

BTEC

Edexcel Level 3 BTEC Nationals in Vehicle Technology

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Specification

Edexcel Level 3 BTEC Nationals in Vehicle
Technology



Qualifications and
Curriculum Authority



Llywodraeth Cynulliad Cymru
Welsh Assembly Government



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Ten principles for delivering an Edexcel Level 3 BTEC National qualification

This specification contains the rules and regulations, along with the units and associated guidance, to enable centres to design and deliver a programme of learning for the Edexcel Level 3 BTEC Nationals in Vehicle Technology. The qualification structures set out the permitted combination of units learners need to complete the qualification. Each unit sets out the learning outcomes and grading criteria along with content, advice and guidance regarding appropriate delivery and assessment strategies. The following generic principles need to be adhered to so that a BTEC qualification is delivered to the appropriate standard.

- 1 **The specification:** The specification gives the information needed for the successful delivery and achievement of the units and the qualification as a whole. The specification is of importance to the learner and the tutor alike. Individual units can be delivered and studied in isolation but the learner and the deliverer should have access to the full information provided to support the programme of learning.
- 2 **The website:** Centres need to make regular use of the Edexcel website (www.edexcel.org.uk) to ensure that they have the most up-to-date information. In particular, the requirements for the external verification of the qualification receive regular updates, and appropriate information for centres is posted on the website. It is the responsibility of the centre to ensure that they are familiar with the latest BTEC NQF Level 2/3 (including Short Courses at Levels 1-3) Handbook and that they implement any related policy documentation which may have been posted on the website.
- 3 **Policy:** This specification gives details of our assessment and quality assurance procedures. It includes advice about our policy regarding access to our qualifications, the design of programmes of study and delivery modes. Centres must ensure that they follow the procedures and conform to the policies outlined.
- 4 **Recruitment:** Centres are required to recruit learners with integrity. A fundamental aspect of this integrity is that centres take appropriate steps to assess each applicant's potential and make a professional judgement about the applicant's ability to be able to successfully complete the programme of study and achieve the qualification. Centres should ensure that applicants have appropriate information and advice about the qualifications and that the qualification will meet their needs.

- 5 **Assessment:** Centres are required to use this specification to design and deliver a programme of learning that will enable learners to achieve the grading criteria stipulated in the unit grading grids. The programme of learning should consist of assignments which provide the opportunity for coverage of all grading criteria as set out in the grading grid for each unit. Assignments must be reliable and fit for purpose, giving learners every opportunity to generate evidence which satisfies the grading criteria. Centres should use a variety of assessment methods, including case studies, assignments and work-based assessments, along with projects, performance observation and time-constrained assessments where appropriate.
- 6 **Assignments:** Centres are encouraged to apply the grading criteria in a practical way. They should provide, wherever possible, a realistic scenario for learners to work with, and make maximum use of practical activities and work experience. The creation of assignments that are fit for purpose is vital to the learner's achievement.
- 7 **National Qualifications Framework (NQF):** These qualifications have been accredited to the NQF and are eligible for public funding as determined by the DfES under Sections 96 and 97 of the Learning and Skills Act 2000. Details of the qualification units can be seen on the QCA OpenQuals database (www.openquals.org.uk).
- 8 **Qualification Accreditation Numbers (QANs):** The qualification titles feature in the funding lists published annually by the DfES and on the regularly updated website www.dfes.gov.uk/. The NQF QANs should be used by centres when they seek public funding for their learners. The QANs are listed in *Annexe A*.
- 9 **Accreditation:** This specification is accredited by the Qualifications and Curriculum Authority (QCA) until 31/08/10 and for certification of learners until 31/08/13. This specification may be updated during its period of accreditation and centres should refer to our website for the latest issue.
- 10 **Approval:** Centres that have not previously offered BTEC qualifications must apply for, and be granted, centre approval before they can apply for approval to offer the programme. When a centre applies for approval to offer a BTEC qualification they will be required to enter into an 'approvals agreement'. The approvals agreement is a formal commitment by the head or principal of a centre to meet all the requirements of the specification and any linked codes or regulations.

What are BTEC Nationals?

BTEC Nationals are qualifications that are designed to provide specialist work-related qualifications in a range of sectors. They give learners the knowledge, understanding and skills that they need to prepare them for employment. The qualifications also provide career development opportunities for those already in work. Consequently they can provide a course of study for full-time or part-time learners in schools, colleges and training centres.

The family of BTEC Nationals includes Awards (usually 6 units), Certificates (12 units) and Diplomas (18 units) which offer opportunities for nested provision and flexibility of delivery.

BTEC Nationals are designed to relate to the National Occupational Standards for the sector, where these are appropriate, and are supported by the relevant Standards Setting Body (SSB) or Sector Skills Council (SSC). Some BTEC Nationals form the Technical Certificate component of Apprenticeships and all attract UCAS points that equate to similar-sized general qualifications.

On successful completion of a BTEC National qualification, learners can progress into or within employment and/or continue their study in the same vocational area.

BTEC National Award

The 360 guided learning hours (GLH) (usually 6 units) BTEC National Award offers a specialist qualification that focuses on particular aspects of employment within the appropriate vocational sector. The BTEC National Award is a qualification which can extend a learner's programme of study and provide vocational emphasis for learners following an Applied GCE or GCE route or a combination of both in their main programme of study. The BTEC National Award is especially suitable for more mature learners, who wish to follow a shorter programme of study directly related to their work experience or to an area of employment that they wish to move into.

BTEC National Certificate

The 720 GLH (usually 12 units) BTEC National Certificate provides a specialist work-related programme of study that covers the key knowledge and practical skills required in the appropriate vocational sector. The BTEC National Certificate offers flexibility and a choice of emphasis through the specialist units. It is broadly equivalent to two GCEs or the full award AVCE.

The qualification offers an engaging programme for those who are clear about the area of employment that they wish to enter. These learners may wish to extend their programme through the study of a related GCE, a complementary NVQ or another qualification. These learning programmes can be developed to allow learners to study complementary qualifications without duplication of content.

For adult learners the BTEC National Certificate can extend their experience of work. It is a suitable qualification for those wishing to change career or move into a particular area of employment following a career break.

BTEC National Diploma

The 1080 GLH (usually 18 units) BTEC National Diploma extends the specialist work-related focus available from the BTEC Certificate. There is potential for the qualification to prepare learners for employment in the appropriate vocational sector and is suitable for those who have decided that they wish to enter a particular area of work.

Some adult learners may wish to complete this qualification in order to enter a specialist area of employment or progress into higher education. Other learners may want to extend the specialism that they followed on the BTEC National Certificate programme.

Progression from the BTEC National Diploma could be into employment where learners might take professional body examinations or complete NVQs. Alternatively, learners could continue to degree or other higher-education programmes in the same vocational sector or in a related sector.

National Occupational Standards (NOS)

BTEC Nationals are designed to relate to the National Occupational Standards (NOS) in the appropriate vocational sector. NOS form the basis of National Vocational Qualifications (NVQs). BTEC Nationals do not purport to deliver occupational competence in the sector, which should be demonstrated in a work context. However, the qualifications provide much of the underpinning knowledge for the NOS, as well as developing practical skills in preparation for work and possible achievement of NVQs in due course.

Relevant aspects of the NOS are addressed in the learning outcomes and content of the units, and these links are identified where appropriate.

The Edexcel Level 3 BTEC Nationals in Vehicle Technology can contribute towards the knowledge and understanding requirements of the following NOS:

- Automotive Skills Level 3 NVQ in Vehicle Maintenance and Repair
- SEMTA Level 3 NVQ in Automotive Engineering.

