All Hallows RC High School

Specialising in Business, Enterprise & Sports

DESIGN AND TECHNOLOGY CURRICULUM OVERVIEW

MR J COLLINS

September 2021

WE AIM FOR ALL HALLOWS RC BUSINESS, ENTERPRISE AND SPORTS COLLEGE TO BE A CATHOLIC SCHOOL TO WHICH CHILDREN WISH TO COME TO WHICH PARENTS WISH TO SEND THEIR CHILDREN AND WHERE TEACHERS WISH TO TEACH

OUR MISSION IS TO OFFER A HIGH QUALITY CATHOLIC EDUCATION FOR ALL, IN AN ENVIRONMENT WHERE GOSPEL VALUES ARE CENTRAL TO TEACHING AND LEARNING AND IN WHICH THE UNIQUE VALUE OF EACH PERSON IS RECOGNISED AND RESPECTED

Curriculum Intent

Design Technology at All Hallows follows AQA Design Technology. This allows all students who choose to study at Year 11, another GCSE, along with the opportunity to study a subject which will allow them to participate confidentially and successfully in an increasingly technological world.

The Importance of Design Technology

Design technology allows our students to learn how to become more resourceful, innovative, enterprising and capable. Our department aims to provide all students with the opportunity to investigate and examine a range of designs and products through visual aids and hands-on experience. As we progress through the curriculum our aim is to develop student awareness in taking a product from initial problem to a final solution. All Design Technology students will build upon:

- Solving 'real life' problems (Being Creative)
- Delivering what the client wants (Managing Information)
- Appreciating that 'quality' in everything is essential (Thinking Skills and Personal Capabilities)
- Decision making (Thinking, Problem-Solving and Decision-Making)
- Working to deadlines (Self-Management)
- Communication skills (Working with Others)
- Use of Information Communication Technology (ICT Accreditation Scheme)

Year 7 – 9 Department Structure

All students at All Hallows study Design Technology at Key Stage 3 (Years 7-9) before deciding on their option to pick DT as a GCSE option. At Key Stage 3 pupils get exposed to a wide range of manufacturing processes, tools and machinery. All students will have the opportunity to gain experience in CAD/ CAM techniques and the whole KS3 is designed in such a way that it is fun while laying the foundations of GCSE skills and knowledge.

The Technology suite is an excellent facility, enhanced by newly updated ICT and CAD CAM equipment.

Design and Technology is essentially a practical subject where the course is designed to enable students to acquire knowledge, understanding and skills which can be used in the design and manufacture of products which are meaningful to them.

During Year 7 pupils spend half the year in DT and the other half in Food Technology (Food Preparation ad Nutrition) and this cycle repeats in Year 8. Over the two years pupils will cover an integrated Design Technology course which covers key aspects of:

- CAD/CAM: Computer Aided Design and Computer Aided Manufacture
- Resistant Materials: Designing and making with plastics, wood & metals
- Systems: Students consider Input, Process and Outputs mainly through their CAD/CAM Mechanisms and Electronics focused projects
- Graphic Products: designing and marketing for printed products such as packaging, mugs and t-shirts
- Electronic Products: exploring the use of electronics and sensors, movement, light and sound into functional technology products.

Year 10 - 11 GCSE Design Technology

Studying AQA GCSE Design Technology provides opportunities to tackle and resolve design and technological problems to meet human needs within a range of contexts, such as home, school, leisure, community, business and industry. Essentially, we are searching for better ways to do things, inventing solutions and taking risks.

Throughout this course, you will investigate historical, social, cultural, environmental and economic influences on design whilst enjoying opportunities to put your learning into practise. Students will produce prototypes of their own design using some of the latest technology available such as 3D CAD and 3D Printing.

You will gain a real understanding of what it means to be a designer. Areas to be covered will be the design cycle, plastics, metals, woods, smart and modern materials.

This creative and thought provoking qualification will develop your practical skills, theoretical knowledge and confidence to succeed in a number of careers. This course lends itself to careers based in Creative Industries and will also give a good grounding for continued study at University.

Students will sit a written 2 hour exam worth 100 marks, which makes 50% of the final GCSE grade. The other 50% coming from a physical prototype worth 100 marks. Each student will use a range of manufacturing techniques and processes to create a design based on a given context. Previous coursework examples have been designing a product which could aid a disabled client, or design a product that could be used for storage.

The GCSE coursework tasks will be provided towards the end of year 10 to enable students to begin to research their chosen task. Coursework should take approximately 35 hours and students undertake a design and make assignment for the chosen task. They are required to produce a folder of evidence for research, design development, and planning, alongside a made product to fit their design brief. The remainder of Year 11 is then spent on examination preparation and revision.

