

Diploma in Manufacturing and Product Design

An Introduction

Improving choice
Improving chances

department for
children, schools and families

A Brief Introduction to the Manufacturing Sector in the UK

Manufacturing is one of the largest and most diverse sectors in the whole of the UK. It generates two thirds of the country's exports and directly provides 4.3 million jobs. Manufacturing accounts for 20% of the UK's Gross Domestic Product.

Manufacturing is a rapidly changing, dynamic and exciting sector. In an increasingly competitive world marketplace manufacturers need to be able to adapt in order to thrive and survive. In the UK high value, innovative producers are now taking the place of mass volume manufacturers, in the UK, creating exciting opportunities for young people to work with expanding organisations competing on a world stage. Within manufacturing there is a vast array of career opportunities for new entrants and great potential for personal success and wealth creation.

Man-made products are all around us, so the scope of the manufacturing sector is huge. It includes: food and drink, textiles and apparel, processing industries and print, chemicals, pharmaceuticals, polymers and engineering. The new Diploma will give young people an insight into the fascinating business of manufacturing and equip them with the skills and knowledge that are vital for the UK to remain at the forefront of global manufacturing.

What is the Diploma in Manufacturing and Product Design?

The Diploma in Manufacturing and Product Design is a work-relevant qualification that looks at the complete process of manufacturing, from the purchasing of raw materials through to the sale of the finished product. This process encompasses design, procurement, human resources management, finance,

marketing and issues such as sustainability and globalisation. Employers in this sector say they are looking for motivated and creative individuals who have a grasp of all aspects of manufacturing and can apply their knowledge in a range of different settings. Above all potential recruits need to understand the importance of profitability for manufacturers, along with the economic, environmental, social and political impacts of manufacturing. The Diploma has a strong business focus and aims to give young people essential lifelong knowledge and skills such as creativity and innovation, the ability to work on their own initiative or as part of a team and communicating effectively with others.

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Diploma students also develop a good standard of English, maths and ICT. This broad mix of knowledge, understanding and skills will equip young people for college, university or employment.

There are three levels of Diploma.

Starting in Year 10 or 12:

The Foundation Diploma is a level 1 qualification that takes broadly the same time to do as four or five GCSEs.

The Higher Diploma is a level 2 qualification that takes broadly the same time to do as five or six GCSEs.

Starting in Year 12 or above:

The Advanced Diploma is a level 3 qualification that takes broadly the same time to do as three A levels.

A Progression Diploma will also be available, which takes broadly the same time as two A levels. This will suit students who do not wish to complete a whole Advanced Diploma.

What will Diploma Students Learn?

Students of the Diploma in Manufacturing and Product Design will complete a series of compulsory and optional courses designed to give them knowledge, skills and experience that will equip them for life, learning and work. All of the different courses are integrated, giving young people a clear understanding of the way the different disciplines relate to one another and presenting a holistic picture of the manufacturing process. In today's changing workplace environment, where people tend to work in

smaller teams with greater responsibility for all aspects of the production process, such an understanding is crucial. The Diploma content is grouped together under three core themes: Product Design and Science, Business and Enterprise, and Production Systems. Students learn using real-life work examples or in a realistic workplace environment, bringing their studies to life to make them more relevant to manufacturing in the real world.

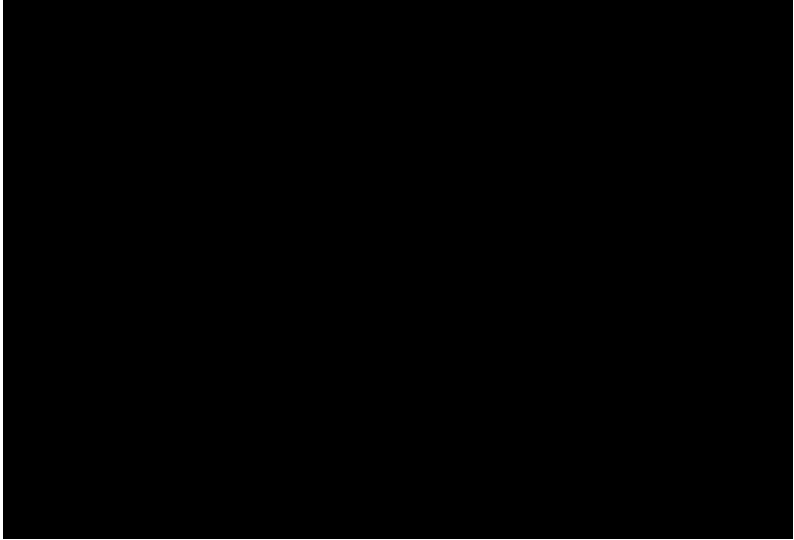
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Compulsory Courses

At Foundation level students study three compulsory topics, to give them a broad understanding of the sector and the way it works. These provide an introduction to manufacturing as a business, to working practices and to the process of manufacturing a product. For example, students might be asked to come up with the idea for a basic product before going on to

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research the product, to design and prototype it and then to look at the way the manufacture of the product is financed and how it is marketed and sold.

