



PRODUCT DESIGN AS/ A Level

The AS / A level Product Design offers a unique opportunity in the curriculum for learners to identify and solve real problems by designing and making products or systems.

Product Design is an inspiring, rigorous and practical subject. The course encourages learners to use creativity and imagination when applying iterative design processes to develop and modify designs, and to design and make prototypes that solve real world problems, considering their own and others' needs, wants, aspirations and values.

The course has been developed to extend learners design and technological capability by promoting design awareness and providing opportunities to experiment and develop their own ideas. The course will essentially be based on designing and developing creative ideas involving some of the following topics:

Core technical principles.

- How manufactured products typically involve multiple materials, processes and techniques and that designers need to be able to discriminate between them and select them appropriately for use, experimenting in order to improve, refine and realise a design
- The requirements for product design, development and manufacture, including: fitness for purpose; meeting the criteria of specifications; accuracy of production
- Appropriate use of digital technologies; aesthetics; ergonomics and anthropometrics; the use of media, communication and presentation techniques, including drawing and sketching, and writing reports to record, explain and communicate their design decisions, providing sufficient information to enable others to interpret their design intentions
- Digital design and digital manufacture, including computer aided design (CAD)/computer aided manufacturing (CAM), modelling and simulation
- Safe working practices, including identifying hazards and understanding the need for risk assessments

In-depth technical principles

- The characteristics and working properties of materials relevant to product design and manufacture, including: metals, woods, polymers, textiles, composites, smart and modern materials
- The use of adhesives, permanent, and semi-permanent fixings
- The use of surface finishes and coatings to enhance appearance, and methods of preventing corrosion and decay such as paints, varnishes, sealants, preservatives, anodising, plating, coating, galvanization and cathodic protection
- The performance characteristics of woods, metals, and polymers including toughness, hardness, elasticity and durability in relation to specific product applications
- The application of smart and modern materials

- Production processes including moulding, extrusion, laminating, milling, turning, casting, stamping, and forming; the use of ICT, prototyping, jigs and fixtures
- Design theory, including key historic movements/figures and their methods
- Industrial and commercial practice including manufacturing processes and systems, product manufacture and maintenance, production scales, and quality control in relation to manufacturing and the design industries
- Modular/cell production systems, just-in-time manufacturing, bought-in parts and components and the use of standardised parts
- Rapid prototyping/ 3D printing.

How will I learn?

The course is structured on a mixture of practical and theory sessions. The practical elements are based on the development of particular techniques and will involve a Design and Make task in both Years 12 and 13.

How will I be assessed?

Examination: 2 Hour examination paper in both Years 12 and 13.

This examination makes up 50% of the AS and A level.

Coursework: Year 12 and 13 students will present their coursework in an A3 folder and a sketch book similar to the Year 11 format. The more creative and developmental work is presented in the form of a sketchbook. Whilst the more formal sheets will be presented in an A3 portfolio.

When combined with the practical outcome this accounts for 50% of the AS/ A level.

Where could it lead?

Besides further study at University level, Product Design is a qualification valued by a whole range of potential employers and is an excellent preparation for a variety of further education courses. As well as the practical expertise gained there is a great range of skills developed and enhanced during coursework, these skills are highly transferable. Career opportunities for students in Product Design, Engineering, Graphic Design, Textiles and Fashion, Electronics, Construction and Civil Engineering.

Career Opportunities

- Product Designer
- Graphic Designer
- Mechanical Engineering
- Civil Engineering
- Architectural Designer/ Architect
- Aeronautical Engineer
- Aircraft Designer
- Heating and Ventilation Engineer
- Building Engineer
- Automotive Engineering
- Materials Engineer
- Furniture Manufacturing
- Primary/ Secondary Teacher
- Manufacturing Engineering