Key features of the BTEC Nationals in Vehicle Technology

The BTEC Nationals in Vehicle Technology have been developed to focus on:

- education and training for employees in the vehicle maintenance and repair sector
- providing opportunities for employees in the vehicle maintenance and repair sector to achieve a nationally recognised Level 3 vocationally specific qualification
- giving learners the opportunity to gain a nationally recognised vocationally specific qualification, to enter employment in the vehicle maintenance and repair sector or to progress to higher education vocational qualifications such as the Edexcel Level 5 BTEC Higher National in Vehicle Operations Management
- giving learners the opportunity to develop a range of skills and techniques, personal skills and attitudes essential for successful performance in working life.

Rationale of the BTEC Nationals in Vehicle Technology

The vehicle maintenance and repair sector continues to suffer from a skills gap and needs to keep up with rapidly developing technologies. New entrants to the sector need to build the underpinning knowledge and specific skills needed to meet the needs of modern industry.

The revised BTEC National Certificate and Diploma in Vehicle Technology are the result of a process of rationalisation which has taken into account:

- the knowledge and evidence requirements of the current National Occupational Standards and relevant NVQs at Level 3
- emerging Sector Skills Agreements and identified skills requirements
- the UK-SPEC - Specific Learning Outcomes for Engineering Technicians
- consultation feedback and guidance
- progression requirements in and to employment
- progression within/to Higher Education (eg BTEC Higher Nationals in Vehicle Operations Management, BTEC Foundation Degrees and relevant undergraduate degree qualifications)
- existing provision and unit registrations.

The BTEC Nationals in Vehicle Technology have been designed with flexible qualification structures and a wide range of units so that learners can focus on their chosen career or area of interest. They provide opportunities for learners who intend progressing into senior technician roles as well as for those who are not yet based in industry and wish to gain a sound understanding of vehicle technology.

Structure of the qualification

BTEC National Award in Vehicle Repair and Technology

The Edexcel Level 3 BTEC National Award in Vehicle Technology consists of two core units plus four specialist units.

The units for the Nationals in Vehicle Technology are on the CD ROM on the inside back cover of this specification.

Unit	Core units	GLH	Level
1	Operation of Vehicle Systems	60	3
2	Vehicle Engine Principles, Operation, Service and Repair	60	3
Specialist units - select units to the value of 4			
3	Vehicle Fault Diagnosis and Rectification	60	3
5	Applications of Vehicle Science and Mathematics	60	3
6	Vehicle Electrical and Electronic Principles	60	3
10	Operation and Testing of Vehicle Electronic Ignition Systems	60	3
11	Vehicle Engine Management Systems	60	3
12	Light Vehicle Transmission Systems	60	3
13	Vehicle Electronic Ancillary and Information Systems	60	3
14	Light Vehicle Suspension, Steering and Braking Systems	60	3
25	Essential Working Practices in Vehicle Technology	60	2

BTEC National Certificate in Vehicle Technology

The Edexcel Level 3 BTEC National Certificate in Vehicle Technology consists of three core units plus specialist units to the value of 540 GLH.

The units for the Nationals in Vehicle Technology are on the CD ROM on the inside back cover of this specification.

Unit	Core units	GLH	Level
1	Operation of Vehicle Systems	60	3
2	Vehicle Engine Principles, Operation, Service and Repair	60	3
3	Vehicle Fault Diagnosis and Rectification	60	3
Specialist units - select units to the value 540 GLH			
4	Vehicle Technology Project	120	3
5	Applications of Vehicle Science and Mathematics	60	3
6	Vehicle Electrical and Electronic Principles	60	3
7	Engine Electrical Charging and Starting Systems	60	3
8	Petrol Injection Systems for Spark Ignition Engines	60	3
9	Diesel Fuel Injection Systems for Compression Ignition Engines	60	3
10	Operation and Testing of Vehicle Electronic Ignition Systems	60	3
11	Vehicle Engine Management Systems	60	3
12	Light Vehicle Transmission Systems	60	3
13	Vehicle Electronic Ancillary and Information Systems	60	3
14	Light Vehicle Suspension, Steering and Braking Systems	60	3
15	Heavy Vehicle Braking Systems	60	3
16	Heavy Vehicle Transmission Systems	60	3
17	Heavy Vehicle Steering and Suspension Systems	60	3
18	Mathematics for Technicians	60	3
19	Business Systems for Technicians	60	3
20	Properties and Application of Engineering Materials	60	3
22	Applications of Welding Technology	60	3
25	Essential Working Practices in Vehicle Technology	60	2

BTEC National Diploma in Vehicle Technology

The BTEC National Diploma in Vehicle Technology consists of four core units plus thirteen specialist units.

The units for the Nationals in Vehicle Technology are on the CD ROM on the inside back cover of this specification.

Unit	Core units	GLH	Level
1	Operation of Vehicle Systems	60	3
2	Vehicle Engine Principles, Operation, Service and Repair	60	3
3	Vehicle Fault Diagnosis and Rectification	60	3
4	Vehicle Technology Project	120	3
Specialist units – a minimum of 13 units must be selected			
5	Applications of Vehicle Science and Mathematics	60	3
6	Vehicle Electrical and Electronic Principles	60	3
7	Engine Electrical Charging and Starting Systems	60	3
8	Petrol Injection Systems for Spark Ignition Engines	60	3
9	Diesel Fuel Injection Systems for Compression Ignition Engines	60	3
10	Operation and Testing of Vehicle Electronic Ignition Systems	60	3
11	Vehicle Engine Management Systems	60	3
12	Light Vehicle Transmission Systems	60	3
13	Vehicle Electronic Ancillary and Information Systems	60	3
14	Light Vehicle Suspension, Steering and Braking Systems	60	3
15	Heavy Vehicle Braking Systems	60	3
16	Heavy Vehicle Transmission Systems	60	3
17	Heavy Vehicle Steering and Suspension Systems	60	3
18	Mathematics for Technicians	60	3
19	Business Systems for Technicians	60	3
20	Properties and Application of Engineering Materials	60	3
21	Fabrication Processes and Technology	60	3
22	Applications of Welding Technology	60	3
23	Engineering Design	60	3
24	Engineering Drawings for Technicians	60	3
25	Essential Working Practices in Vehicle Technology	60	2

BTEC National Award in Vehicle Repair and Technology (Motorsports)

The Edexcel Level 3 BTEC National Award in Vehicle Technology (Motorsports) consists of two core units plus four specialist units.

The units for the Nationals in Vehicle Technology are on the CD ROM on the inside back cover of this specification.

Unit	Core units	GLH	Level
1	Operation of Vehicle Systems	60	3
28	Motorsport Vehicle Preparation and Inspection	60	3
Specialist units - select units to the value of four			
2	Vehicle Engine Principles, Operation, Service and Repair	60	3
3	Vehicle Fault Diagnosis and Rectification	60	3
5	Applications of Vehicle Science and Mathematics	60	3
7	Engine Electrical Charging and Starting Systems	60	3
12	Light Vehicle Transmission Systems	60	3
14	Light Vehicle Suspension, Steering and Braking Systems	60	3
18	Mathematics for Technicians	60	3
23	Applications of Welding Technology	60	3
27	Motorsport Workshop Practices	60	3
33	Mechanical Principles and Applications	60	3

BTEC National Certificate in Vehicle Technology (Motorsports)

The Edexcel Level 3 BTEC National Certificate in Vehicle Technology (Motorsports) consists of four core units plus specialist units to the value of 480 GLH.

