requirements of the assessment. Learners will be given opportunities to develop health, safety and welfare awareness in engineering environments. They will undertake practical and theoretical tasks relating to health and safety activities throughout the unit.

Learners must know about and be able to use personal protective equipment (PPE) this will be done in practical scenarios which will include the correct manual handling of different objects and materials. Throughout the unit learners will be made aware of all relevant legislation and when it would come into force. They will be introduced to risk assessments through live scenarios giving them an understanding of their importance in every construction situation.

Internet research can be used to find details of PPE and its application, as well as information on material hazards and health and safety legislation. Learners will benefit from exposure to a range of visual resources for example video clips, the "Clickview" digital library resources and the HSE website.

Unit 2 Mechanical Engineering Project 1

Unit summary	This unit brings together the knowledge and skills developed on the course by enabling you to carry out a basic mechanical engineering process safely and to carry out the safe manufacture of a mechanical engineering product. It involves engineering drawing and the use of engineering skills, tools and processes carried out in a safe working environment.
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Guided learning hours	48 hours
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Level	2
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Learning outcome 1

The learner will: Select the correct materials, tools and equipment required to carry out a basic mechanical engineering process safely.

The learner must know about:

- The correct materials required for a specified mechanical engineering product.
- The correct tools and equipment required for a specified mechanical engineering product.
- The safe assessment of the risks associated with the manufacturing of the engineering component.
- Drawing out basic mechanical engineering components.

Learning outcome 2

The learner will: Carry out the safe manufacture of a mechanical engineering product.

The learner must demonstrate:

- The safe use of materials, tools and equipment.
- The ability to carry out basic mechanical engineering practices.
- The ability to work to a specification
- The ability to carry out basic mechanical engineering practices within a required tolerance

Learning outcome 3

The learner will: Review the completed mechanical engineering project.

The learner must consider:

- The risks associated with the project and the extent to which the work was carried out within the parameters highlighted in the risk assessments.
- Their interpretation of the design brief.
- The success of the completed mechanical engineering project against the design brief.
- The use of the correct testing methods for mechanical engineering practices.
- The extent to which they have worked within tolerances and what they might do differently in the future to improve this if necessary.

Grading descriptors

Pass:

LO1: Select the correct materials, tools and equipment required to carry out a basic mechanical engineering process safely.

- Identify, using some technical terms, the components, tools and equipment required to carry out a basic mechanical engineering manufacturing in accordance to a specification.

LO2: Carry out the safe manufacture of a mechanical engineering product.

- Safely carry out basic mechanical engineering manufacturing in accordance with a specification.
- Carry out basic mechanical engineering manufacturing achieving the minimum standard of the set tolerances.

LO3: Review the completed mechanical engineering project.

- Test the manufacturing correctly.
- Achieve the minimum standard of the set tolerances and identify what might be done to improve this.
- Identify the risks associated with the project.

Merit:

LO1: Select the correct materials, tools and equipment required to carry out a basic mechanical engineering process safely.

- Identify, using a range of technical terms, the components, tools and equipment required to carry out a basic mechanical engineering manufacturing in accordance to a specification.

LO2: Carry out the safe manufacture of a mechanical engineering product.

- Safely carry out basic mechanical engineering manufacturing in accordance with a specification.
- Carry out basic mechanical engineering manufacturing achieving a medium standard of the set tolerances.

LO3: Review the completed mechanical engineering project.

- Test the manufacturing correctly and confidently.
- Achieve a medium standard of the set tolerances and identify what might be done to improve this.
- Outline the risks associated with the project.

LO1: Select the correct materials, tools and equipment required to carry out a basic mechanical engineering process safely.

- Identify, using consistently and correctly, a wide range of technical terms, the components, tools and equipment required to carry out a basic mechanical engineering manufacturing in accordance to a specification.

LO2: Carry out the safe manufacture of a mechanical engineering product.

- Safely carry out basic mechanical engineering manufacturing in accordance with a specification.
- Carry out basic mechanical engineering manufacturing achieving maximum standard or higher of the set tolerances.

LO3: Review the completed mechanical engineering project.

- Test the manufacturing skilfully.
- Achieve a maximum standard or higher of the set of the set tolerances and describe what might have been done differently.
- Describe the risks associated with the project.

Assessment

The assessment for this unit consists of:

LO1 The production of a drawing of an engineering component.

LO2 Working to a design brief, the learner will carry out the manufacture of a mechanical engineering component. This will need to be produced within the given tolerance. As a guide a general tolerance of 3mm will be allowed for pass, within 2mm will be graded as Merit and if it is within 1mm it will be graded as Distinction.

LO3 Completion of a viva voce exam immediately following the production of the last component to confirm the live assessment for LO3.

Types of evidence

LO1 A drawing of an engineering component. The evidence required for assessment purposes will consist of the Lecturer's report which will be used by the assessor to support and confirm their own assessment for LO1.

LO2 The produced engineering drawing and component to a given tolerance. This piece will be graded using a grade sheet that accompanied the drawing. Learners will be allowed to access the grade sheet once the drawing is released. A lecturer's report on each learner's contribution and approach. Grades achieved in the workshop tasks will provide evidence for a proposed indicative grade for this outcome.

LO3 The individual viva carried out by the assessor that follows the production of the engineering component. This will be recorded for assessment purposes.

Delivery guidance

The unit requires the learner to produce a drawing of an engineering component and then go on to produce the engineering component in the workshop. In order for this unit to be successful, the engineering component chosen will need to be sufficiently complex to test the learner's ability and skills. It is important that it reflects the knowledge, understanding and skills that the learner will have achieved at this stage of the course. This unit is designed to build on the knowledge gained by the learner and to increase their confidence within a workshop environment.

When introducing this unit, it is important to explain the grade sheet to learners. It would be beneficial to have a practice run using a component that is slightly less complicated than the exam piece.

The materials for the project, mainly steel, will have been covered in unit 7; tools and equipment that will be used in the project will have been covered in unit 5 and the carrying out of risk assessments and safe working practices will have been covered in unit 1. For the manufacturing element of the project, the engineering component manufacturing must be from specifications available within the workshop. For the Engineering drawings aspect of the project, all drawings must be completed in 1st or 3rd angle projection.

Unit 3 Mechanical Engineering Project 2

Unit summary	This unit brings together the knowledge and skills developed on the course by enabling you to manufacture a larger and more complex engineering component. It involves engineering drawing and the use of engineering skills, tools and processes carried out in a safe working environment.
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Guided learning hours	48 Hours
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Level	2
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Learning outcome 1

The learner will: Select the correct materials, tools and equipment required to safely carry out advanced mechanical engineering manufacturing.

The learner must know about:

- The correct materials required for a specified mechanical engineering product.
- The correct tools and equipment required for a specified mechanical engineering component.
- The safe assessment of the risks associated with the manufacturing of the engineering component.
- Drawing out advanced mechanical engineering components.

Learning outcome 2

The learner will: Carry out the safe manufacture of a complex mechanical engineering project.

The learner must demonstrate:

- The safe use of materials, tools and equipment
- The ability to carry out advanced mechanical engineering practices when working to a specification and within a required high tolerance.
- The ability to fusion weld where required in the completed assembly.

Learning outcome 3

The learner will: Review the completed project against the design brief.

The learner must consider:

- The risks associated with the project and the extent to which the work was carried out within the parameters highlighted in the risk assessments.
- Their interpretation of the design brief and the success of the completed advanced mechanical engineering project against the design brief.
- The use of the correct testing methods for mechanical engineering practices
- The extent they have worked within tolerances and how they might improve this.

Grading descriptors

Pass:

LO1: Select the correct materials, tools and equipment required to safely carry out advanced mechanical engineering manufacturing.

- Identify, using some technical terms, the components, tools and equipment required to carry out advanced mechanical engineering manufacturing in accordance to a specification.

LO2: Carry out the safe manufacture of a complex mechanical engineering project.

- Safely carry out advanced mechanical engineering manufacturing in accordance with a specification.
- Carry out advanced mechanical engineering manufacturing achieving the minimum standard of the set tolerances.

LO3: Review the completed project against the design brief.

