BTEC Tech Award in Engineering
Your Key Stage 4 BTEC for schools

The skills to succeed - the confidence to progress
## What's inside your first look guide?

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### In this section
- What are BTECs?
- What are the BTEC Tech Awards?
- Why is the BTEC Tech Award in Engineering the best option for my students?
New to BTEC at Key Stage 4?

What are BTECs?
Chosen by over a million students every year, BTECs are vocational qualifications designed to help your students succeed. Students develop knowledge and understanding through applying their learning to work-related contexts, and gain the skills they need for further study and employment.

What are BTEC Tech Awards?
Designed specifically for schools, BTEC Tech Awards are brand new Level 1 and Level 2 qualifications for first teaching in September 2017. Complementing GCSEs and providing a first glimpse into a professional sector, these qualifications assess students through assignments and tasks rather than traditional exams.

BTEC Tech Awards have been specifically designed:

- for 14-16 year olds in schools
- to give students a hands-on taste of the sector, and the skills and confidence to take their next steps
- to count in the 'open group' of Progress 8.

Why choose BTEC Tech Award in Engineering?

- Teach the course as an introduction to Engineering, or focus on specialist areas: the choice is yours.
- Clear progression to the Level 3 National.
- All the support you need: free course materials, published resources, and a subject specialist always on hand.
- Assessments based on real-life scenarios your students will recognise.
- Graded across Level 1 and 2 to ensure all student achievements are recognised.
- Prepares students for the world of work by developing transferable skills.

Introducing
How does the course work?

The course is made up of three components: two that are internally assessed and one that’s externally assessed.

Our three-block structure, explore, develop and apply, has been developed to allow students to build on and embed their knowledge. This allows them to grow in confidence and then put into practice what they have learned.

Our assessment structure is also designed so that students can build on what they learn, and develop their skills, as they move through the course.
Component 1: Explore

Students explore the various engineering sectors, and the role of design in engineering

Aim: get to know industry sectors and how they work together to solve real-life problems.

Assessment: internally assessed assignments

Weighting: 30% of total course

During Component 1, your students will:

- explore the different sectors, products and interconnections within the industry
- investigate what various engineering organisations and functions do, in addition to potential career paths
- discover the engineering design and manufacture processes.

For more information on the content in this component and assessment examples visit: quals.pearson.com/TAengineering and explore Section 3 of the specification.
Component 2: Develop

Students develop knowledge and understanding of the processes of engineering a product

Develop

Component 2

Investigating an Engineering Product

Aim: explore the types of materials, components and processes used to make products, then reproduce and test a product.

Assessment: internally assessed assignments

Weighting: 30% of total course

During Component 2, your students will:

- learn why engineers choose certain materials and components to make products
- investigate how products are made
- identify best practice when it comes to safety and risk management
- develop research, observation, recording, interpretation and measuring skills
- put what they’ve learned into practice by safely planning, reproducing and testing an engineered product.

This component can be tailored to your students: simply choose a product that fits their interests.

For more information on the content in this component and assessment examples visit: quals.pearson.com/TAengineering and explore Section 3 of the specification.
Component 3: Apply

Students pull together all they have learned and apply their knowledge by creating their own product.

Aim:
provide solutions to real-life problems by creating their own engineered product.

Assessment:
externally assessed task, where students create an engineered product based on a brief.

Weighting:
40% of total course

To achieve this aim, your students will:

• build on what they’ve learned in Components 1 and 2
• identify the problem, develop a hypothesis and investigate possible solutions
• create a prototype that meets the brief
• record, analyse and evaluate data and outcomes, and reflect on how the product meets the brief.

This component can be tailored to your students: simply choose a product that fits their interests.