The units for the Nationals in Vehicle Technology are on the CD ROM on the inside back cover of this specification.

Unit	Core units	GLH	Level
1	Operation of Vehicle Systems	60	3
3	Vehicle Fault Diagnosis and Rectification	60	3
27	Motorsport Workshop Practices	60	3
28	Motorsport Vehicle Preparation and Inspection	60	3
Specialist units - select units to the value 480 GLH			
29	Professional Practice and Logistics for Motorsport	60	3
2	Vehicle Engine Principles, Operation, Service and Repair	60	3
5	Applications of Vehicle Science and Mathematics	60	3
4	Vehicle Technology Project	120	3
6	Vehicle Electrical and Electronic Principles	60	3
7	Engine Electrical Charging and Starting Systems	60	3
8	Petrol Injection Systems for Spark Ignition Engines	60	3
10	Operation and Testing of Vehicle Electronic Ignition Systems	60	3
11	Vehicle Engine Management Systems	60	3
12	Light Vehicle Transmission Systems	60	3
13	Vehicle Electronic Ancillary and Information Systems	60	3
14	Light Vehicle Suspension, Steering and Braking Systems	60	3
18	Mathematics for Technicians	60	3
19	Business Systems for Technicians	60	3
20	Properties and Application of Engineering Materials	60	3
21	Fabrication Processes and Technology	60	3
22	Applications of Welding Technology	60	3
23	Engineering Design	60	3
24	Engineering Drawing for Technicians	60	3
26	Communications for Technicians	60	3
30	Computer Numerical Control of Machine Tools	60	3

Specialist units (continued)			
31	Computer aided Drafting	60	3
32	Engineering Secondary/Finishing Processes	60	3
33	Mechanical Principles and Applications	60	3

BTEC National Diploma in Vehicle Repair and Technology (Motorsports)

The BTEC National Diploma in Vehicle Technology consists of four core units plus specialist units to the value of thirteen.

The units for the Nationals in Vehicle Technology are on the CD ROM on the inside back cover of this specification.

Unit	Core units	GLH	Level
1	Operation of Vehicle Systems	60	3
3	Vehicle Fault Diagnosis and Rectification	60	3
4	Vehicle Technology Project	120	3
27	Motorsport Workshop Practices	60	3
28	Motorsport Vehicle Preparation and Inspection	60	3
Specialist units - select units to the value of 13			
29	Professional Practice and Logistics for Motorsport	60	3
2	Vehicle Engine Principles, Operation, Service and Repair	60	3
5	Applications of Vehicle Science and Mathematics	60	3
6	Vehicle Electrical and Electronic Principles	60	3
7	Engine Electrical Charging and Starting Systems	60	3
8	Petrol Injection Systems for Spark Ignition Engines	60	3
10	Operation and Testing of Vehicle Electronic Ignition Systems	60	3
11	Vehicle Engine Management Systems	60	3
12	Light Vehicle Transmission Systems	60	3
13	Vehicle Electronic Ancillary and Information Systems	60	3
14	Light Vehicle Suspension, Steering, Braking and Suspension	60	3
18	Mathematics for Technicians	60	3
19	Business Systems for Technicians	60	3
20	Properties and Application of Engineering Materials	60	3
21	Fabrication Processes and Technology	60	3
22	Applications of Welding Technology	60	3
23	Engineering Design	60	3
24	Engineering Drawing for Technicians	60	3
26	Communications for Technicians	60	3
30	Computer Numerical Control of Machine Tools	60	3

Specialist units (<i>continued</i>)			
31	Computer aided Drafting	60	3
32	Engineering Secondary/Finishing Processes	60	3
33	Mechanical Principles and Applications	60	3

Unit format

All units in Edexcel Level 3 BTEC National qualifications have a standard format. The unit format is designed to give guidance on the requirements of the qualification for learners, tutors, assessors and those responsible for monitoring national standards.

Each unit has the following sections.

Unit title

The unit title is accredited by QCA and this form of words will appear on the learner's Notification of Performance (NOP). The unit title summarises and reflects the achievement in the unit.

NQF level

This is the level of the unit within the National Qualifications Framework (NQF). The level of the unit has been informed by the NICATs level descriptors and, where appropriate, the NOS and/or other sector/professional benchmarks.

Guided learning hours (GLH)

In BTEC National qualifications each unit consists of 30, 60, 90 or 120 GLH. Guided learning hours are 'a notional measure of the substance of a unit'. GLH include an estimate of time that might be allocated to direct teaching, instruction and assessment, together with other structured learning time such as directed assignments or supported individual study. It excludes learner-initiated private study. Centres are advised to consider this definition when planning the programme of study associated with this qualification.

Unit abstract

The unit abstract gives the reader an appreciation of the value of the unit in the vocational setting of the qualification as well as highlighting the focus of the unit. It gives the reader a snapshot of the aims of the unit and the key knowledge, skills and understanding developed while studying the unit. The unit abstract also highlights any links to the appropriate vocational sector by describing how the unit relates to that sector.

Learning outcomes

Learning outcomes state exactly what a learner should 'know, understand or be able to do' as a result of completing the unit.

Unit content

The unit content gives centres the substance to devise and plan the programme of learning needed for the learning outcomes to be successfully achieved. Evidence to meet the grading criteria will include relevant areas of the unit content as described in the assessment section of the unit. Where appropriate, this is informed by the underpinning knowledge and understanding requirements of the related National Occupational Standards (NOS).

The unit content sets out each learning outcome with prescribed key phrases or concepts listed in italics followed by the range of related topics. Detailed lists provide an indicative range to support the specific topic item. Not all of the unit content is expected to be assessed in every unit.

Grading grid

Each grading grid contains statements of the assessment criteria used to determine the evidence that each learner must produce in order to receive a pass, merit or distinction grade. It is important to note that the merit and distinction grading criteria refer to a qualitative improvement in the learner's evidence, and not a quantitative one.

Essential guidance for tutors

This section is designed to give tutors additional guidance and amplification in order to provide understanding and a consistent level of delivery and assessment. It is divided into the following sections:

- *Delivery* – explains the content's relationship with the learning outcomes and offers guidance about possible approaches to delivery. This section is based on the more usual delivery modes but is not intended to rule out alternative approaches.
- *Assessment* – gives amplification about the nature and type of evidence that learners need to produce in order to pass the unit or achieve the higher grades. This section should be read in conjunction with the grading criteria.
- *Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications* – sets out links with other units within the qualification. These links can be used to ensure that learners make connections between units, resulting in a coherent programme of learning. The links show opportunities for integration of learning, delivery and assessment.
- *Essential resources* – identifies any specialist resources needed to allow learners to generate the evidence required for each unit. The centre will be asked to ensure that any requirements are in place when it seeks approval from Edexcel to offer the qualification.
- *Indicative reading for learners* – provides a short list of learner resource material that benchmarks the level of study.

Key skills

This section identifies any opportunities in the unit for learners to generate evidence to meet the requirements of key skills units. Assessors should take care to become familiar with the key skills specifications and evidence requirements and not to rely solely on this section when presenting key skills evidence for moderation. Centres should refer to the QCA website (www.qca.org.uk) for the latest version of the key skills standards.

Assessment and grading

The purpose of assessment is to ensure that effective learning has taken place.