- Test the manufacturing correctly and achieve results in accordance with specification.
- Achieve the minimum standard of the set tolerances and identify what might be done to improve this.
- Identify the risks associated with the project.

Merit:

LO1: Select the correct materials, tools and equipment required to safely carry out advanced mechanical engineering manufacturing.

- Identify, using a range of technical terms, the components, tools and equipment required to carry out advanced mechanical engineering manufacturing in accordance to a specification.

LO2: Carry out the safe manufacture of a complex mechanical engineering project.

- Safely carry out advanced mechanical engineering manufacturing in accordance with a specification.
- Carry out advanced mechanical engineering manufacturing achieving a medium standard of the set tolerances.

LO3: Review the completed project against the design brief.

- Test the manufacturing correctly and confidently and achieve results in accordance with specification.
- Achieve a medium standard of the set tolerances and identify what might be done to improve this.
- Outline the risks associated with the project.

Distinction:

LO1: Select the correct materials, tools and equipment required to safely carry out advanced mechanical engineering manufacturing.

- Identify, using consistently and correctly, a wide range of technical terms, the components, tools and equipment required to carry out advanced mechanical engineering manufacturing in accordance to a specification.

LO2: Carry out the safe manufacture of a complex mechanical engineering project.

- Safely carry out advanced mechanical engineering manufacturing in accordance with a specification.
- Carry out advanced mechanical engineering manufacturing achieving maximum standard or higher of the set tolerances.

LO3: Review the completed project against the design brief.

- Test the manufacturing skilfully and achieve results in accordance with specification.
- Achieve a maximum standard or higher of the set of the set tolerances and describe what might have been done differently.
- Describe the risks associated with the project.

Assessment

The assessment for this unit consists of:

LO1 The production of a drawing of an engineering component.

LO2 Working to a design brief, the learner will carry out the manufacture of a mechanical engineering component. This will need to be produced within the given tolerance. As a guide a general tolerance of 3mm will be allowed for pass, within 3mm will be graded as Merit and if it is within 1mm it will be graded as Distinction.

LO3 Completion of a viva voce exam immediately following the production of the last component to confirm the assessor's live assessment for LO3.

Types of evidence

LO1 A drawing of an engineering component. The evidence required for assessment purposes will consist of the Lecturer's report which will be used by the assessor to support and confirm their own assessment for LO1

LO2 The produced engineering drawing and component to a given tolerance. This piece will be graded using a grade sheet that accompanied the drawing. Learners will be allowed to access the grade sheet once the drawing is released.

LO3 The individual viva carried out by the assessor that follows the production of the engineering component. This will be recorded for external verification purposes.

Delivery guidance

The unit requires the learner to produce a drawing of an engineering component and then go on to produce the engineering component in the workshop. In order for this unit to be successful the engineering component chosen will need to be sufficiently complex to test the learner's ability and skills. It is important that it reflects the knowledge, understanding and skills that the learner will have achieved at this stage of the course. This unit is designed to build on the knowledge gained by the learner and to increase their confidence within a workshop environment.

When introducing this unit, it is important to explain the grade sheet to learners. It would be beneficial to have a practice run using a component that is slightly less complicated than the exam piece.

The materials for the project, mainly steel, will have been covered in unit 7; tools and equipment that will be used in the project will have been covered in unit 5 and the carrying out of risk assessments and safe working practices will have been covered in unit 1. As this project will also include welding it is important that unit 10 and 11 are completed before starting this project. For the manufacturing element of the project, the engineering component manufacturing must be from specifications available within the workshop. All drawings must be completed in 1st or 3rd angle projection and they must also include a cross section of the project.

Unit 4 Working in the Industry

Unit summary	This unit will develop your readiness for the world of work. Through research activities you will develop an awareness of your industry sector and the opportunities that may be open to you. You will assess your current employability skills, plan for and undertake work-related developmental activities. This unit concludes with an opportunity to re-assess your skill set and the progress made.
Guided learning hours	27 teaching hours and the equivalent of one working week in work placement or other structured professional development activity.
Level	2

Learning outcome 1

The learner will: identify current employability skills and plan for an industry-relevant work placement or other structured professional development activity.

The learner must know about:

- Employability skills and employment opportunities in their industry
- CV, cover letters and email etiquette
- Skills for gaining and maintaining employment, to include:
 - communication skills
 - self-management skills
 - teamwork skills
 - confidence and resilience skills.

Learning outcome 2

The learner will: carry out an industry-relevant work placement or other structured professional development activity, e.g. vocational work-based project, for the equivalent of one working week.

The learner must demonstrate:

- Good attendance and timekeeping at placement as evidenced by the tutor, employer or trainer.
- Appropriate dress and presentation in accordance with industry requirements.
- Engagement with professionals within the placement or activity as evidenced by feedback.

Learning outcome 3

The learner will: Review the progress made in developing employability skills during the course, their placement or activity and how this has influenced their plans for the future.

The learner must consider:

- Their end of course employability skills, time management and distance travelled through reassessment via 'Navigate'.
- Their interview skills as demonstrated in an observed interview with an external agency.
- The impact of their work experience placement or activity on improving their employability skills.
- How their work experience placement or activity has influenced their plans for the future.

Grading descriptors

Pass:

LO1: Identify current employability skills and plan for an industry-relevant work placement or other structured professional development activity.

- Identify current employability skills, their strengths and areas for improvement.
- Identify three employment options that are suitable for the student via Kudos or class-based activities and provide evidence to show this.
- Complete preparation for an appropriate work placement or activity including an up-to-date basic CV and covering letter/email showing adequate spelling, grammar and punctuation skills.
- Completion of adequate skills preparation for placement or activity evidenced through 'My Activities' timeline on Navigate and witness statement from tutor.

LO2: Carry out an industry-relevant work placement or other structured professional development activity for the equivalent of one working week.

- Complete an appropriate activity evidenced by a daily timesheet signed by supervisor or tutor statement.
- Complete a daily work placement or activity journal on Navigate.
- Satisfactory feedback from employer or equivalent (facilitator, mentor, etc.) evidenced through Navigate or other appropriate documentation.

LO3: Review the progress made in developing employability skills during their course and their placement/activity period and how this has influenced their plans for the future, evidenced through observed interview.

- Take part in an observed interview showing basic interview skills and preparation.
- Identify their 'end of course' employability skills and identify a range of strengths and areas for development in these areas providing evidence to support this.
- Outline basic ways to improve their employability skills.
- Outline how their placement/activity has influenced their plans for the future.

Grading descriptors

Merit:

LO1: Identify current employability skills and plan for an industry-relevant work placement or other structured professional development activity.

- Identify current employability skills, strengths and areas for improvement with explanations of these.
- Identify and compare at least three employment options that are suitable for the student via Kudos or class-based activities and provide evidence to show this.
- Complete tailored preparation for an appropriate work placement or activity including an up-to-date tailored CV and appropriate covering letter/email demonstrating good grammar, spelling and punctuation skills.
- Completion of good skills preparation for placement or activity evidenced through 'My Activities' timeline on Navigate and witness statement from tutor.

LO2: Carry out an industry relevant work placement or other structured professional development activity for the equivalent of one working week.

- Complete an appropriate activity evidenced by a daily timesheet signed by supervisor or tutor statement.
- Complete a daily work placement journal on Navigate showing what student has learnt each day.
- Good feedback from employer or equivalent (facilitator, mentor, etc.) evidenced through Navigate or other appropriate documentation.

LO3: Review the progress made in developing employability skills during their course and placement/activity period and how this has influenced their plans for the future, evidenced through observed interview.

- Take part in an observed interview showing good interview skills and preparation.
- Review their 'end of course' employability skills and discuss a range of strengths and areas for development in these areas providing evidence to support this.
- Outline how they will improve their employability skills and produce evidence to support this.
- Describe how their placement/activity has influenced their plans for the future.

Grading descriptors

Distinction:

LO1: Identify current employability skills and plan for an industry-relevant work placement or other structured professional development activity.

- Identify current employability skills, outline strengths and areas for improvement with detailed explanations of each.
- Identify and evaluate several employment options that are suitable for the students via Kudos or class-based activities and provide evidence to show this.
- Complete thorough preparation for an appropriate work placement or activity including an up-to-date detailed CV and covering letter/email demonstrating excellent spelling, grammar and punctuation skills.
- Completion of excellent skills preparation for placement or activity evidenced through 'My Activities' timeline on Navigate and witness statement from tutor.