For more information on the content in this component and assessment examples visit: quals.pearson.com/TAengineering and explore Section 3 of the specification.
Your support for teaching: overview

Free support

Course materials
There are lots of materials available on our website to support your planning and delivery, including:
- Course Planners for 1 and 2 years
- Schemes of Work for each component
- Assessment materials: SAMs, Authorised Assignment Briefs, and Sample Marked Learner Work.
quals.pearson.com/TAengineering

Training events
We will be running Getting Ready to Teach events to help you feel confident teaching and assessing this new qualification.
quals.pearson.com/training

Engineering Subject Advisor
Your Engineering Subject Advisor, Evren Alibaba, is always on hand if you have any queries. Get in touch at:
TeachingEngineering@pearson.com  020 7010 2170

Published resources

Every lesson covered
Our resources are built around the free Schemes of Work and cover every lesson from all three components, to make planning and teaching simple.

Every lesson in one spread
Each lesson in the Scheme of Work has a corresponding two-page spread in the Student Book, with all the content you need to teach that lesson, as well as activities, case studies and assessment practice. See pages 16-17.

More resources for every lesson
The online Teaching Resources offer additional front-of-class resources matched to each lesson in the Scheme of Work, including PowerPoints and worksheets. See pages 18-19.

Order your free Evaluation Pack at:
www.pearsonschools.co.uk/engtechres
Your published support for teaching: 

**Student Book**

Key Concept

**Why are engineers needed?**

With a partner, discuss why you think engineers are required and where they work. How many types of engineer do you think there are?

**Types of engineers**

As you may expect, with there being many engineering disciplines and specialities, there are many types of engineer who work in the associated industries. The list of types of engineer is extensive.

Each type of engineer undertakes training and education in their respective field of engineering, so that they learn and understand the scientific principles and methods of working needed for them to undertake engineering tasks and solve real-world problems.

**Interconnections**

More and more, engineers in one engineering discipline need to be able to work in another. The development of industry by industry and engineering product means that there are now many interconnections required between engineering disciplines foroundary operations to occur efficiently.

For example, within the automotive or car manufacturing industry, this includes:

- **Mechanical engineers** who design and maintain car parts using machine tools.
- **Electrical engineers** who design and maintain the electricalyte in cars, ensuring that they are produced to ensure the safety and function of the vehicles.
- **Electronics engineers** who design and maintain the electronic systems and controls that operate the vehicle.
- **Computer engineers** who support all other disciplines, looking after computer hardware and writing the many software programs, such as those used to control production processes and to analyse and record data.
- **Maintenance engineers** who maintain and service machines and repair breakdowns.

These engineers will work together with many other engineers to create, develop, test, design, produce and service products. This includes the development of many of today’s engineered products means that there are many interconnections needed for them to undertake engineering tasks and solve real-world problems.

**Interconnections between the types of engineers**

In today’s world, the issue of personnel who are not multi-skilled, meaning they cannot do more than one job, is of even greater significance. There is an increasing need for people with expertise in more than one engineering discipline, who can cross over between engineering industry boundaries. For example, an electrical engineer who can support and solve electronics engineering problems, is of great benefit to an engineering company.

**Why are more engineers needed?**

Over time, the UK and many other countries have mistrained enough engineers. It is currently estimated that there is a shortage of 80,000 engineers in the UK.

There is also a significant change of skilled technicians and professional engineers. Olof Persson, the chief executive of the Volvo Group, said on the subject in 2013 that ‘by 2025, we (Europe) might need 500,000 engineers.’ In comparison, India and China are currently educating 500,000 engineers annually.

In today’s engineering world, the issue of personnel who are not multi-skilled, meaning they cannot do more than one job, is of even greater significance. There is an increasing need for people with expertise in more than one engineering discipline, who can cross over between engineering industry boundaries. For example, an electrical engineer who can support and solve electronics engineering problems, is of great benefit to an engineering company.

**The need for engineers**

Engineering provides employment for many millions of people across the world, allowing a range of products to be designed, tested, manufactured, operated and maintained.

However, the technological progress will not stand still with time, and engineering solutions are constantly evolving with new products being developed. Therefore, new skills and processes are required. Engineers of our discipline are now expected to be involved in new technologies and new engineering principles that go with these.

Do you know any engineers – family members, friends? What do they do?

Search online and see how many types of engineers you can find, both where you are based and across the UK. How many mention cross-disciplinary training and skills to cover more than one discipline.