Assignments constructed by centres should be reliable and fit for purpose, and should build on the application of the grading criteria. Centres should use a variety of assessment methods, including case studies, assignments and work-based assessments, along with projects, performance observation and time-constrained assessments. Centres are encouraged to emphasise the practical application of the grading criteria, providing a realistic scenario for learners to adopt, and making maximum use of practical activities and work experience. The creation of assignments that are fit for purpose is vital to learners' achievement and their importance cannot be over-emphasised.

All of the criteria listed in the grading grid for each unit must be covered by one assignment, or by a series of assignments. It is advisable that criteria are clearly indicated on each assignment to provide a clear focus for learners and to assist with internal verification and standardisation processes. This will also help to ensure that feedback is specific to the criteria. Tasks and activities should enable learners to produce evidence that relates directly to the specified criteria.

When reading the grading grids and designing assignments, centres should note that for learners to achieve a merit/distinction grade they will be required to provide evidence that is qualitative, not quantitative, in its nature. Centres are encouraged to look across the units' grading grids to identify common topics.

Grading domains

The grading criteria are developed in relation to grading domains which provide for the assessment of the learning outcomes of the unit. There are four BTEC National grading domains which underpin the grading criteria:

- application of knowledge and understanding
- development of practical and technical skills
- personal development for occupational roles
- application of generic and key skills.

The qualitative nature of the merit and distinction grading criteria is based on indicative characteristics of the evidence to fulfil the higher grades. Please refer to *Annexe B*.

A grading scale of pass, merit and distinction is applied to all units.

In Edexcel BTEC Nationals all units are internally assessed.

All assessment for BTEC Nationals is criterion referenced, based on the achievement of specified learning outcomes. Each unit has specified criteria which are to be used for grading. A summative unit grade can be awarded at pass, merit or distinction:

- to achieve a 'pass' a learner must have satisfied **all** the pass criteria
- to achieve a 'merit' a learner must additionally have satisfied **all** the merit criteria
- to achieve a 'distinction' a learner must additionally have satisfied **all** the distinction criteria.

Learners who complete the unit but who do not meet all the pass criteria are graded 'unclassified'.

Quality assurance

Edexcel's qualification specifications set out the standard to be achieved by each learner in order to be awarded the qualification. This is covered in the statement of learning outcomes and grading criteria in each unit. Further guidance on delivery and assessment is given in the *Essential guidance for tutors* section in each unit. This section is designed to provide additional guidance and amplification related to the unit to support tutors, deliverers and assessors and to provide for a coherence of understanding and a consistency of delivery and assessment.

Edexcel operates an independent, external quality assurance process which is designed to ensure that these standards are maintained by all internal verifiers and external verifiers. It achieves this through the following activities.

Approval

Centres that have not previously offered BTEC qualifications will first need to apply for, and be granted, centre approval before they can apply for approval to offer the programme.

Centres wishing to offer a vocational area for the first time will need to apply for approval to offer the programme.

When a centre applies for approval to offer a BTEC qualification they will be required to enter into an approvals agreement.

The approvals agreement is a formal commitment by the head or principal of a centre to meet all the requirements of the specification and any linked codes or regulations. Sanctions and tariffs may be applied if centres do not comply with the agreement. Ultimately, this could result in the suspension of certification or withdrawal of approval.

Centres will be allowed 'accelerated approval' for a new programme where the centre already has approval for a programme that is being replaced by the new programme.

Risk assessment

Edexcel has an approval process which creates a quality profile of each qualification programme in each centre and for the centre as a whole. This profile helps to determine how the programme will be externally verified and will also be used to initiate other quality control measures by Edexcel.

Internal verification

Centres are required to have processes in place that review each assessor's decisions. This ensures that they are correctly interpreting and applying the standards set out in the specifications. The system used to do this is a matter for individual centres and Edexcel fully supports the use of the centre's own quality assurance systems where they ensure robust internal standardisation.

Centres should refer to the BTEC NQF Level 2/3 (including Short Courses at Levels 1-3) Handbook (updated annually). This information can also be found on our website www.edexcel.org.uk then click on 'Services for Centres' and then 'FE Colleges & Schools'.

External verification

Edexcel will sample assessors' decisions using sector-specialist external verifiers. For BTEC Nationals this process will follow the National Standards Sampling (NSS) protocol.

Learners' work **must** have been internally assessed. Additionally, at least 50 per cent of submitted work **must** be internally verified.

Centres should refer to the BTEC NQF Level 2/3 (including Short Courses at Levels 1-3) Handbook (updated annually). This updated information can also be found on our website, go to www.edexcel.org.uk then click on 'Services for Centres' and then 'FE Colleges & Schools'.

Calculation of the qualification grade

Awarding a qualification grade

The qualification grade will be calculated through the aggregation of points achieved through the successful achievement of individual units. The number of points available will be dependent on the unit grade achieved and the size of the unit as determined by the stipulated guided learning hours.

For the calculation of a qualification grade for a BTEC National a learner must:

- complete all designated units
- achieve a minimum points score of
 - 36 points for a National Award
 - 72 points for a National Certificate
 - 108 points for a National Diploma
- achieve a pass (or above) grade for units with a combined total of
 - 300 guided learning hours for a National Award
 - 600 guided learning hours for a National Certificate
 - 900 guided learning hours for a National Diploma.

Unit points

Size of unit (GLH)	Pass grade	Merit grade	Distinction grade
10	1	2	3
30	3	6	9
60	6	12	18
90	9	18	27
120	12	24	36

Grade boundaries and UCAS points (as of 1st January 2007)

Grade boundaries BTEC National Award	Overall grade BTEC National Award		UCAS points
36 - 59	Pass	P	40
60 - 83	Merit	M	80
84 - 108	Distinction	D	120

Grade boundaries BTEC National Certificate	Overall grade BTEC National Certificate		UCAS points
72 - 95	PP		80
96 - 119	MP		120
120 - 143	MM		160
144 - 167	DM		200
168 - 216	DD		240

Grade boundaries BTEC National Diploma	Overall grade BTEC National Diploma		UCAS points
108 - 131	PPP		120
132 - 155	MPP		160
156 - 179	MMP		200
180 - 203	MMM		240
204 - 227	DMM		280
228 - 251	DDM		320
252 - 324	DDD		360

Programme design and delivery

BTEC National qualifications consist of core units (which are mandatory) and specialist units. Specialist units are designed to provide a specific focus to the qualification. Required combinations of specialist units are set out clearly in relation to each qualification in the defined qualification structures in this document.

In BTEC Nationals each unit is 30, 60, 90 or 120 guided learning hours (GLH). The GLH includes an estimate of time that might be allocated to direct teaching, instruction and assessment, together with other structured learning time such as directed assignments or supported individual study. It excludes learner-initiated private study. Centres are advised to consider this definition when planning the programme of study associated with this specification.

Mode of delivery

Edexcel does not define the mode of study for BTEC Nationals. Centres are free to offer the qualifications using any mode of delivery that meets their learner's needs. This may be through traditional classroom teaching, open learning, distance learning or a combination of the three. Whichever mode of delivery used, centres must ensure that learners have appropriate access to the resources identified in the specification and to the subject specialists delivering the units. This is particularly important for learners studying for the qualification through open or distance learning.

Learners studying for the qualification on a part-time basis bring with them a wealth of experience that should be utilised to maximum effect by tutors and assessors. Assessment evidence drawn from learners' work environments should be encouraged. Those planning the programme should aim to enhance the vocational nature of the qualification by:

- liaising with employers to ensure a course relevant to learners' specific needs
- accessing and using non-confidential data and documents from learners' workplaces
- including sponsoring employers in the delivery of the programme and, where appropriate, in the assessment
- linking with company-based/workplace training programmes
- making full use of the variety of experience of work and life that learners bring to the programme.