LO2: Carry out an industry relevant work placement or other structured professional development activity for the equivalent of one working week.

- Complete an appropriate work placement evidenced by daily timesheet signed by supervisor or tutor statement.
- Complete a daily work placement journal on Navigate explaining in detail what student has learnt each day.
- Excellent feedback from employer or equivalent (facilitator, mentor, etc.) evidenced through Navigate or other appropriate documentation.

LO3: Review the progress made in developing employability skills during their course and placement/activity period and how this has influenced their plans for the future, evidenced through observed interview.

- Take part in an observed interview showing excellent interview skills and preparation.
- Review and evaluate their 'end of course' employability skills and discuss a range of strengths and areas for development in these areas providing evidence to support this.
- Describe advanced ways to improve their employability skills and develop ideas to enhance them further.
- Give a detailed account of how their placement/activity has influenced their plans for the future.

Assessment Evidence

The assessment for this unit requires the completion of:

1. An employability skills assessment under controlled conditions. This will be completed during the first week of course.
2. Evidence of research into suitable careers.
3. Pre-placement planning and preparation including production of an up-to-date CV and covering letter/email.
4. Industry-appropriate employability skills activities evidenced through Navigate 'My Activities' timeline and tutor witness statements.
5. Allocated days of work placement or other structured professional development activity appropriate for industry.
6. A daily work placement journal completed on Navigate including daily hours attended and skills developed.
7. A second online employability skills assessment (following placement/activity) via Navigate, under controlled conditions, demonstrating and reviewing the progress made since the first employability skills assessment.
8. A review task in the form of an interview under controlled conditions.

Timing of assessment tasks:

- Employability skills assessment: first week of course.
- Completion of pre-placement skills development: during taught sessions and extra-curricular activities.
- Completion of work placement or other structured professional development activity: equivalent to one working week
- Maintenance of work placement/activity journal: during placement/activity.
- Reassessment of employability skills post-placement/post-activity under controlled conditions.
- Interview to reflect on unit, work experience and plans for the future.

Types of evidence

The evidence for this unit consists of:

1. The results of an online employability skills assessment.
2. Pre-placement skills development: Navigate 'My Activities' timeline and witness statements from tutor.
3. Kudos 'Compare my Careers' screen or other similar class-based activities: uploaded to Navigate or E-Subs.
4. Planning and preparation for placement/activity including strengths and areas for improvement, CV and covering letter/email.
5. Completion of allocated days of work placement/activity: signed timesheet and feedback from employer or equivalent (facilitator, mentor, etc.)
6. A daily work placement/activity journal.
7. The results of a second online employability skills assessment (following placement/activity).
8. An observed interview carried out by an external agency.

Delivery guidance

The focus of this unit is the professional approach required by learners when applying for any form of employment, work experience or voluntary position. Learners will be given the opportunity to complete a placement or other structured professional development activity to ensure that they have been able to develop their employability skills and knowledge of the industry/workplace. This unit will be delivered by a combination of e-learning through the online platform Navigate, tutor input, visiting speakers from the industry and work placement/activity supervisors.

Learners will need to know about their current employability skills. They will complete an online skills questionnaire and set targets on Navigate. These will be discussed with their tutor. Learners will research employment opportunities, both on and off the island, through tutor taught sessions, visiting speakers from the industry and research online. Research should include knowledge of specific recruitment methods for industry and the part social media plays in job searching. Learners will identify appropriate opportunities linked to personal analysis through a career planning computer package, e.g. Adult Directions accessed through Navigate and e-learning sessions.

Learners will prepare for their placement/activity through taught sessions and Navigate. They will identify appropriate placement organisations, matching job description and person specification to skills, abilities and qualities. They will learn how to develop a relevant CV, complete an application form and produce an effective covering letter/email. They will demonstrate effective interview techniques and develop a knowledge of expectations and appropriate behaviours for their placement/activity. Tutors are to use appropriate activities that suit the needs of their industries to ensure that the necessary skills are developed.

The use of Link Careers Advisers from Skills Jersey should be embraced and planned into the Scheme of Work to ensure adequate notice is given to them. Also, with sufficient notice, support from Careers and Employability is available for the sessions using Kudos.

Learners will complete a relevant and appropriate work placement or other structured professional development activity and produce a daily placement/activity journal through Navigate which will be verified by the placement/activity supervisor and personal tutor. After the placement/activity, learners will complete an online placement/activity review, a review of skills and an updated CV. They will identify their strengths and areas for development appropriate to employment in the industry.

Unit 5 Common Processes in Mechanical Engineering

Unit summary	This unit will provide you with the knowledge, understanding and skills required when using common processes and materials to carry out tasks in mechanical engineering. You will be introduced to processes, tools, equipment and materials used in the industry and will also carry out basic tasks commonly used in mechanical engineering.
Guided learning hours	48 hours
Level	2

Learning outcome 1

The learner will: Understand basic principles used in engineering processes.

The learner must know about:

- The principles of material removal and cutting tool geometry.
- Measurement and marking out
- Engineering tools
- Forming, joining and assembly of engineering materials

Learning outcome 2

The learner will: Produce three different engineering components.

The learner must demonstrate:

- The selection and use of measuring and marking out equipment
- The use of metric measurements in engineering applications
- The use of datum edges and datum lines as well as materials removal and shaping
- The interpretation of engineering drawings to produce components.

Learning outcome 3

The learner will: Review the manufactured items.

The learner must consider:

- The principles of measuring and marking out, forming and assembly when making their judgements.
- The justification for their choice of equipment and tools that were used
- The effectiveness of the manufactured items in terms of quality.
- How well they have met the requirements as specified in the original drawings.
- The strengths and weaknesses of the manufactured items and what they have learnt from the process.

Grading descriptors

Pass:	<p>LO1: Understand basic principles used in engineering processes. PASS ONLY.</p> <p>LO2: Produce three different engineering components.</p> <ul style="list-style-type: none"> • Produce an engineering component following a given brief with some accuracy. • Produce an engineering component within some of the given tolerances. <p>LO3: Complete a post-production written report reviewing the marking out and manufacturing of one of the three components. PASS ONLY.</p>
Merit:	<p>LO2: Produce three different engineering components.</p> <ul style="list-style-type: none"> • Produce an engineering component following a given brief, mostly accurately. • Produce an engineering component within most of the given tolerances.
Distinction:	<p>LO2: Produce three different engineering components.</p> <ul style="list-style-type: none"> • Produce an engineering component following a given brief, consistently accurately. • Produce an engineering component within all the given tolerances.

Assessment

The assessment for this unit consists of a scenario where the learner is working in a design practice. As part of the induction programme for trainee technicians, the manager has asked for the production of three engineering components. Assessment includes:

LO1 The completion of a workbook based on marking out equipment and engineering tools.

The completion of an exam on tools and equipment carried out under controlled conditions.

LO2 A practical assessment where learners produce the three engineering components. Only the final component will be graded

LO3 The completion of a post-production written report reviewing the marking out and manufacturing of the three components.

Types of evidence

The evidence for this unit consists of:

LO1 A workbook based on marking out equipment and engineering tools.

An exam on tools and equipment carried out under controlled conditions.

LO2 Tutor observation of a practical assessment where learners produce the three engineering components.

LO3 A post-production written report (completed under 1 hour supervised conditions using own notes as a prompt) reviewing the marking out and manufacturing of the three components.

Delivery guidance

There are three identified areas of learning for this unit:

1. The identification and use of marking out equipment
2. The identification and use of material removal tools
3. The operation of sheet metal forming equipment.