Higher-level students cover many of the same areas but in a lot more detail. For example, they may look at how businesses promote their products to overseas markets or they may consider the impact of highly competitive global markets on UK manufacturing. They may look at how the properties of materials influence product design and be introduced to advanced materials like biodegradable, microbiological, smart and nano-materials or examine the environmental considerations and impact of manufacturing and production.

Choices

Students also have the flexibility to choose from a wide range of additional or specialist learning options that are part of the Diploma in Manufacturing and Product Design. They will be able to explore their own interests and to gain an insight into the manufacturing industries within their local area. Students can choose to learn about a particular sector subject or to go into one of the main Diploma subjects in greater depth. So, for example, a student may opt to learn about robot technology and how it benefits modern day manufacturers. Alternatively, students may wish to delve deeper into the processes of a specific manufacturing sector such as the manufacture of paper, covering everything from pulping to coatings and finishing and printing.

Diploma students can also choose to include a subject that broadens their study programme – perhaps a language or a science.

Student Project

All Diploma students will complete a project to demonstrate the skills and knowledge they have acquired. Students can choose their own project and they are encouraged to work with local employers to solve real-life manufacturing problems. The content of projects will vary enormously but might include the Formula One Technology Challenge, which invites schools and colleges to design and manufacture CO₂ powered Formula One cars, or the Schools Food and Drink Challenge, which is an enterprise activity aimed at secondary school pupils. Students work in teams to develop a new food or drink product, choosing from a sandwich, pizza, smoothie, muffin or breakfast bar. They are guided through a series of activities required for new product development,

determining product values, manufacturing requirements, marketing and costings. The project culminates in a trade fair with prizes or certificates for the best products.

Personal, Learning and Thinking Skills

Mastering essential life and work skills is crucial in today's competitive job market. So all Diploma students are encouraged to develop skills like teamwork and self-management as part of their course. They will learn how to express themselves confidently and how to apply their knowledge and skills creatively in a work environment.

Work Experience

Diploma students will do a minimum of 10 days work experience. They will get the chance to learn and be mentored by business people working in their chosen field. For example, a student might work in a single large employer, a smaller company or a mixture of organisations connected by supply chain links.

English, Maths and ICT

All Diploma students need to achieve a minimum standard in English, maths and ICT. These subjects can be studied as part of the Diploma or can be taken with a GCSE alongside it.

A Typical Week

Diplomas will be taught through a lively mix of classroom learning, practical projects, local community involvement and work-related learning. Students receive input from a range of different people, including teachers, college lecturers, local business people and

industry practitioners. A typical student at Foundation and Higher levels would spend two days a week on Diploma study (in and out of the classroom) with the rest of the timetable available for GCSEs and National Curriculum studies. An Advanced student timetable might include practical workshops or master classes, work experience, classroom-based learning and learning off-site.

What will the Diploma lead to?

The Diploma is designed to broaden a student's horizons and give them a wide range of next-step options.

Students who have completed a Foundation or Higher Diploma in Manufacturing and Product Design might choose to go on to do an Advanced Diploma, or perhaps to do A levels. The Advanced Diploma can lead on to college or university, or to further training and employment. They could also decide to start an Apprenticeship or take a job with further training.

The Diploma in Manufacturing and Product Design does not mean students have to pursue a career in this sector. A Diploma gives students relevant, transferable skills that will be welcomed by colleges, universities and employers.

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Case Study

This might be the experience of a Diploma student taking a Diploma in Manufacturing and Product Design.

Name: Victoria

Age: 16

Which Diploma would I do?

Advanced Diploma in Manufacturing and Product Design

Why?

I've always been fascinated by the processes of manufacturing – from the purchasing of raw materials through to the sale of the finished product, and the journey a product takes in getting there. The Diploma would give me the unique opportunity to learn more about this, and to witness it first hand. It would be great to work with a growing business, and to be part of such a vibrant sector.

Highlight

The highlight for me would be getting the opportunity to gain real work experience, and complete a project where I had to design and develop a new product – and for the company I was working for to take on board some of my ideas.

Where next?

I would like to study for a degree in Food Marketing and Business Economics, and like to become a food scientist after I graduated.

"We are looking forward to the introduction of the Diploma in Manufacturing and Product Design as we believe it will afford all learners the opportunity to experience the industry first hand and thus discover and develop the relevant industry-related skills for whenever they are ready to enter the workplace. This is an excellent example of industry and education working hand in hand to produce well-educated and well-informed young people ready for further education and/or the work environment."

**Amanda Solloway, Training and Development Controller,
BMB Group Ltd.**

"The Diploma promises to deliver not only an excellent educational background but also the skills and abilities we look for in our employees. We've aligned our support for schools with the proposed Personal, Learning & Thinking Skills and have run a successful pilot in Birmingham. The young people were engaged by the activities and learnt a huge amount about the 'world of work'. We are looking forward to seeing talented young people in the market with the skills we need, clearly identified and developed."

**Jonathan Cooper, Technical Training Manager,
Cadbury Trebor Bassett**

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The Diploma in Manufacturing and Product Design will be taught for the first time by selected schools and colleges across England from September 2009. For more information, visit **www.manufacturingdiploma.co.uk** or **www.dcsf.gov.uk/14-19**.

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