Resources

BTEC Nationals are designed to prepare learners for employment in specific occupational sectors. Physical resources need to support the delivery of the programme and the proper assessment of the learning outcomes, and should therefore normally be of industry standard. Staff delivering programmes and conducting the assessments should be fully familiar with current practice and standards in the sector concerned. Centres will need to meet any specialist resource requirements when they seek approval from Edexcel.

Where specific resources are required these have been indicated in individual units under the *Essential resources* section.

Delivery approach

It is important that centres develop an approach to teaching and learning that supports the specialist vocational nature of BTEC National qualifications. Specifications give a balance of practical skill development and knowledge requirements, some of which can be theoretical in nature. Tutors and assessors need to ensure that appropriate links are made between theory and practical application and that the knowledge base is applied to the sector. This requires the development of relevant and up-to-date teaching materials that allow learners to apply their learning to actual events and activity within the sector. Maximum use should be made of the learner's experience.

Where the qualification has been designated and approved as a Technical Certificate and forms part of an Apprenticeship scheme, particular care needs to be taken to build strong links between the learning and assessment for the BTEC National qualification and the NVQs and key skills that also contribute to the scheme.

Accreditation of Prior Learning (APL)

Edexcel encourages centres to recognise learners' previous achievements and experiences through APL. Learners may have evidence that has been generated during previous study or in their previous or current employment or whilst undertaking voluntary work that relates to one or more of the units in the qualification. Assessors should map this evidence against the grading criteria in the specification and make this evidence available to the external verifier. As with all evidence, assessors should be satisfied about the authenticity and currency of the material when considering whether or not the learning outcomes of the unit have been met.

Full guidance on Edexcel's policy on APL is provided on our website, go to www.edexcel.org.uk then click on 'About Us' and then 'Policies for Centres'.

Meeting local needs

Centres should note that the qualifications set out in these specifications have been developed in consultation with centres and employers, particularly the Sector Skills Councils or the Standards Setting Bodies for the relevant sector. The units are designed to meet the skill needs of the sector and the specialist units allow coverage of the full range of employment. Centres should make maximum use of the choice available to them within the specialist units in these specifications to meet the needs of their learners, and the local skills and training needs identified by organisations such as the Regional Development Agency and the local Learning and Skills Council.

In certain circumstances, units in this specification might not allow centres to meet a local need. In this situation, centres can seek approval from Edexcel to make use of units from other standard NQF BTEC National specifications. Centres will need to justify the need for importing units from other specifications and Edexcel will ensure that the vocational focus of the qualification has not been diluted. Units that have externally set assignments cannot be imported into other qualifications.

There may be exceptional circumstances where even this flexibility does not meet a particular local need. In this case, centres can seek permission from Edexcel to develop a unit with us to meet this need. There are very few cases where this will be allowed. Centres will need strong evidence of the local need and the reasons why our standard units are inappropriate. Edexcel will need to submit these units for accreditation by QCA.

Limitations on variations from standard specifications

The flexibility to import standard units from other BTEC Nationals and/or develop unique units is limited to a total of:

- $\frac{2}{9}$ (for example four 60 GLH units) in a BTEC National Diploma qualification
- $\frac{1}{6}$ (for example two 60 GLH units) in a BTEC National Certificate qualification
- $\frac{1}{6}$ (for example one 60 GLH unit) in a BTEC National Award qualification.

The use of these units cannot be at the expense of the core units in any qualification.

Access and recruitment

Edexcel's policy regarding access to its qualifications is that:

- they should be available to everyone who is capable of reaching the required standards
- they should be free from any barriers that restrict access and progression
- there should be equal opportunities for all wishing to access the qualifications.

Centres are required to recruit learners to BTEC qualifications with integrity. This will include ensuring that applicants have appropriate information and advice about the qualifications and that the qualification will meet their needs. Centres should take appropriate steps to assess each applicant's potential and make a professional judgement about their ability to successfully complete the programme of study and achieve the qualification. This assessment will need to take account of the support available to the learner within the centre during their programme of study and any specific support that might be necessary to allow the learner to access the assessment for the qualification. Centres should also show regard for Edexcel's policy on learners with particular requirements.

Centres will need to review the profile of qualifications and/or experience held by applicants, considering whether this profile shows an ability to progress to a Level 3 qualification. For learners who have recently been in education, the profile is likely to include one of the following:

- a BTEC First qualification in Vehicle Technology or a related vocational area
- an Intermediate GNVQ in an appropriate vocational area
- GCSEs equivalent to four passes at grade C

- other related Level 2 qualifications
- related work experience.

More mature learners may present a more varied profile of achievement that is likely to include experience of paid and/or unpaid employment.

Restrictions on learner entry

Most BTEC National qualifications are accredited on the NQF for learners aged 16 years and over. Learners aged 15 and under cannot be registered for a BTEC National qualification.

In particular sectors the restrictions on learner entry might also relate to any physical or legal barriers, for example people working in health, care or education are likely to be subject to police checks.

Edexcel Level 3 BTEC Nationals are listed on the DfES funding lists Section 96 and Section 97.

Access arrangements and special considerations

Edexcel's policy on access arrangements and special considerations for BTEC and Edexcel NVQ qualifications aims to enhance access to the qualifications for learners with disabilities and other difficulties (as defined by the 1995 Disability Discrimination Act and the amendments to the Act) without compromising the assessment of skills, knowledge, understanding or competence.

Further details are given in the policy 'Access Arrangements and Special Considerations for BTEC and Edexcel NVQ Qualifications', which is on the Edexcel website (www.edexcel.org.uk). This policy replaces the previous Edexcel policy (Assessment of Vocationally Related Qualification: Regulations and Guidance Relating to Learners with Special Requirements, 2002) concerning learners with particular requirements.

The Edexcel BTEC Qualification Framework for the Engineering sector

Progression opportunities within the framework are available vertically, diagonally and horizontally.

NQF Level	General Qualifications	BTEC full VRQ courses	BTEC Short Courses	NVQ/occupational
8				
7				
6				
5		HNC/D in Vehicle Operations Management HNC/D in Manufacturing Engineering HNC/D in Mechanical Engineering HNC/D in Electrical/Electronic Engineering HNC/D in Operations Engineering HNC/D in Aerospace Engineering HNC/D in Marine Engineering		
4				

NQF Level	General Qualifications		BTEC full VRQ courses	BTEC Short Courses	NVQ/occupational
3	GCE Engineering		NA/NC/ND in Vehicle Technology NC/AD in Mechanical Engineering NC/ND in Manufacturing Engineering NA/NC/ND in Engineering NC/ND in Electrical/Electronic Engineering NC/ND in Operations and Maintenance Engineering NC/ND in Communications Technology		
2	GCSE Engineering		BTEC First Certificate and Diploma in Vehicle Technology		Level 2 NVQ in Performing Engineering Operations
1	GCSE Manufacturing		Introductory Certificate and Diploma in Engineering		Level 1 NVQ in Performing Engineering Operations
Entry			Entry Level Certificate in Skills for Working Life - Practical Skills		

Further information

For further information please call Customer Services on 0870 240 9800 (calls may be recorded for training purposes) or visit our website at www.edexcel.org.uk.