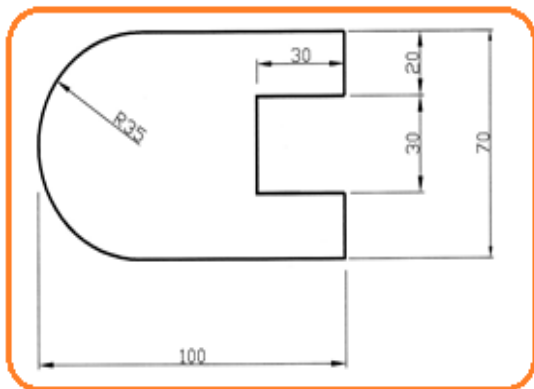
All equipment and tools will need to be demonstrated before learners use them. They will need to be provided with the opportunity to familiarise themselves with the names and uses of different tools. This will require constant reinforcement throughout the unit. Measurement and marking out will include rule, tape measure, engineer's square, dividers, centre punch, micrometer, Inside/Outside calliper. Engineering tools should include file, hacksaw, chisel, tin snips, pillar drill, guillotine, portable drill. Forming, joining and assembly of engineering materials

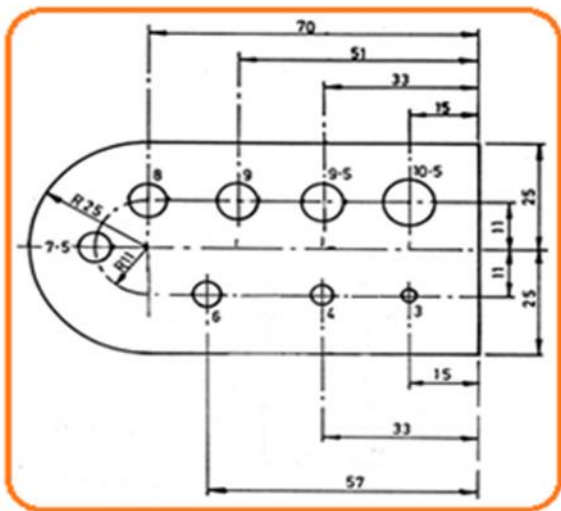
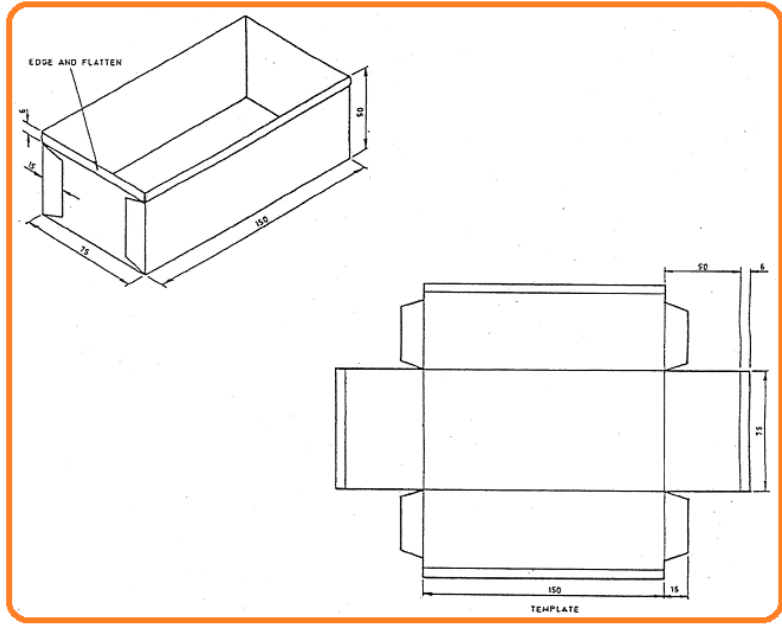
should include swing beam folder, box and pan folder, rolling machine, self-secured joints, nut and bolt.

Learners will work in an engineering workshop with benches and vices. They need to become familiar with engineering drawing and how to transfer details from a drawing onto engineering material (see attached examples, Learners will then need to use engineering tools to produce a component and will need to carry out visual inspections.

Technical terms used should always be spelt correctly and the mathematical processes required for measuring out and cutting material to the correct length will be explicitly taught. Engineers marking blue can be very helpful when learners begin marking out components.

Sample drawings of engineering components





Unit 6 Engineering Drawing

Unit summary

This unit will provide you with the knowledge, understanding and skills required when producing and interpreting engineering drawings and measurements. You will be introduced to the drawing equipment used in the production of engineering drawings and will also watch a demonstration of CAD drawing, saving and printing.

Guided learning hours

48 hours

Level

2

Learning outcome 1

The learner will: Identify how common drawing equipment, materials, measurement and scales are used in engineering drawing.

The learner must know about:

- Equipment used in engineering drawing.
- Materials used in engineering drawing.
- Measurement, scales and detailing in engineering drawing.

Learning outcome 2

The learner will: Apply common drawing and measuring practices to produce a range of engineering drawings.

The learner must demonstrate:

- Use of scales
- Use of appropriate equipment
- Use of accurate measurements

Learning outcome 3

The learner will: Review the engineering drawings.

The learner must consider:

- How the work produced has met the brief
- Why they used their selected materials, equipment and drawing methods
- The strengths and weaknesses of the finished drawings and ways that the work might be improved or extended in the future.

Grading descriptors

Pass:	<p>LO1: Learners will identify how common drawing equipment, materials, measurement and scales are used in engineering drawing. PASS ONLY.</p> <p>LO2: Apply common drawing and measuring practices to produce a range of engineering drawings.</p> <ul style="list-style-type: none">• Use scales in engineering drawings with some accuracy.• Use appropriate equipment in engineering drawings.• Use measurements in engineering drawings with some accuracy. <p>LO3: Complete a review of the drawings produced. PASS ONLY.</p>
Merit:	<p>LO2: Apply common drawing and measuring practices to produce a range of engineering drawings.</p> <ul style="list-style-type: none">• Use scales in engineering drawings mostly with accuracy.• Confidently use appropriate equipment in engineering drawings.• Use measurements in engineering drawings mostly with accuracy.
Distinction:	<p>LO2: Apply common drawing and measuring practices to produce a range of engineering drawings.</p> <ul style="list-style-type: none">• Use scales in engineering drawings with consistent accuracy.• Skillfully use appropriate equipment in engineering drawings.• Use measurements in engineering drawings with consistent accuracy.

Assessment

The assessment for this unit consists of:

LO1 A written exam identifying the ways that common drawing equipment, materials, measurement and scales are used in engineering drawing.

Preparation of a sheet of drawing paper with a 10 mm border; title box to include name, date and title of drawing.

LO2 Production of a portfolio of construction drawings which meet the standards set in relation to scales and accuracy.

LO3 Completion of a review of the drawings produced.

Types of evidence

LO1 A written exam identifying the ways that common drawing equipment, materials, measurement and scales are used in engineering drawing.

Preparation of a sheet of drawing paper with a 10 mm border; title box to include name, date and title of drawing.

LO2 A portfolio of construction drawings completed under controlled conditions.

LO3 A review of the drawings produced.

Delivery guidance

This unit provides the learner with the knowledge, understanding and skills needed to produce engineering-related drawings. They will develop their hand skills in order to produce manual drawings and will be introduced to the computer aided packages that could be utilised. It is important that learners practise the techniques required. The tutor will make reference to existing engineering drawings relating to local projects. They will emphasise the importance of accuracy and consistency when producing drawings and time should be spent consolidating the basic skills.

At the beginning of the unit the focus will be on principles of measurement, basic setting out of borders and title panels and will then progress to more complex drawings using scales and differing projections. The concept of scales and projections will be introduced and the use of three-dimensional models is recommended. In terms of resources, drawing boards and related drawing equipment should be made available as well as access to computers with the appropriate software packages. Equipment should include drawing board, 45° set square, 30/60 set square, T-square, pencils, eraser, drawing board clips, masking tape, ruler, compass. Materials should include paper (detail paper, tracing paper, paper sizes (A0, A1, A2, A3, A4), media (pencil HB, H, and 2H) and access to a CAD computer. Scales and detailing should cover 1:1, 1:2, 1:5, 1:10, 1:20, 1:50, 1:100, 1:1250, 1:2500 centre lines, grid lines, section lines, outlines, dimension lines, and hidden detail.

Learners will be encouraged to apply the knowledge they have learned on the other units to aid their progress through this unit. The tutor should contextualise the drawings so that learners can see where they fit in to the engineering process.