See link below for further information on GCSE AQA Design Technology

https://www.aqa.org.uk/subjects/design-and-technology

Career opportunities
Structural Engineering
Naval Engineering
Electronic Engineer
Architecture
Electrician
Graphic Designer
Fashion Design
Interior Designer
Games Design
Plumbing
Welding

KS3 Order of Teaching 2021/2022

	Term 1	Term 2	Term 3
Year 7	Name - Pine Wood Pencil Holder Outline - This project introduces the use of basic workshop tools and equipment. Including Tenon saws, Pillar drill use, Electric Sander along with hand filing and sanding. CAD will be introduced to create a virtual model of the finished design.	Name - JigSaw Project Outline - Using advanced Coping saw techniques along with machine Scroll saws to create a jigsaw puzzle. Basic CAM introduction taught to create a laser cut version of final design.	N/A as technology rotation with food technology
Year 8	Name - PlyWood Box Outline - Students will learn the skill of creating a box using wood joints, without using screws or nails. Students will develop CAM skills, through Laser cutting their name on the box lid. Manuel Isometric sketching techniques will be introduced as a way to present design work.	Name - Pewter Cast Key ring Outline - Students will be introduced to using the brazing hearth to melt Pewter metal into a mould to create a key ring. Students will develop CAM/ CAD ability through use of the laser cutter to create a wooden Pewter mould.	N/A as technology rotation with food technology
Year 9	Name - BlockBot Outline - Year 9 will begin by creating a Pine Wood block bot. This project uses advanced sawing and measuring techniques to create blocks of various sizes. Advanced drilling techniques will also be taught including the use of Forstner drill bits to create extra large holes in clean and precise woodwork. Technical drawing techniques will be further explored along with CAD to create virtual models and design ideas throughout.	N/A as technology rotation with food technology	N/A as technology rotation with food technology

KS4 Order of Teaching 2021/2022

Year	Term 1	Term 2	Term 3
Year 9		Name - Experimenter Boards Outline - This project will develop analytical as well as problem solving skills whilst creating workable prototypes. Name - Fab-Ric! Outline - This project will investigate the properties of textiles.	Name - Key Designers Outline - This project will analyse the work of designers. Name - Passive Amp Outline - The project is a practical task that develops accuracy in cutting and shaping several pieces of solid timber, in this case pine, combined with a bit of careful shaping, gluing and drilling you can make a mobile phone Passive Amplifier.
Year 10	Name - Adjustable Mirror Outline - This project will give a basic understanding of the main workshop skills involved in manipulating polymers, metals and woods. Students will learn how to cut, bend and screw thread metals, laser cut polymers, shape and finish wood to create a accurate and usable product. Name - Gameboy Puzzle Game Outline - This project will gives an introduction to polymers, how they can be shaped through vacuum forming and formed using the sander, drill and countersink. Students will also develop a solid working understanding of 2D Design in order to create an orthographic drawing. Manual isometric sketching will be developed with the use of traditional drawing equipment.	Name - 3D Sketching Outline - This project will develop ability to sketch in 3D (isometric) Name - Mechanical Modelling Outline - This project will allow to develop problem solving skills whilst creating workable prototypes. Effective use of time will be needed to complete the set tasks.	Name - Bit Stop Bedside Storage Outline - This project will give a sound understanding of some of the main manufacturing techniques used in industry in order to batch produce products using jigs, templates and formers. Previously gained experience in woods, metals and polymers will also be developed. CNC machining will be introduced in order to create a personalised finished product.
Year 11	Name - Coursework (NEA) Section 1 - Research Outline - Design possibilities identified and thoroughly explored through research. Name - Coursework (NEA) Section 2 - Ideas Outline - Creation of imaginative, creative and innovative ideas that show full consideration for functionality, aesthetics and innovation using a range of communication techniques. Name - Coursework (NEA) Section 3 - Idea Development Outline - Development of design ideas using a wide range of 2D/3D techniques (including CAD where appropriate) in order to develop a prototype. Appropriate materials/components selected with extensive research into their working properties and availability. Detailed manufacturing specification is produced with comprehensive justification to inform manufacture.	Name - Coursework (NEA) Section 4 - Manufacture Outline - Production of a prototype which shows a high level of making/finishing skills that are fully consistent and appropriate to the desired outcome. Quality control is evident to ensure the prototype is accurate by consistently applying very close tolerances, as well as safe working practises. Name - Coursework (NEA) Section 5 - Evaluation Outline - Testing of all aspects of the final prototype against the design brief and specification. Detailed and justified reference is made to any modifications.	
Year 11	R105 Design Briefs, design specifications and user requirements https://my.dynamic-learning.co.uk/ResourcesOverview.aspx?tid=3af0ea0a-5607-40ba-bbdf-a6af6622e689&csid=9781398308022#todo	R106 Product Analysis and research https://my.dynamic-learning.co.uk/ResourcesOverview.aspx?tid=3af0ea0a-5607-40ba-bbdf-a6af6622e689&csid=9781398308022#todo	R107 Developing and presenting engineering Design

#TheAllHallowsWay

All Hallows RC High School

Specialising in Business, Enterprise & Sports