Useful publications

Further copies of this document and related publications can be obtained from:

Edexcel Publications
Adamsway
Mansfield
Nottinghamshire NG18 4FN

Telephone: 01623 467 467
Fax: 01623 450 481
Email: publications@linneydirect.com

Related information and publications include:

- *Accreditation of Prior Learning* available on our website: www.edexcel.org.uk
- *Guidance for Centres Offering Edexcel/BTEC NQF Accredited Programmes* – (Edexcel, distributed to centres annually)
- key skills publications – specifications, tutor support materials and question papers
- *The Statutory Regulation of External Qualifications in England, Wales and Northern Ireland* – (QCA, 2004).
- the current Edexcel publications catalogue and update catalogue.

Edexcel publications concerning the Quality Assurance System and the internal and external verification of vocationally related programmes can be found on the Edexcel website and in the Edexcel publications catalogue.

NB: Most of our publications are priced. There is also a charge for postage and packing. Please check the cost when you order.

How to obtain National Occupational Standards (NOS)

The Level 3 National Occupational Standards in Automotive Engineering are available from:

SEMTA
14 Upton Road
Watford
Hertfordshire
WD18 0JT
Telephone: 01923 238441
Website: www.semta.org.uk

The Level 3 National Occupational Standards in Vehicle Maintenance and Repair are available from:

Automotive Skills

Fanshaws

Brickendon

Hertford

SG13 8PQ

Telephone: 01992 511521

Fax: 01992 511548

Website: www.automotiveskills.org.uk

Professional development and training

Edexcel supports UK and international customers with training related to BTEC qualifications. This support is available through a choice of training options offered in our published training directory or through customised training at your centre.

The support we offer focuses on a range of issues including:

- planning for the delivery of a new programme
- planning for assessment and grading
- developing effective assignments
- building your team and teamwork skills
- developing student-centred learning and teaching approaches
- building key skills into your programme
- building in effective and efficient quality assurance systems.

The national programme of training we offer can be viewed on the Edexcel website (www.edexcel.org.uk). You can request customised training through the website or by contacting one of our advisers in the Professional Development and Training team via Customer Services on telephone 0870 240 9800 (calls may be recorded for training purposes) to discuss your training needs.

The training we provide:

- is active – ideas are developed and applied
- is designed to be supportive and thought provoking
- builds on best practice.

Annexe A

QCA codes

The QCA National Qualifications Framework (NQF) code is known as a Qualification Accreditation Number (QAN). This is the code that features in the DfES Funding Schedules, Section 96 and 97 and is to be used for all qualification funding purposes. Each unit within a qualification will also have a QCA NQF unit code.

The QCA qualification and unit codes will appear on the learner's final certification documentation.

The QANs for the qualifications in this publication are:

Edexcel Level 3 BTEC National Award in Vehicle Technology 500/2322/6

Edexcel Level 3 BTEC National Certificate in Vehicle Technology 500/2320/2

Edexcel Level 3 BTEC National Diploma in Vehicle Technology 500/2321/4

These qualification titles will appear on the learners' certificates. Learners need to be made aware of this when they are recruited by the centre and registered with Edexcel. Providing this happens, centres are able to describe the programme of study leading to the award of the qualification in different ways to suit the medium and the target audience.

Annexe B

Grading domains: Level 3 BTEC generic grading domains

Grading domain 1	Indicative characteristics – Merit	Indicative characteristics – Distinction
<p>Application of knowledge and understanding</p> <p>(Learning outcome stem <i>understand</i> or <i>know</i>)</p>	<ul style="list-style-type: none"> • Shows depth of knowledge and development of understanding in familiar and unfamiliar situations (eg explain why, makes judgements based on analysis). • Applies and/or selects concepts showing comprehension of often complex theories. • Applies knowledge in often familiar and unfamiliar contexts. • Applies knowledge to non-routine contexts (eg assessor selection). • Makes reasoned analytical judgements. • Shows relationships between p criteria. 	<ul style="list-style-type: none"> • Synthesises knowledge and understanding across p/m criteria. • Evaluates complex concepts/ideas/actions and makes reasoned and confident judgements. • Uses analysis, research and evaluation to make recommendations and influence proposals. • Analyses implications of application of knowledge/understanding. • Accesses and evaluates knowledge and understanding to advance complex activities/contexts. • Shows relationships with p/m criteria. • Responds positively to evaluation.

Grading domain 2	Indicative characteristics – Merit	Indicative characteristics – Distinction
<p>Development of practical and technical Skills</p> <p>(Learning outcome stem <i>be able to</i>)</p>	<ul style="list-style-type: none"> • Deploys appropriate advanced techniques/processes/skills. • Applies technical skill to advance non-routine activities. • Advances practical activities within resource constraints. • Produces varied solutions (including non-routine). • Modifies techniques/processes to situations. • Shows relationship between p criteria. 	<ul style="list-style-type: none"> • Demonstrates creativity/originality/own ideas. • Applies skill(s) to achieve higher order outcome. • Selects and uses successfully from a range of advanced techniques/processes/skills. • Reflects on skill acquisition and application. • Justifies application of skills/methods. • Makes judgements about risks and limitations of techniques/processes. • Innovates or generates new techniques/processes for new situations. • Shows relationship with p and m criteria.

Grading domain 3	Indicative characteristics – Merit	Indicative characteristics – Distinction
<p>Personal development for occupational roles</p> <p>(Any learning outcome stem)</p>	<ul style="list-style-type: none"> • Takes responsibility in planning and undertaking activities. • Reviews own development needs. • Finds and uses relevant information sources. • Acts within a given work-related context showing understanding of responsibilities. • Identifies responsibilities of employers to the community and the environment. • Applies qualities related to the vocational sector. • Internalises skills/attributes (creating confidence). 	<ul style="list-style-type: none"> • Manages self to achieve outcomes successfully. • Plans for own learning and development through the activities. • Analyses and manipulates information to draw conclusions. • Applies initiative appropriately. • Assesses how different work-related contexts or constraints would change performance. • Reacts positively to changing work-related contexts • Operates ethically in work-related environments. • Takes decisions related to work contexts. • Applies divergent and lateral thinking in work-related contexts. • Understands interdependence.

Grading domain 4	Indicative characteristics – Merit	Indicative characteristics – Distinction
<p>Application of generic skills</p> <p>(Any learning outcome stem)</p>	<ul style="list-style-type: none"> • Communicates effectively using appropriate behavioural and language registers. • Communicates with clarity and influence. • Makes judgements in contexts with explanations. • Explains how to contribute within a team. • Demonstrates positive contribution to team(s). • Makes adjustments to meet the needs/expectations of others (negotiation skills). • Selects and justifies solutions for specified problems. 	<ul style="list-style-type: none"> • Presents self and communicates information to meet the needs of a variety of audience. • Identifies strategies for communication. • Shows innovative approaches to dealing with individuals and groups. • Takes decisions in contexts with justifications. • Produces outputs subject to time/resource constraints. • Reflects on own contribution to working within a team. • Generates new or alternative solutions to specified problems. • Explores entrepreneurial attributes.

Annexe C

Key skills

All BTEC National qualifications include mapping and/or signposting of key skills. These are transferable skills, which play an essential role in developing personal effectiveness for adult and working life and in the application of specific vocational skills.

In each unit the opportunities for the generation of evidence for key skills are signposted. These are indicative links only. Tutors will need to become familiar with key skills specifications and their evidence requirements and they are advised not to rely on the signposting in the units when presenting key skills evidence for moderation. Centres should refer to the QCA website (www.qca.org.uk) for the latest key skills standards.

Key skills provide a foundation for continual learning. They enable and empower individuals who inevitably face a series of choices in work, education and training throughout their lives. Current and future initiatives such as learndirect, lifelong learning and widening participation all require a more flexible population in the workplace and key skills play a role in setting the framework.