Unit 7 Engineering Materials

Unit summary

This unit is designed to help you to distinguish between engineering materials. You will define and test mechanical properties of several materials and will carry out heat treatment processes to see the effect on the materials properties. The materials will include ferrous metals and non-ferrous metals as well as thermoplastic and thermoset plastics.

Guided learning hours

48 hours

Level

2

Learning outcome 1

The learner will: Identify a range of engineering materials including ferrous metals, non-ferrous metals and plastics.

The learner must know about:

- The mechanical and physical properties of ferrous metals, non-ferrous metals and plastics.
- Ductility, malleability, hardness, brittleness, toughness, elasticity, conductivity, and insulation.

Learning outcome 2

The learner will: Carry out suitable tests to determine material properties and record the results.

The learner must demonstrate:

- The ability to identify the difference between thermosetting plastic and thermoplastic.
- Perform tensile testing, toughness testing using Izod or Charpie test and hardness testing using Rockwell.

Learning outcome 3

The learner will: Select an appropriate material for a given application from a design brief.

The learner must consider:

- Compressive, tensile and shear forces.
- Atmospheric conditions including heat, cold and how corrosive the environment is.

Grading descriptors

Pass:	<p>LO1: Identify a range of engineering materials including ferrous metals, non-ferrous metals and plastics. PASS ONLY.</p> <ul style="list-style-type: none"> • Identify a range of engineering materials. • List the mechanical properties of a range of engineering materials. • Achieve a pass grade for the assessed 20-question exam. <p>LO2: Carry out suitable tests to determine material properties and record the results.</p> <ul style="list-style-type: none"> • Perform tests to determine material properties competently. • Record the results of the tests with some accuracy. <p>LO3: Completion of a review of a given material. PASS ONLY.</p>
Merit:	<p>LO2: Carry out suitable tests to determine material properties and record the results.</p> <ul style="list-style-type: none"> • Perform tests to determine material properties confidently. • Record the results of the tests, mostly accurately.
Distinction:	<p>LO2: Carry out suitable tests to determine material properties and record the results.</p> <ul style="list-style-type: none"> • Perform tests to determine material properties skilfully. • Record the results of the tests, completely accurately.

Assessment

The assessment for this outcome consists of:

LO1 Completion of a written exam identifying eight given samples of engineering materials including ferrous metals, non-ferrous metals and plastics.

LO2 Completion of suitable tests to determine material properties of given engineering materials. Completion of a record of the results of the tests.

LO3 Completion of a written report reviewing the selection of a suitable material from a given brief and giving reasons for the selection.

LO3 Completion of a review.

Types of evidence

LO1 Identification of samples of engineering materials. A written exam of 20 questions taking 1 hour under controlled conditions.

LO2 Practical testing assessment, record of the results and tutor observation.

LO3 A written report reviewing the selection of a suitable material.

Delivery guidance

Learners will be introduced to different engineering materials. They will work with aluminium and low carbon steel during unit Core 2 and unit 5 and will need to be introduced to other metals and plastics using workshop equipment as examples. It is important that each example has a reason why it is used in that environment. When learners can identify the different materials, they should then explore the materials differing properties in a practical environment. It is very useful if the learner can use the finished product e.g. wine bottle holder (malleability), cold chisel (hardenability), annealing of a file, injection moulding (thermoplastic).

Annealing and hardening will need to be carried out on any materials to be tested helping to vary the results and aid understanding of both processes. For tensile testing the learner will require access to a tensile testing machine. During this process it is also important to measure percentage elongation and percentage reduction in area. For toughness learners will require access to either an Izod or Charpie testing machine. For hardness testing the learner will require access to a Rockwell or Vickers hardness testing machine.

The design brief for LO3 will include the amount of force, type of force and temperature range that the engineered piece will be required to withstand and whether the engineered piece will be exposed to a corrosive environment.

Practical requirements required to deliver this unit: the ability to heat metals to above 900 degrees Celsius; two quench tanks, one containing water and one containing oil; a plastic injection machine with moulding; a tensile testing machine; an Izod or Charpie testing machine; and a hardness testing machine (Rockwell or Vickers). Practical examples of different metals will include; brass, copper, zinc, stainless steel (austenitic and martensitic), low medium and high carbon steel, aluminium, tin and cast iron. Practical examples of thermoplastics will include; PVC, polythene, Perspex and nylon. Practical examples of thermoset plastics to include urea-formaldehyde, phenol-formaldehyde (Bakelite) and polyurethane.

Unit 8 Plate Fabrication

Unit summary

In this unit you will explore the theory and practice of plate metal fabrication. You will apply this knowledge to safely produce plate metal fabrications fit for purpose, in line with current BS, EN and/or ISO standards in 3mm or above.

Guided learning hours

48 hours

Level

2

Learning outcome 1

The learner will: Interpret a manufacturing design brief and produce a drawing of component layout with a list of materials.

The learner must know about:

- Equipment and machinery used within the metal plate fabrication industry.
- Guarding systems including isolators, telescopic guards, hinged guards, adjustable guards and fixed guards.
- Producing drawings of component layout and listing materials.

Learning outcome 2

The learner will: Select and use items of measuring and marking equipment to produce a complex metal plate fabrication component.

The learner must demonstrate:

- How to operate powered machinery to produce a complex metal plate fabrication component.
- Recognition and naming of the common forms of supply used in plate fabrication.

Learning outcome 3

The learner will: Review the production of the complex metal plate fabrication component.

The learner must consider:

- The equipment and tools used.
- The strengths and weaknesses of the complex metal plate fabrication component.

Grading descriptors

Pass:	<p>LO1: Interpret a manufacturing design brief and produce a drawing of component layout with a list of materials. PASS ONLY.</p> <p>LO2: Select and use items of measuring and marking equipment to produce a complex metal plate fabrication component.</p> <ul style="list-style-type: none"> • Safely complete and present appropriate tasks following a given brief with some accuracy. • Competently operate powered machinery to produce a complex metal plate fabrication component and achieving the minimum standard of the set tolerances. • List some forms of common supply used within the plate fabrication industry. <p>LO3: Complete a review of the production of a metal plate fabrication component. PASS ONLY.</p>
Merit:	<p>LO2: Select and use items of measuring and marking equipment to produce a complex metal plate fabrication component.</p> <ul style="list-style-type: none"> • Safely complete and present appropriate tasks following a given brief and mostly accurately. • Confidently operate powered machinery to produce a complex metal plate fabrication component and achieving a medium standard of the set tolerances. • Describe some forms of common supply used within the plate fabrication industry.
Distinction	<p>LO2: Select and use items of measuring and marking equipment to produce a complex metal plate fabrication component.</p> <ul style="list-style-type: none"> • Safely and accurately complete and present appropriate tasks following a given brief, • Operate powered machinery skilfully to produce a complex metal plate fabrication component and achieving the maximum standard of the set tolerances. • Describe in detail some forms of common supply used within the plate fabrication industry.

Assessment

The assessment for this outcome consists of:

LO1 Completion of a scaled diagram of a complex metal plate fabrication component, working to a brief and with the aid of manufacturer's literature.

Completion of a materials list based on the drawing produced.

LO2 The manufacture of a complex metal plate fabrication. Completion of a list of forms of common supply used within the plate fabrication industry.

LO3 Completion of a review of the production of the complex metal plate fabrication component.

Types of evidence

LO1 A scaled diagram showing component layout and a materials requisition based on the drawing produced.

LO2 Tutor observation of the manufacture of a complex metal plate fabrication. A list of forms of common supply used within the plate fabrication industry.

LO3 A review of the production of the complex metal plate fabrication component.

Delivery guidance

Learners will draw on the knowledge and skills developed during previous units and apply them when carrying out the manufacture of the plate metal component. Prior to the assessment, time should be spent in the classroom looking at the different manufacturing techniques required for various metal removal, forming and joining techniques. Using the correct terminology when specifying equipment and tools is important, so learners should, from an early stage, be familiar with accurate descriptions and appropriate names for tools and components.

Learners will be made aware of the importance of accurate drawings when producing component and materials lists and they should practise producing these from various engineering drawings. During practical sessions, learners will be looking at different metal fabrication material removal techniques. The workshops should contain a range of metal manufacturing equipment both manual and powered machinery. The learners will be given the opportunity to use them in the process of manufacturing the components. Below is an example of a possible component that could be manufactured.

