Design and Technology (Product Design)

Course Description:

The key aim of this subject is to enable you to use creativity and imagination when applying iterative design processes to develop and modify designs.
You will be able to integrate and apply your understanding and knowledge from Key Stage 4, with some elements of mathematics and science for analysis and informing decisions in design and well as a knowledge and understanding of materials, industrial processes and design history.
Within the Independent Design and Make Project component of the course, you will undertake a substantial design, make and evaluate a project. This will be of your choice. You will create a prototype, which is an appropriate working solution to a need or want that is sufficiently developed to be tested and evaluated; this could be a full-sized product, a scaled working model or functioning system. This project will require you to follow the iterative design processes of exploring, creating and evaluating.

Qualifications Required:

Minimum entry requirements apply. Grade 5 in a Design and Technology subject and a Grade 5 in English and Maths is advisable. We would also consider applications from students who have a Grade 5 in Art and Design.

Aims of the Course:

- To use creativity and imagination to develop and modify designs.
- To design and make prototypes that solve real world problems, considering your own needs and others' needs, wants, aspirations and values.
- To acquire subject knowledge in design and technology, including how a product can be developed through the stages of prototyping, realisation and commercial manufacture.
- To be open to taking design risks, showing innovation and enterprise whilst considering your role as responsible designers and citizens.
- To develop intellectual curiosity about the design and manufacture of products.
- To gain an insight into the creative, engineering and/or manufacturing industries
- To develop an in-depth knowledge and understanding of materials, components and processes associated with the creation of products that can be tested and evaluated in use.

Future Prospects:

Product, Industrial Design or Graphic Design related subjects at University or College.

- Various other design degree courses at University or College, such as Architecture, Interior Design, Fashion Design, Web Design, Illustration, Set Design or Automotive Design.
- A wide range of careers including design, engineering and architecture.

Student Feedback:

"It gave me the innovative knowledge that no other course provides and an entrepreneurial outlook and appreciation for everyday objects."
"It refined my creative mind-set and was a perfect stepping stone for my university course and future."

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Features of the Course:

- Sketching, modelling and design development skills
- Sustainable design and Life Cycle Assessment Processes and Techniques of specialist tools.
- CAD/CAM skills including Laser Cutting and 3D printing
- Health and safety issues
- Manufacturing systems including quality control, quality assurance and TQM
- A knowledge and understanding of materials, industrial processes (wood, metal, polymers, composites, textiles, papers and boards)
- Ergonomics, anthropometrics and user centred design
- Design influences and history
- The design process – product analysis and near centred design, market research, project planning, evaluating and testing

Units:

Component 1: Principles of Design and Technology

- Topic 1: Materials
- Topic 2: Performance characteristics of materials
- Topic 3: Processes, techniques and specialist tools
- Topic 4: Digital technologies
- Topic 5: Factors influencing the development of products
- Topic 6: Effects of technological developments
- Topic 7: Safe working practices, 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

The exam paper includes calculations, short-open and open-response questions, as well as extended writing questions.

Component 2: Independent Design and Make Project

- Students individually and/or in consultation with a client/end user identify a problem and design context.
- Students will develop a range of potential solutions which include the use of computer aided design and evidence of modelling.
- Students will be expected to make decisions about the designing and development of the prototype in conjunction with the opinions of the client/end user.
- Students will realise one potential solution through practical making activities with evidence of project management and plan for production.
- Students will incorporate issues related to sustainability and the impact their prototype may have on the environment.

Methods of Assessment:

Component 1: 50% of A Level. Written examination.

Component 2: 50% of A Level. Coursework that is assessed by your teachers and moderated by the exam board.