Learners need the chance to show current and future employers that they can:

- communicate effectively, in a variety of situations, using a wide range of techniques
- work well with others – individuals or teams – so that work can be properly planned and targets met
- manage their own development, so that they are always ready to take on the challenges of change and diversification
- use number, not just within routine tasks and functions but to help them be more effective and efficient in all they do
- use ICT in a range of applications to support all aspects of their role
- solve problems in a variety of circumstances.

Key skills mapping - summary of opportunities suggested in each unit

Key skills	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9	Unit 10	Unit 11
N3.1		✓		✓	✓	✓					
N3.2	✓	✓		✓	✓	✓					
N3.3	✓	✓		✓	✓	✓					
C3.1a											
C3.1b				✓							
C3.2	✓	✓		✓			✓	✓	✓	✓	
C3.3	✓	✓		✓			✓	✓	✓	✓	
ICT3.1	✓	✓		✓		✓		✓	✓		
ICT3.2	✓	✓				✓		✓	✓		
ICT3.3	✓	✓		✓		✓		✓	✓		
LP3.1		✓		✓							
LP3.2		✓		✓							
LP3.3		✓		✓							
PS3.1						✓	✓			✓	
PS3.2						✓	✓			✓	
PS3.3			✓			✓	✓				
WO3.1		✓									
WO3.2		✓									
WO3.3		✓									

Key skills	Unit 12	Unit 13	Unit 14	Unit 15	Unit 16	Unit 17	Unit 18	Unit 19	Unit 20	Unit 21	Unit 22
N3.1				✓	✓		✓	✓			
N3.2				✓	✓		✓	✓			
N3.3				✓	✓		✓	✓			
C3.1a						✓					
C3.1b						✓		✓			
C3.2	✓		✓	✓	✓	✓					
C3.3	✓	✓	✓	✓	✓	✓		✓	✓	✓	
ICT3.1	✓			✓	✓						
ICT3.2	✓			✓	✓						
ICT3.3	✓			✓	✓						
LP3.1	✓										
LP3.2	✓										
LP3.3	✓										
PS3.1	✓									✓	✓
PS3.2	✓	✓	✓								
PS3.3	✓	✓									
WO3.1	✓										
WO3.2	✓										
WO3.3	✓										

Key skills	Unit 23	Unit 24	Unit 25	Unit 26	Unit 27	Unit 28	Unit 29	Unit 30	Unit 31	Unit 32	Unit 33
N3.1					✓		✓	✓	✓		✓
N3.2					✓		✓				✓
N3.3	✓				✓		✓				✓
C3.1a											
C3.1b							✓				
C3.2				✓	✓	✓	✓			✓	
C3.3	✓			✓	✓	✓	✓	✓		✓	
ICT3.1	✓			✓	✓	✓	✓				
ICT3.2	✓			✓	✓	✓	✓	✓			
ICT3.3	✓	✓		✓	✓	✓	✓				
LP3.1				✓							
LP3.2				✓							
LP3.3				✓							
PS3.1		✓			✓				✓		✓
PS3.2		✓			✓			✓			✓
PS3.3					✓			✓			✓
WO3.1											
WO3.2											
WO3.3											

Annexe D

National Occupational Standards/mapping with NVQs

The following grid maps the knowledge covered in the BTEC Nationals in Vehicle Technology against the underpinning knowledge of the Level 3 Automotive Skills and SEMTA SSC National Occupational Standards.

KEY

Relevant NVQ units are listed where the BTEC unit provides partial coverage of the underpinning knowledge and understanding.

A blank space indicates no coverage of the underpinning knowledge and understanding.

NVQ	BTEC unit									
	1	2	3	4	5	6	7	8	9	10
Level 3 in Vehicle Maintenance and Repair	MR12HV		AE4, AE6, MR6, MR7, MR8, MR11, MR13, MR58, MR59, MR62, MR63, MR64, MR65, MR66, MR67, MR69			AE4, AE6, MR7	MR6, MR7, MR11	AE4, MR6, MR7, MR10	AE4, MR6, MR7, MR10	AE4, MR1, MR5
Level 3 in Automotive Engineering	4, 6, 7, 8									

NVQ	BTEC unit									
	11	12	13	14	15	16	17	18	19	20
Level 3 in Vehicle Maintenance and Repair		MR13, MR13HV	MR3	MR4, MR8	MR6, MR8HV	MR13, MR13HV	MR1, MR6, MR4, MR8			
Level 3 in Vehicle Body and Paint Operations										
Level 3 in Vehicle Fitting Operations										
Level 3 in Automotive Engineering					4, 8, 45, 52		4, 7, 52			

NVQ	BTEC unit												
	21	22	23	24	25	26	27	28	29	30	31	32	33
Level 3 in Vehicle Maintenance and Repair								MR6					
Level 3 in Vehicle Body and Paint Operations													
Level 3 in Vehicle Fitting Operations													
Level 3 in Automotive Engineering								59, 67					

Annexe E

BTEC Nationals in Vehicle Repair and Technology (old)/BTEC Nationals in Vehicle Technology (new) – unit mapping

Rationale

When developing the new units and qualifications, content from the old units was reviewed and altered to more accurately reflect the sector requirements by aligning the content closer to the National Occupational Standards (NOS).

The new units have been designed to give more flexibility for the user, centre and learner by careful use of 'egs' within the unit content.

A quick overview is included to give a summary of the relationship between the new units and those of the old Manufacturing Engineering Nationals. This is followed by a more detailed review.

The following annotation has been used throughout this mapping exercise:

LO = Learning Outcome

Old = September 2004 BTEC Nationals in Vehicle Repair & Technology qualification

New = September 2007 BTEC Nationals in Vehicle Technology qualification.

BTEC Nationals in Vehicle Repair and Technology (old)/BTEC Nationals in Vehicle Technology (new) – unit mapping overview

Old Units \ New Units	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Unit 1		F																			
Unit 2							F														P
Unit 3				F																	
Unit 4					F																
Unit 5						F															
Unit 6			F																		
Unit 7								F	F												
Unit 8										F		P									
Unit 9													F								
Unit 10											F	P									
Unit 11												F									
Unit 12														F						P	
Unit 13			P									P			F						
Unit 14		P														F					
Unit 15																	F				
Unit 16																		F			

KEY

P - Partial Mapping (Some topics from the old unit appear in the new unit)

F - Full Mapping (Topics in old unit match new unit exactly or almost exactly)

Old Units \ New Units	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Unit 17		P														P			F		
Unit 18						P															F
Unit 19																					
Unit 20																					
Unit 21																					
Unit 22																					
Unit 23																					
Unit 24																					
Unit 25	F																				
Unit 26																					
Unit 27																					
Unit 28																					
Unit 29																					
Unit 30																					
Unit 31																					
Unit 32																					
Unit 33																					

KEY

P - Partial Mapping (Some topics from the old unit appear in the new unit)

F - Full Mapping (Topics in old unit match new unit exactly or almost exactly)

BTEC Nationals in Vehicle Repair and Technology (old)/BTEC Nationals in Vehicle Technology (new) – unit mapping in depth

New units		Old units		Mapping/Comments (New topics in italics)	
Number	Name	Number	Name		
Unit 1	Operation of Vehicle Systems	Unit 2	Vehicle Systems	F	Full coverage.
Unit 2	Vehicle Engine Principles, Operation, Service and Repair	Unit 7	Engine Technology	F	Full coverage but <i>additional practical activities</i> in new unit.
		Unit 20	Heavy Vehicle Engine Technology	P	Some topics within LO1, LO2 and LO3.
Unit 3	Vehicle Fault Diagnosis and Rectification	Unit 4	Vehicle Fault Diagnosis and Rectification	F	Full coverage.
Unit 4	Vehicle Technology Project	Unit 5	Project - Vehicle Repair and Technology	F	Full coverage. Project is now 120 hours to allow extra emphasis on <i>the outcome from the project work</i> , all topics are fully covered.
Unit 5	Applications of Vehicle Science and Mathematics	Unit 6	Vehicle Science and Mathematics	F	Full coverage.
Unit 6	Vehicle Electrical and Electronic Principles	Unit 3	Vehicle Electronic Principles	F	Full coverage of new unit plus LO2 from the old unit in other new electrical units.