Unit 9 Scientific Principles used in Mechanical Engineering

Unit summary

This unit will provide you with a knowledge and understanding of basic scientific principles applied to mechanical engineering. You will be introduced to pressure, force, flow, temperature, electricity and heat transfer methods. The unit is designed to provide the essential theoretical knowledge that underpins the practical processes of the mechanical engineering sector.

Guided learning hours

48 hours

Level

2

Learning outcome 1

The learner will: Understand basic scientific principles used within mechanical engineering.

The learner must know about:

- Standard units of measurement used in mechanical engineering.
- Properties of materials used in mechanical engineering.
- The basic structure of matter in terms of atoms and molecules.
- The characteristics of the combustion of the acetylene and propane
- The principles of electricity as they relate to mechanical engineering

Learning outcome 2

The learner will: Apply basic scientific principles when working within mechanical engineering.

The learner must demonstrate:

- A method of heat transfer using appropriate equipment.
- The application of units of measurement.
- Their knowledge of an element, compound, mixture of a solution, solid, liquid and gas in relation to fabrication and mechanical engineering.
- The lighting and setting of a carburising, neutral and oxidising flame and how to extinguish the flame.

Learning outcome 3

The learner will: Carry out basic testing and analysis of completed tasks carried out using materials relating to mechanical engineering.

The learner must consider:

- How to test materials and carry out inspections.
- How to analyse the results of completed tasks.
- How combustion occurs and how the flame content can be changed.

Grading descriptors

Pass:	<p>LO1: Understand basic scientific principles used within mechanical engineering.</p> <ul style="list-style-type: none"> • Recognise standard units of measurement and properties of materials used in mechanical engineering. • Outline the characteristics of combustion. • Identify the basic structure of matter and the principles of electricity. <p>PASS ONLY.</p> <p>LO2: Apply basic scientific principles when working within mechanical engineering.</p> <ul style="list-style-type: none"> • Competently carry out a method of heat transfer using appropriate equipment. • Apply units of measurement competently. • Apply knowledge of an element, compound, mixture of a solution, solid, liquid and gas competently. • Competently light and set a carburising, neutral and oxidising flame and extinguish it. <p>LO3: Review of a test specimen and testing procedure. PASS ONLY.</p>
Merit:	<p>LO2: Apply basic scientific principles when working within mechanical engineering.</p> <ul style="list-style-type: none"> • Confidently carry out a method of heat transfer using appropriate equipment. • Apply units of measurement confidently. • Apply knowledge of an element, compound, mixture of a solution, solid, liquid and gas confidently. • Confidently light and set a carburising, neutral and oxidising flame and extinguish it.
Distinction:	<p>LO2: Apply basic scientific principles when working within mechanical engineering.</p> <ul style="list-style-type: none"> • Skilfully carry out a method of heat transfer using appropriate equipment. • Apply units of measurement skilfully. • Apply knowledge of an element, compound, mixture of a solution, solid, liquid and gas skilfully. • Skilfully light and set a carburising, neutral and oxidising flame and extinguish it.

Assessment

The assessment for this outcome consists of:

LO1 Completion of a written, short answer assignment testing the understanding of scientific principles used within mechanical engineering.

LO2 Completion of practical tasks which apply basic scientific principles in mechanical engineering to be recorded in a workbook by the learner.

Types of evidence

LO1 A written, short answer assignment testing the understanding of scientific principles used within mechanical engineering.

LO2 Tutor observation of practical tasks and learner's workbook. The workbook should be mapped against the requirements for this unit.

Delivery guidance

This unit introduces the scientific principles that underpin the processes carried out during mechanical engineering operations. These will be contextualised to ensure that learners understand the importance of the key principles and how they impact on their practical applications. The unit has a theoretical content, but with careful planning, much of the subject content can be delivered in a workshop in the form of practical demonstrations and explorations. Lecturers can assemble simple experiments using examples from science resources accessible online through educational web sites or self-devised examples based on existing resources. Learners will be encouraged to interpret results of demonstrations and discussions should be facilitated around how findings affect mechanical engineering systems.

Learners should be encouraged to use the correct S.I units and should also be made aware of conversion factors. The college's video resources should be utilised to provide simple explanations of what can be complicated concepts.

When covering the testing aspect of the unit, realistic working systems should be used to ensure that learners understand the context of the tests. The lecturer should be able to make alterations to the systems to give different readings. There will be an emphasis on interpretation of results and what impact they have on the system performance.

Standard units of measurement could include those of length, mass, time, temperature, area, volume, density and velocity.

Properties of materials used in mechanical engineering could include water (boiling/freezing point, volume, capillary action, Celsius and Kelvin temperature scales), methods of heat transfer; conduction in solids, liquids and gases, radiation, units of energy and heat; energy – joules (J), power – watts (W).

The principles of electricity could include magnetism, electron flow theory; measurements of electrical flow, material conductivity and resistance, direct and alternating current, units of electrical measurement; current, voltage, resistance, power, electrical calculations; ohm's law, power consumption of electrical circuits and earthing of electrical circuits.

Unit 10 Manual Metal Arc Welding

Unit summary

In this unit you will develop the basic practical skills of manual metal-arc welding as well as an awareness of the health and safety issues required when using the process. You will be required to perform satisfactory welds using the manual metal arc process in the flat position.

Guided learning hours

48 hours

Level

2

Learning outcome 1

The learner will: Identify the components, tools and equipment required to carry out Manual Metal Arc Welding (MMA welding) to a specification.

The learner must know about:

- Selection of the correct size and type of electrode for a given application.
- The components required to carry out MMA welding.
- The tools and equipment required to carry out MMA welding.

Learning outcome 2

The learner will: Carry out MMA welding safely and to a specification.

The learner must demonstrate:

- How to apply weld parameters.
- How to clean and prepare plate for the practical application.
- The ability to set up and safely produce straight-line weld beads in the flat down hand position on plate 4-5 mm thick.

Learning outcome 3

The learner will: Carry out performance tests on the weld in accordance with relevant standards and record the results.

The learner must consider:

- Cleaning and visual inspection of the welding.
- Application of the Macro-Etch test.
- An analysis of the weld test results and identification of weld defects.

Grading descriptors

Pass:	<p>LO1: Identify the components, tools and equipment required to carry out Manual Metal Arc Welding to a specification. PASS ONLY.</p> <p>LO2: Carry out MMA welding safely and to a specification.</p> <ul style="list-style-type: none"> • Clean and prepare plate competently for the practical application. • Set up safely and competently produce straight-line weld beads in the flat down hand position on plate 4-5 mm thick. • Apply appropriate parameters and achieve the minimum standard of the set tolerances. <p>LO3: Produce a review of the welded test piece. PASS ONLY.</p>
Merit:	<p>LO2: Carry out MMA welding safely and to a specification.</p> <ul style="list-style-type: none"> • Clean and prepare plate confidently for the practical application. • Set up safely and confidently produce straight-line weld beads in the flat down hand position on plate 4-5 mm thick. • Apply correct parameters confidently and achieve a medium standard of the set tolerances.
Distinction:	<p>LO2: Carry out MMA welding safely and to a specification.</p> <ul style="list-style-type: none"> • Clean and prepare plate skilfully for the practical application. • Set up safely and skilfully produce straight-line weld beads in the flat down hand position on plate 4-5 mm thick. • Apply precise parameters skilfully and achieve the maximum standard of the set tolerances.

Assessment

The assessment for this unit consists of:

LO1 Working to a design brief, the identification and listing of the correct tools, materials and equipment required to carry out MMA welding in the flat position.

LO2 Completion of the practical welding task, within parameters and in accordance with the brief, under controlled conditions in a workshop environment.

Types of evidence

The evidence for this unit will be in the form of:

LO1 The identification and listing of the correct tools, materials and equipment required to carry out MMA welding in the flat position.

Production of suitable materials, welding equipment and tools list.

LO2 Practical examples of finished welds and tutor observation of practice.

The welding will be graded using a set of tolerances representing a graduating degree of accuracy with the completed weld being measured against these tolerances.

