

POST 16 SUBJECT OVERVIEW

Name of Subject - Edexcel Level 3 Advanced GCE in Design and Technology (product design)

Design and Technology - Product Design is a creative and thought-provoking qualification that gives students the practical skills, theoretical knowledge and confidence to succeed in a wide range of careers, especially those in the creative industries. It places a greater emphasis on understanding and applying iterative design processes. Students will use their creativity and imagination to design and make prototypes that solve real and relevant problems, considering their own and others' needs, wants and values. Design and Technology is a subject that recognises that individuals need to be able to express their creativity & develop a range of problem solving skills in practical situations.

They will investigate historical, social, cultural, environmental and economic influences on design and technology, whilst enjoying opportunities to put their own learning into practice by producing prototypes of their choice. Students will gain a real understanding of what it means to be a designer, alongside the knowledge and skills sought by higher education and employers. It encourages personal learning through inquiry into Design and Technology enjoyment of its application in the real world, along with the acquisition of lifelong learning and thinking skills.

We have devised and developed specialist workshops to enable students to incorporate wood and metal turning, 3D printing, laser cutting and casting manufacturing processes into the development and manufacturing of projects that they do throughout their A level and the final prototype that will be produced at the end of the qualification.

From these workshops and individual interests in particular the different manufacturing processes, students then develop a personal portfolio and prototype which really expresses the needs and wants of their real life client.

Which Examination Specification is Studied for this Course?

Edexcel Level 3 Advanced GCE in Design and Technology (Product Design)

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Why should I study this course? -

This course is an exciting course that equips students with design skills for the future. They will be able to recognise design needs and develop an understanding of how current global issues, including integrating technology, impacts on today's world. The course encourages creativity and innovation and at A level, students will have the confidence to innovate and produce creative design solutions as they develop their own design brief with a client/end user. Students will get the opportunity to visit a range of leading industries from McLaren's AMRC in Sheffield, to JCB in Uttoxeter to the Design Museum and new designers exhibition in London to gain a real understanding of how design and technology is embedded within industry.

Who is suitable to study this course? - What GCSE Qualifications Support the Study of this Course?

Creatively minded individuals with enthusiasm for creative thinking and problem solving, whilst pushing your own boundaries. You must be enthusiastic, prepared to really explore an idea or concept and be able to work with determination and perseverance. You will have timetabled lessons and will also be encouraged to come and use the space in your free periods, an equal amount of time is expected to be spent on your studies out of lessons as in lessons. GCSE Design and Technology would be a good foundation for embarking on this course but it isn't essential.

Careers that the study of Design and Technology (product design) supports include:

Product Designer, Design Engineer, Architecture, CAD Draughtsperson, Automotive Design, Graphic Designer, Manufacturing, Engineering, Teaching, Animator, Game designer, Fashion designer, Graphic Designer, Architect, Interior Designer. These are just a few of the careers that this qualification can take you into.

What are the Qualification Requirements for this Course?

GCSE Design and Technology would be a good foundation for embarking on this course but it isn't essential. An individual discussion with the Head of Department looking at your current Design and Technology work will be necessary if not taken at GCSE.

How is the Course Delivered? -

Students have 5 hours of timetabled lessons with specialist Design and Technology teachers. In addition to this students are required to complete 5 hours of personal study time and are encouraged to do this within the department to make best use of resources, materials and teacher support.

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Year 1

Initially students will undertake specialist workshops in wood turning, metal turning, 3D printing, laser cutting and casting to produce a range of different projects throughout Y12. These projects will be assessed internally. Students will gain knowledge and understanding of 6 different topics to prepare them for the end of year examination. These topics are as follows:

Topic 1: Materials

Topic 2: Performance characteristics of materials

Topic 3: Processes and techniques

Topic 4: Digital technologies

Topic 5: Factors influencing the development of products

Topic 6: Effects of technological development

Students will start to identify and outline possibilities for a design. They will look at identification and investigation of a design possibility, investigation of client/end user needs, wants and values, research and the production of a specification for their NEA (non examination assessment). Marked internally - NEA work will be used to support students in the second year of their NEA portfolio too. Year 1 is about building skills, confidence and understanding for year 2. There is no formal qualification gained at the end of this year.