But there is a significant need for more engineers, especially those with the training and skills to cover more than one discipline.

Look online and see how many jobs are advertised for engineers in technical and design disciplines that are not within your own discipline.

**LEARNING AIM**

The need for engineers

**ACTIVITY**

Do you know any engineers – family members, friends? What do they do?

Search online and see how many types of engineers you can find. Is the number more than you originally thought?

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Your published support for teaching:

**Teaching Resources (via ActiveLearn Digital Service)**

Our Teaching Resources provide extra activities for each lesson in the Scheme of Work, and are designed to complement the Student Book spread.

**What’s inside?**
- Online version of the Student Book for front-of-class use.
- Ready-made PowerPoint presentations.
- Activity and assessment worksheets, that you can download and tailor to your students’ needs.
- Video clips and interviews to provide an insight into the sector.

**How will it support my teaching?**

The Teaching Resources build on the lesson spreads in the Student Book, providing you with additional front-of-class teaching resources for every lesson.

Using the Student Book and Teaching Resources together means that you have all the lesson content and teaching resources you need to plan and teach every lesson from the Scheme of Work.

You do not have to purchase paid-for resources to deliver our qualifications.

Download your free slice of teaching content at:

[www.pearsonschools.co.uk/engtechres](http://www.pearsonschools.co.uk/engtechres)
Get set for assessment

In this section...

» Why the combination of internal and external assessment?
» How does assessment work?
» How does grading work?
» Your support for assessment

Why the combination of internal and external assessment?

The combination of internal and external assessment means your students will develop the knowledge, understanding and skills they need and then have the opportunity to put this learning into practice through a real-life scenario.

Internally assessed assignments

The focus is on your students developing their knowledge, understanding and skills.

Component 1 example assignment:
Your students produce a design proposal for an engineered product, based on a customer brief.

Component 2 example assignment:
Your students select an engineered product, investigate its construction and reproduce a component from it.

Externally assessed task

The focus is on your students putting their learning into practice through real-life scenarios.

Component 3 example task:
Your students are asked to carry out research into different types of elasticated ropes that can be used to lower supplies from a helicopter.
How does the assessment work?

Retaining the BTEC approach

Internal assessment

We’ve retained the well-established BTEC approach, adapted to fit the specific needs of this qualification. These assignments are set by your school assessment team, using guidance and examples provided by us. Students are given an assignment brief with a defined start date, completion date, and clear requirements for evidence needed. This assignment is then internally and externally verified.

Can my students resubmit?

There will be one opportunity to resubmit improved evidence, once approved with your Lead Internal Verifier.

Task over tests

External assessment

We realise that BTEC students should be assessed in a way that suits vocational learning. That’s why our new Tech Awards use task-based external assessments rather than traditional exam formats.

When can my students take the external assessment?

There is one externally assessed component (Component 3), designed to be synoptic (drawing together knowledge from the previous components) and taken near the end of the course.

There will be two assessment sittings per year, in February and May/June, from 2019 onwards.

Can my students resit?

Your students will have one opportunity to resit.

Want to see an example task?

See the sample assessment material (SAM) on our website.

quals.pearson.com/TAengineering

Why do we use verification?

We have chosen to verify rather than moderate our assignments; this means you can receive feedback on individual students and understand and track their performance at every stage - avoiding any last minute surprises.

i Want to know more?

More detail on internal assignments is in section 5 of your specification.

quals.pearson.com/TAengineering
How does the grading work?

Students achieve a grade for each component, which are allocated points. At the end of the course, we calculate the final grade by adding the points from each component, and matching this against the qualification grade point thresholds.

Full grading

Our qualification goes from Level 1 Pass to Level 2 Distinction* to ensure all students’ achievements are recognised. Students need to achieve a L1 Pass or above in the three components to achieve the qualification.