Delivery guidance

The learner will connect the component parts of an MMA welding system in the correct sequence and check for safety. Prior to the assessment, time should be spent in the classroom, explaining the purpose of selecting the correct electrode, both size and type for the application in the given brief. Suppliers' websites can be accessed to identify likely materials and tools. During this time the lecturer should demonstrate the setting of the required current and check the electrode polarity for the practical application. When identifying the components, tools and equipment required to carry out MMA welding to a specification, learners could include the correct size and type of electrode for the given application, transformer/generator or transformer-rectifier unit, welding lead, welding return and work earth, electrode holder. Learners should also be aware of the correct storage conditions.

The learner will practise their welding skills in order to ensure the welding assessment samples are carried out to required tolerances. Some of the hours allocated to teaching will be used to reinforce the importance of correct test procedures for welding, with an emphasis on relevant standards. Learners will need to understand why welding defects occur. They should be able to identify correct remedial procedures to remove defects and how to avoid these defects reoccurring in the future.

Weld parameters could include - current setting, open circuit voltage, electrode slope and tilt angles, arc length, electrode polarity, and speed of travel.

Weld defects could include - undercut, porosity, stop/start defect, lack of penetration, excessive penetration, surface defects, weld contour, cracks, and lack of fusion and inclusions.

Unit 11 Metal Arc Gas Shielded Welding

Unit summary

In this unit you will develop the basic practical skills of Metal Arc Gas Shielded Welding and an awareness of the health and safety issues required when using the process. You will be required to perform satisfactory welds using the manual metal arc process in the flat position.

Guided learning hours

48 hours

Level

2

Learning outcome 1

The learner will: Identify the components, tools and equipment required to carry out Metal Arc Gas Shielded Welding (MAGS) welding system to a specification.

The learner must know about:

- Selection of the correct size and type of filler wire for a given application.
- The components required to carry out MAGS welding.
- The tools and equipment required to carry out MAGS welding

Learning outcome 2

The learner will: Carry out MAGS welding safely and to a specification

The learner must demonstrate: How to clean and prepare plate for the practical application

- How to apply weld parameters.
- How to clean and prepare plate for the practical application.
- The ability to set up and safely produce straight-line weld beads in the flat down hand position on plate 4-5 mm thick.

Learning outcome 3

The learner will: Carry out performance tests on the weld in accordance with relevant standards and record the results.

The learner must consider:

- Cleaning and visual inspection of the welding.
- Application of the Macro-Etch test.
- An analysis of the weld test results and identification of weld defects.

Grading descriptors

Pass:	<p>LO1: Identify and name the parts of a Metal Arc Gas Shielded Welding (MAGS) welding system to a specification. PASS ONLY.</p> <p>LO2: Carry out MAGS welding safely and to a specification</p> <ul style="list-style-type: none"> • Clean and prepare plate competently for the practical application. • Set up safely and competently produce straight-line weld beads in the flat down hand position on plate 4-5 mm thick. • Apply appropriate parameters and achieve the minimum standard of the set tolerances. <p>LO3: Produce a review of the welded test piece. PASS ONLY.</p>
Merit:	<p>LO2: Carry out MAGS welding safely and to a specification.</p> <ul style="list-style-type: none"> • Clean and prepare plate confidently for the practical application. • Set up safely and confidently produce straight-line weld beads in the flat down hand position on plate 4-5 mm thick. • Apply correct parameters confidently and achieve a medium standard of the set tolerances.
Distinction:	<p>LO2: Carry out MAGS welding safely and to a specification.</p> <ul style="list-style-type: none"> • Clean and prepare plate skilfully for the practical application. • Set up safely and skilfully produce straight-line weld beads in the flat down hand position on plate 4-5 mm thick. • Apply precise parameters skilfully and achieve the maximum standard of the set tolerances.

Assessment

The assessment for this unit consists of:

LO1 Working to a design brief, the identification and listing of the correct tools, materials and equipment required to carry out MAGS welding in the flat position.

LO2 Completion of the practical welding task, within parameters and in accordance with the brief, under controlled conditions in a workshop environment.

Types of evidence

The evidence for this unit will be in the form of:

LO1 The identification and listing of the correct tools, materials and equipment required to carry out MAGS welding in the flat position.

Production of suitable materials, welding equipment and tools list

LO2 Practical examples of finished welds and tutor observation of practice.

The welding will be graded using a set of tolerances representing a graduating degree of accuracy with the completed weld being measured against these tolerances.

Delivery guidance

The learner will connect the component parts of a MAGS welding system in the correct sequence and check for safety. Prior to the assessment, time should be spent in the classroom, explaining the purpose of selecting the correct electrode, both size and type for the application in the given brief. Suppliers' websites can be accessed to identify likely materials and tools. During this time the lecturer should demonstrate the setting of the required current and check the electrode polarity for the practical application. When identifying the components, tools and equipment required to carry out MAGS welding to a specification, learners could include the correct size and type of filler wire for the given application, transformer/generator or transformer-rectifier unit, welding lead, welding return and work earth, gas types and cylinder colours, and torch. They should be aware of the correct storage conditions. The learner will practise their welding skills in order to ensure the welding assessment samples are carried out to required tolerances. Some of the hours allocated to teaching will be used to reinforce the importance of correct test procedures for welding, with an emphasis on relevant standards. Learners will need to understand why welding defects occur. They should be able to identify correct remedial procedures to remove defects and how to avoid these defects reoccurring in the future.

Weld parameters could include - current setting, voltage setting, electrode slope and tilt angles, arc length, electrode polarity, gas flow rate and speed of travel.

Weld defects could include - undercut, porosity, stop/start defect, lack of penetration, excessive penetration, surface defects, weld contour, cracks, and lack of fusion and inclusions.

Unit 12 Tungsten Arc Gas Shielded Welding

Unit summary	In this unit you will develop the basic practical skills of Tungsten Arc Gas Shielded welding and an awareness of the health and safety issues required when using the process. You will be required to perform satisfactory welds using the manual metal arc process in the flat position.
Guided learning hours	48 hours
Level	2

Learning outcome 1

The learner will Identify the components, tools and equipment required to carry out Tungsten Arc Gas Shielded welding to a specification.

- **The learner must know about:** Selection of the correct size and type of electrode for a given application.
- The components required to carry out Tungsten Arc Gas Shielded welding.
- The tools and equipment required to carry out Tungsten Arc Gas Shielded welding.

Learning outcome 2

The learner will: Carry out Tungsten Arc Gas Shielded welding safely and to a specification.

The learner must demonstrate:

- How to apply weld parameters.
- How to clean and prepare plate for the practical application.
- The ability to set up and safely produce straight-line weld beads in the flat down hand position on plate 4-5 mm thick.

Learning outcome 3

The learner will: Carry out performance tests on the weld in accordance with relevant standards and record the results.

The learner must consider:

- Cleaning and visual inspection of the welding.
- Application of the Macro-Etch test.
- An analysis of the weld test results and identification of weld defects.

Grading descriptors

Pass:	<p>LO1: Identify the components, tools and equipment required to carry out Tungsten Arc Gas Shielded welding to a specification. PASS ONLY.</p> <p>LO2: Carry out Tungsten Arc Gas Shielded welding safely and to a specification.</p> <ul style="list-style-type: none"> • Clean and prepare plate competently for the practical application. • Set up safely and competently produce straight-line weld beads in the flat down hand position on plate 4-5 mm thick. • Apply appropriate parameters and achieve the minimum standard of the set tolerances. <p>LO3: Produce a review of the welded test piece. PASS ONLY.</p>
Merit:	<p>LO2: Carry out Tungsten Arc Gas Shielded welding safely and to a specification.</p> <ul style="list-style-type: none"> • Clean and prepare plate confidently for the practical application. • Set up safely and confidently produce straight-line weld beads in the flat down hand position on plate 4-5 mm thick. • Confidently apply correct parameters and achieve a medium standard of the set tolerances.
Distinction:	<p>LO2: Carry out Tungsten Arc Gas Shielded welding safely and to a specification.</p> <ul style="list-style-type: none"> • Clean and prepare plate skilfully for the practical application. • Set up safely and skilfully produce straight-line weld beads in the flat down hand position on plate 4-5 mm thick. • Skilfully apply precise parameters and achieve the maximum standard of the set tolerances.