KEY

P - Partial Mapping (Some topics from the old unit appear in the new unit)

F - Full Mapping (Topics in old unit match new unit exactly or almost exactly)

New units		Old units		Mapping/Comments (New topics in italics)	
Number	Name	Number	Name		
Unit 7	Engine Electrical Charging and Starting Systems	Unit 8	Vehicle Electrical Systems	F	Full coverage.
		Unit 9	Vehicle Electrical Components	F	Full coverage.
Unit 8	Petrol Injection Systems for Spark Ignition Engines	Unit 10	Electronic Petrol Injection Systems	F	Full coverage.
Unit 9	Diesel Fuel Injection Systems	Unit 13	Diesel Fuel Injection Systems	F	Full coverage.
Unit 10	Operation and Testing of Vehicle Electronic Ignition Systems	Unit 11	Electronic Ignition Systems	F	Full coverage.
		Unit 12	Engine Management Systems	P	Some topics within LO1, LO2 and LO3.
Unit 11	Vehicle Engine Management Systems	Unit 12	Engine Management Systems	F	Full coverage.
Unit 12	Light Vehicle Transmission Systems	Unit 14	Light Vehicle Transmission Systems	F	Full coverage.
		Unit 18	Heavy Vehicle Transmissions	P	Some topics within LO1, LO2 and LO3.
Unit 13	Vehicle Electronic Ancillary and Information Systems	Unit 15	Vehicle Electronic Ancillary and Information Systems	F	Full coverage.
		Unit 3	Vehicle Electronic Principles	P	Some topics within LO1, LO2, LO3 and LO4.
		Unit 12	Engine Management Systems	P	Some topics within LO1, LO2, LO3 and LO4.
Unit 14	Light Vehicle Suspension, Steering and Braking Systems	Unit 16	Light Vehicle Steering Braking and Suspension	F	Full coverage.

New units		Old units		Mapping/Comments (New topics in italics)	
Number	Name	Number	Name		
Unit 15	Heavy Vehicle Braking Systems	Unit 17	Heavy Vehicle Braking Systems	F	Full coverage.
Unit 16	Heavy Vehicle Transmission Systems	Unit 18	Heavy Vehicle Transmissions	F	Full coverage.
Unit 17	Heavy Vehicle Steering and Suspension Systems	Unit 19	Heavy Vehicle Steering and Suspension	F	Full coverage.
Unit 18	Mathematics for Technicians	Unit 21	Mathematics for Technicians	F	Full coverage.
		Unit 6	Vehicle Science and Mathematics	P	Some topics within LO1, LO2, LO3 and LO4.
Unit 19	Business Systems for Technicians	-	-	-	<i>New unit for Nationals in Vehicle Technology.</i>
Unit 20	Properties and Application of Engineering Materials	-	-	-	<i>New unit for Nationals in Vehicle Technology.</i>
Unit 21	Fabrication Processes and Technology	-	-	-	<i>New unit for Nationals in Vehicle Technology.</i>
Unit 22	Applications of Welding Technology	-	-	-	<i>New unit for Nationals in Vehicle Technology.</i>
Unit 23	Engineering Design	-	-	-	<i>New unit for Nationals in Vehicle Technology.</i>
Unit 24	Engineering Drawings for Technicians	-	-	-	<i>New unit for Nationals in Vehicle Technology.</i>
Unit 25	Essential Working Practices in Vehicle Technology	Unit 1	Essential Working Practices and Customer Care	F	Full coverage (Level 2)

New units		Old units		Mapping/Comments (New topics in italics)	
Number	Name	Number	Name		
Unit 26	Communications for Technicians	-	-	-	<i>New unit for Nationals in Vehicle Technology.</i>
Unit 27	Motorsport Workshop Practices	-	-	-	<i>New unit for Nationals in Vehicle Technology.</i>
Unit 28	Motorsport Vehicle Preparation and Inspection	-	-	-	<i>New unit for Nationals in Vehicle Technology.</i>
Unit 29	Professional Practice and Logistics for Motorsport	-	-	-	<i>New unit for Nationals in Vehicle Technology.</i>
Unit 30	Computer Numerical Control of Machine Tools	-	-	-	<i>New unit for Nationals in Vehicle Technology.</i>
Unit 31	Computer aided Drafting	-	-	-	<i>New unit for Nationals in Vehicle Technology.</i>
Unit 32	Engineering Secondary/Finishing Processes	-	-	-	<i>New unit for Nationals in Vehicle Technology.</i>
Unit 33	Mechanical Principles and Applications	-	-	-	<i>New unit for Nationals in Vehicle Technology.</i>

Annexe F

Wider curriculum mapping

Study of the Edexcel Level 3 BTEC Nationals in Engineering gives learners opportunities to develop an understanding of moral, ethical, social and cultural issues as well as an awareness of environmental issues, European developments, health and safety considerations and equal opportunities issues.

The Edexcel Level 3 BTEC Nationals in Engineering make a positive contribution to wider curricular areas as appropriate.

Moral, ethical, social and cultural issues

The specification contributes to an understanding of moral, ethical, social and cultural issues, especially when learners are dealing with colleagues and customers.

Environmental issues

Learners are led to appreciate the importance of environmental issues throughout the engineering sector. Many of the units allow learners to consider the influence that engineering processes have on the environment and the ways that this impact can be reduced.

European developments

Much of the content of the Edexcel Level 3 BTEC Nationals in Engineering applies throughout Europe, even though the delivery is in a UK context.

Health and safety considerations

The Edexcel Level 3 BTEC Nationals in Engineering are practically based and health and safety issues are encountered throughout the units. Learners will develop awareness of the safety of others as well as themselves in all practical activities.

Equal opportunities issues

Equal opportunities issues are implicit throughout the Edexcel Level 3 BTEC Nationals in Engineering.

Wider curriculum mapping

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9	Unit 10	Unit 11	Unit 12	Unit 13	Unit 14	Unit 15	Unit 16	Unit 17
Moral and ethical issues																	
Social and cultural issues																	
Environmental issues	✓	✓	✓	✓			✓	✓	✓			✓				✓	
European developments	✓		✓	✓			✓	✓	✓								
Health and safety considerations		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Equal opportunities issues	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

	Unit 18	Unit 19	Unit 20	Unit 21	Unit 22	Unit 23	Unit 24	Unit 25	Unit 26	Unit 27	Unit 28	Unit 29	Unit 30	Unit 31	Unit 32	Unit 33
Moral and ethical issues		✓						✓				✓				
Social and cultural issues		✓						✓				✓				
Environmental issues		✓			✓			✓							✓	
European developments		✓	✓		✓	✓	✓	✓	✓	✓				✓		
Health and safety considerations		✓		✓	✓			✓		✓	✓				✓	
Equal opportunities issues	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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