Qualification grade point thresholds

- Level 2 Distinction* · 114 points
- Level 2 Distinction · 105 points
- Level 2 Merit · 95 points
- Level 2 Pass · 72 points
- Level 1 Distinction · 58 points
- Level 1 Merit · 44 points
- Level 1 Pass · 30 points

Example

<table>
<thead>
<tr>
<th>Internally assessed</th>
<th>Externally assessed</th>
<th>Final qualification grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explore - 30%</td>
<td>Develop - 30%</td>
<td>Apply - 40%</td>
</tr>
<tr>
<td>PASSED</td>
<td>PASSED</td>
<td>PASSED</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 2 - Merit</td>
<td>29 Points</td>
</tr>
<tr>
<td>Level 2 - Distinction</td>
<td>36 Points</td>
</tr>
<tr>
<td>Level 2 - Merit</td>
<td>36 Points</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Final Grade</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 2 - Merit</td>
<td>101 Points</td>
</tr>
</tbody>
</table>

For more information on internal and external grading see section 8 of the specification.

quals.pearson.com/TAengineering

For more information on grading see section 8 of the specification.

quals.pearson.com/TAengineering
Your support for assessment

Sample Assessment Material
You can download Sample Assessment Material for Component 3 from our website, to give you an idea of what the tasks will look like. This also includes a mark scheme and marking guidance, so that you can see what is required from your students at each level.
quals.pearson.com/TAengineering

Authorised Assignment Briefs
You can download Authorised Assignment Briefs for each of the Learning Aims of Component 1 and 2 from our website. You can use these with your students as they are, tailor them to fit your students, or use them as inspiration to develop your own briefs.
quals.pearson.com/TAengineering

Sample Marked Learner Work
Sample Marked Learner Work will be available on our website. This will give you an example of students’ responses at pass, merit, and distinction grades.
quals.pearson.com/TAengineering

Published Support
Our Student Book and Teaching Resources contain specific activities on preparing for assessment, making sure your students have plenty of chance to practice.
See pages 14-17 of this guide to find out more

Recognising student achievement

In this section...
» How does the BTEC Tech Award fit into Progress 8?
» Where can a BTEC Tech Award take your students?
Where can a BTEC Tech Award take your students?

What will my students gain from a BTEC Tech Award?

**Practical, transferable skills**
BTEC Tech Awards focus on building skills which will give your students the confidence to progress in whatever path they choose.

**A taster of the sector**
The BTEC Tech Award is a practical introduction to life and work in Engineering, so your students can develop their understanding of the sector and see whether it’s an industry they’d like to be in.

**A well-rounded foundation for further study**
As they’re designed to be taken alongside GCSEs, with a BTEC Tech Award your KS4 students have the opportunity to apply academic knowledge to everyday and work contexts, giving them a great starting point for academic or vocational study post-16, as well as preparing them for future employment.
Where can my students progress to?

**Level of achievement**

- **Level 1** at KS4
  - Post-16 Level 2 study of engineering
  - Ideal for students who perform strongly in Engineering compared to their overall performance at KS4
  - Designed to lead towards work, apprenticeships or further study at Level 3

- **Level 2** at KS4
  - A Levels
    - Will prepare them for entry into Higher Education
  - Post-16 Level 2 study in a variety of subjects
  - Recognised by employers and universities

**Recognised by employers and universities**

In 2017, nearly 1 in 4 students who entered university in the UK did so with a BTEC. BTEC is a recognised and well-known qualification suite, providing reassurance that students who study a BTEC meet the levels required by employers and Higher Education.

**What are my students’ options for progression after the course?**

After completing their BTEC Tech Award, your students will be in a great position to continue in the engineering sector. This qualification prepares students for both practical and academic routes.

**Between 2010 and 2020 engineering companies in the UK are projected to have 2.74 million job openings**

**Recognising student achievement**
Your next steps

If you like what you see, and are interested in the BTEC Tech Award in Engineering, then:

Download your specification for a more detailed look at the course: quals.pearson.com/TAengineering

Get in touch with your Subject Advisor, Evren Alibaba with any queries.

Email: TeachingEngineering@pearson.com

Twitter: @PearsonTeachDT

Phone: 020 7010 2170

Tell us you’re teaching this qualification to receive the latest updates:

quals.pearson.com/TAsignup