Assessment

The assessment for this unit consists of:

LO1 Working to a design brief, the identification and listing of the correct tools, materials and equipment required to carry out TAGS welding in the flat position.

LO2 Completion of the practical welding task, within parameters and in accordance with the brief, under controlled conditions in a workshop environment.

Types of evidence

The evidence for this unit will be in the form of:

LO1 The identification and listing of the correct tools, materials and equipment required to carry out TAGS welding in the flat position.

Production of suitable materials, welding equipment and tools list

LO2 Practical examples of finished welds and tutor observation of practice.

Completed weld assessment paperwork.

Tutor report of viva voce.

The welding will be graded using a set of tolerances representing a graduating degree of accuracy with the completed weld being measured against these tolerances.

Delivery guidance

The learner will connect the component parts of a Tungsten Arc Gas Shielded welding system in the correct sequence and check for safety. Prior to the assessment, time should be spent in the classroom, explaining the purpose of selecting the correct electrode, both size and type for the application in the given brief. Suppliers' websites can be accessed to identify likely materials and tools. During this time the lecturer should demonstrate the setting of the required current and check the electrode polarity for the practical application. When identifying the components, tools and equipment required to carry out Tungsten Arc Gas Shielded welding to a specification, learners could include the correct size and type of electrode and filler wire for the given application, transformer/generator or transformer-rectifier unit, welding lead, welding return and work earth, electrode holder. Learners should also be aware of the correct storage conditions.

The learner will practise their welding skills in order to ensure the welding assessment samples are carried out to required tolerances. Some of the hours

allocated to teaching will be used to reinforce the importance of correct test procedures for welding, with an emphasis on relevant standards. Learners will need to understand why welding defects occur. They should be able to identify correct remedial procedures to remove defects and how to avoid these defects reoccurring in the future.

Weld parameters could include - current setting, open circuit voltage, electrode slope and tilt angles, arc length, electrode polarity, and speed of travel.

Weld defects could include - undercut, porosity, stop/start defect, lack of penetration, excessive penetration, surface defects, weld contour, cracks, and lack of fusion and inclusions.

Appendices

Appendix I Extenuating Circumstances Form

(Must be fully completed and accompanied by independent supportive evidence, e.g. a letter from your GP/doctor/counsellor on headed paper or other official document. The form and evidence must be sent to the Registry Department AS SOON AS POSSIBLE after the circumstances begin. Retrospective claims received within 10 working days will only be considered if there are exceptional circumstances which prevent the early submission of a claim form.)

Name of candidate				
HC number				
Course name and year				
Date circumstances started				
Date circumstances ended				
Assessment(s) affected (complete below)				
Unit code	Unit tutor	Type of assessment (e.g. exam coursework, presentation)	Assessment deadline	Is this group work?
Description of circumstances				
Signature				
Date				

Appendix II Candidate Appeal Form



(To be completed if informal Stage 1 appeal is unresolved)

Name of candidate	
Name of assessor	
Name of internal verifier	
Date of assessment	
Unit(s) assessed	
Date appeal received	
Date of Stage 1 decision <small>(within 5 working days of assessment decision)</small>	

Stage 1:	
Assessment details	
Candidate's reasons for appeal	
Assessor decision	
Candidate's signature and date	I agree with the decision: YES / NO
Assessor's signature and date	

Stage 2:	
Date appeal received by internal verifier	
Internal verifier's comments and decision <small>(within 10 working days of assessment decision)</small>	
Candidate's signature and date	I agree with the decision: YES / NO
Internal verifier's signature and date	

Appendix III Assessment Brief Template

	Progression Qualification in Subject name here		
Unit No. / Title			
Assessment No.		This work assesses:	
Issue Date:		Due Date:	
<p>In this assignment, you will [continue writing vocational/technical scenario]:</p>			
<p>During this assessment you are also required to demonstrate speaking and listening skills/ written communication skills/ mathematical skills [delete as appropriate]</p>			
Learning Outcome 1:	The learner will		
Task 1:			
Task details	<p>Image here</p> <p>[visual reinforcement to aid readability of assignment]</p>		
<p>You must/ should/ could produce the following evidence:</p>			
<ul style="list-style-type: none"> ✓ A written report ✓ A presentation ✓ A practical assessment ✓ These are just examples [delete as appropriate] 			

Learning Outcome 2: The learner will

Task 2: Delete if necessary

Task details Delete if necessary	Image here
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You must/ should/ could produce the following evidence:

- ✓ A written report
- ✓ A presentation
- ✓ A practical assessment
- ✓ **These are just examples [delete as appropriate]**

Learning Outcome 3: The learner will

Task 3: Delete if necessary

Task details Delete if necessary	Image here
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You must/ should/ could produce the following evidence:

- ✓ A written report
- ✓ A presentation
- ✓ A practical assessment
- ✓ **These are just examples [delete as appropriate]**

Grading Descriptors

Pass	Merit	Distinction

Appendix IV Assessment Brief Internal Verification Template

	Progression Qualification in Subject name here	
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VERIFICATION OF ASSESSMENT

JPQ Title	
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Unit No. / Title	
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Assessor		Internal Verifier	
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Assessment No.		Lead Verifier	
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Verifier Checklist	Comments
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Are accurate qualification details shown?	Y/N	
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Are accurate unit details shown?	Y/N	
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Are clear deadlines for assessment given?	Y/N	
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Is the timescale for the assessment appropriate?	Y/N	
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What are the Learning Outcomes being assessed?		
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Do the grading descriptors identified match the Learning Outcomes being assessed?	Y/N	
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Are the appropriate English and maths skills identified on the assessment?	Y/N	
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Will the tasks enable the learner to generate sufficient evidence to be assessed against the range of grading descriptors?	Y/N	
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Is the language and presentation used accessible to most learners?	Y/N	
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Are the tasks set appropriate for most learners' current and expected level of knowledge/skill?	Y/N	
Is it possible to authenticate the learner's individual evidence through this assessment?	Y/N	
Is the method of assessment reliable?	Y/N	
Overall, is the assignment fit for purpose?	Y/N*	
*If 'No' is recorded and the Verifier recommends remedial action before the brief is issued, the Assessor and the Verifier should confirm that the action has been undertaken		
Assessor signature		Date
Verifier signature		Date
Lead Verifier signature (if required)		Date
Agreed remedial action required/taken		
Assessor signature		Date
Verifier signature		Date
Lead Verifier signature (if required)		Date

Appendix V Internal Verification Template for Assessment Decisions

ncfe.		Progression Qualification in <i>Subject name here</i>			
VERIFICATION – ASSESSMENT DECISIONS					
JPQ Title					
Unit(s)					
Assessor		Internal Verifier			
Assignment No.		Lead Verifier			
Name of Learner <small>(For larger samples, please add rows or use additional sheets)</small>	Submission Type <small>(First, Resubmission, Retake)</small>	State grade awarded	Assessment Decision Accurate (Y/N)	Comments	

VERIFIER CHECKLIST		Please give reasons for responses including evidence of judgements and good practice.
Is the assessed evidence valid? (Reflect current standards, practice/assessment requirements?)	Y/N	
Is the assessed evidence authentic? (Confirmed by both the learner and assessor?)	Y/N	
Is the assessed evidence current? (Produced, submitted and assessed within a relevant time frame?)	Y/N	
Is the assessed evidence sufficient? (Evidence matches the assessment outcome?)	Y/N	
Is the assessed evidence reliable? (Judgements consistent across all learners, over time and across levels?)	Y/N	
Does the feedback from the assessor confirm achievement?	Y/N	
Is the feedback constructive? (Clearly outline what has been done well, how to improve and clear targets set?)	Y/N	
Does the feedback address the English and maths needs of the students? (e.g. spelling, grammar and punctuation corrected using agreed approach; maths framework used)	Y/N	

Any actions required must be reviewed across the whole cohort.

Action Required	Target Date for Completion

I confirm that the assessment decisions are accurate, there is no evidence of assessment malpractice and any action points have been addressed and completed in respect of the whole cohort.

Verifier signature		Date	
Assessor signature		Date	
Lead Verifier signature (if appropriate)		Date	