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Year 2

Students will gain knowledge and understanding of 6 different topics to prepare them for the final end of year examination. These topics are as follows:

Topic 7: Potential hazards and risk assessment

Topic 8: Features of manufacturing industries

Topic 9: Designing for maintenance and the cleaner environment

Topic 10: Current legislation

Topic 11: Information handling, Modelling and forward planning

Topic 12: Further processes and techniques

Students will continue with their NEA and start designing a prototype. This will look at design ideas, development of design ideas, final design solution, review of development and final design and communication of design ideas. Students then start making the final prototype. This will look at the design, manufacture and realisation of a final prototype, including tools and equipment and quality and accuracy. Students will then evaluate their own design and final prototype. Marked internally / externally moderated.

Exam

Written exam: 2hrs & 30 mins – This examination will cover principles of Design and Technology and the 12 topics covered over the 2 years of the course. The paper includes calculations, short-open and open-response questions, as well as extended-writing questions. Externally moderated.

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Subject Overview		
Half Term	Year 12	Year 13
Autumn 1	Specialist workshops, Principles of Design and Technology - topics 1 - 6	Principles of Design and Technology - topics 7 - 12, design, manufacture and realisation of a final prototype, including tools and equipment and quality and accuracy
Autumn 2	Specialist workshops, Principles of Design and Technology - topics 1 - 6, identify and outline possibilities for a design	Principles of Design and Technology - topics 7 - 12, design, manufacture and realisation of a final prototype, including tools and equipment and quality and accuracy
Spring 1	Specialist workshops, Principles of Design and Technology - topics 1 - 6, identify and outline possibilities for a design	Principles of Design and Technology - topics 7 - 12, design, manufacture and realisation of a final prototype, including tools and equipment and quality and accuracy
Spring 2	Specialist workshops, Principles of Design and Technology - topics 1 - 6, investigation of client/end user needs, wants and values	Principles of Design and Technology - topics 7 - 12, design, manufacture and realisation of a final prototype, including tools and equipment and quality and accuracy, testing and evaluation
Summer 1	Specialist workshops, Principles of Design and Technology - topics 1 - 6, investigation of client/end user needs, wants and values	Externally set exam paper in May/June 2.5hrs on Principles of Design and Technology covering the 12 topics. Centre Marks are submitted by 31st May and external moderation of centre after this.
Summer 2	Specialist workshops, Principles of Design and Technology - topics 1 - 6, production of a specification for their final prototype, end of year exam	

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How is the Course Assessed?

Internally assessed at regular intervals throughout the year which will inform Praising Stars data & also to prepare students for work being externally moderated against an assessment criteria in Year 2.

Year 2 - March/April Year 13 Internal & External assessment and moderation of NEA portfolio and prototype. Work will be assessed at regular intervals throughout the year also.

Exam - May/June Year 13

Key Assessment Objectives

The 4 key assessment objectives in Design and Technology (product design) are

AO1 - Identify, investigate and outline design possibilities to address needs and wants - 15%

AO2 - Design and make prototypes that are fit for purpose - 25%

AO3 - Analyse and evaluate design decisions and outcomes, including for prototypes made by themselves and others and wider issues in design and technology - 25%

AO4 - Demonstrate and apply knowledge and understanding of technical principles, design and making principles - 35%

What is our Recommended Subject Reading list to Support your Study? - We suggest reading up on anything with regards to design, as well as looking at the different design movements and the key figures within these movements. Below are the movements and key figure to read up on:

- **Arts and Crafts** – (key figure William Morris 1834-1896)
- **Art Nouveau** – (key figure Charles Rennie Mackintosh 1868-1928)
- **Bauhaus Modernist** – (key figure Marianne Brandt 1893-1983)
- **Art Deco** – (key figure Eileen Gray 1878-1976)
- **Streamlining** – (key figure Raymond Loewy 1893-1986)
- **Memphis** (key figure Ettore Sottsass 1917-2007)
- **Post Modernism** (key figure Philippe Starck 1949 -