DESIGN & TECHNOLOGY

Overview

Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, students design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Students learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Aims of subject

The national curriculum for Design and Technology aims to ensure that all students:
- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others

Subject content

Key Stage 3

Through a variety of creative and practical activities, students will be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of domestic and local contexts (for example, the home, health, leisure and culture), and industrial contexts (for example, engineering, manufacturing, construction, food, energy, agriculture, horticulture and fashion).

When designing and making, students will be taught to:

Design
- use research and exploration, such as the study of different cultures, to identify and understand user needs (Years 7,8,9)
- identify and solve their own design problems and understand how to reformulate problems given to them (Years 8,9)
- develop specifications to inform the design of innovative, functional, appealing products that respond to needs in a variety of situations (Years 8,9)
- use a variety of approaches to generate creative ideas and avoid stereotypical responses (Years 7,8,9)
- develop and communicate design ideas using annotated sketches, detailed plans, 3-D and mathematical modelling, oral and digital presentations and computer-based tools (Years 7,8,9)

Make
- select from and use specialist tools, techniques, processes, equipment and machinery precisely, including computer-aided manufacture (Years 7,8,9)
- select from and use a wider, more complex range of materials and components, taking into account their properties (Years 8,9)

Evaluate

- analyse the work of past and present professionals and others to develop and broaden their understanding (Years 7,8,9)
- investigate new and emerging technologies (Years 8,9)
- test, evaluate and refine their ideas and products against a specification, taking into account the views of intended users and other interested groups (Years 7,8,9)
- understand developments in design and technology, its impact on individuals, society and the environment, and the responsibilities of designers, engineers and technologists (Years 7,8,9)

Technical knowledge

- understand and use the properties of materials and the performance of structural elements to achieve functioning solutions (Years 7,8,9)
- understand how more advanced mechanical systems used in their products enable changes in movement and force (Years 8,9)
- understand how more advanced electrical and electronic systems can be powered and used in their products (Year 9)

DESIGN & TECHNOLOGY – GCSE

Examination Board: EDUQAS

Course content:
Design and Technology enables learners to work creatively when designing and making and apply technical and practical expertise, in order to:

- demonstrate their understanding that all design and technological activity takes place within contexts that influence the outcomes of design practice
- develop realistic design proposals as a result of the exploration of design opportunities and users' needs, wants and values
- use imagination, experimentation and combine ideas when designing
- develop the skills to critique and refine their own ideas whilst designing and making
- communicate their design ideas and decisions using different media and techniques, as appropriate for different audiences at key points in their designing
- develop decision making skills, including the planning and organisation of time and resources when managing their own project work
- develop a broad knowledge of materials, components and technologies and practical skills to develop high quality, imaginative and functional prototypes
- be ambitious and open to explore and take design risks in order to stretch the development of design proposals, avoiding clichéd or stereotypical responses
- consider the costs, commercial viability and marketing of products
- demonstrate safe working practices in design and technology
- use key design and technology terminology including those related to: designing, innovation and communication; materials and technologies; making, manufacture and production; critiquing, values and ethics

Non-examination Assessment:
Students will undertake a design and make task, the theme of which is specified by the exam board. This entails designing and making a product, over an extended period. The context for the assessment will be provided in July of Year 10, and counts for 50% of the GCSE grade.

Design and make task: 50% of qualification   100 marks   35 hours duration
Set by the board – Contextual Areas

The learner should be allowed to explore a context before deciding upon a final problem/brief
- work within a context which will inform the outcome
- identify and understand client and user needs
- write a design brief and specifications
- identify opportunities and constraints that influence the processes of designing and making
- explore, develop, test, critically analyse and evaluate ideas
- investigate and analyse the work of others
- use different design strategies to generate initial ideas
- develop, communicate, record and justify design ideas
- design and develop at least one prototype that is fit for purpose
- make informed and reasoned decisions to identify the potential for further development

Written Examination:

The examination is of 2 hours duration, and is worth the remaining 50%, marked by the exam board out of 100 marks. In the exam, learners will be presented with questions relating to the core knowledge and understanding acquired throughout the course, as well as in-depth knowledge of a specific topic area.

Further information from Mrs E Wild