Design Technology and Engineering Curriculum Map Overview

Please note further information can be found in the Design Technology and Engineering curriculum sequencing document

DEYES HIGH SCHOOL
LYDIATE LEARNING TRUST

Key Stage 3

KS3 Year 7	Half term 1 Autumn 1	Half term 2 Autumn 2	Half term 3 Spring 1	Half term 4 Spring 2	Half term 5 Summer 1	Half term 6 Summer 2
Design, Tech & Engineering	Depending on student rotation - Students complete 3 projects using booklets covering Graphic Design, Electronics, Resistant Materials, Product Design and use of CAD/CAM packages • Students study a 12 week programme investigating Structures - This is delivered through the Bridge Project • Students study a 12-week programme investigating Energy and Electronics - This is delivered through the Electronic Steady Hand Game • Students study a 12-week programme investigating Materials-Timber this is delivered through the Chinese Calendar Project					

KS3 Year 8	Half term 1 Autumn 1	Half term 2 Autumn 2	Half term 3 Spring 1	Half term 4 Spring 2	Half term 5 Summer 1	Half term 6 Summer 2
Design, Tech & Engineering	During this half term students study a sequence of lessons developing essential knowledge of: Students study a 12-week programme focusing on Prototypes. This is delivered through the following project: Designing and Modelling Prototypes - Mobile Phone Project Students study a 12-week programme focusing on Electronics. This is delivered through the following project: IKEA - Night light project Students study a 12-week programme focusing on Metals. This is delivered through the following project: Wind Turbine Project					

KS3 Year 9	Half term 1 Autumn 1	Half term 2 Autumn 2	Half term 3 Spring 1	Half term 4 Spring 2	Half term 5 Summer 1	Half term 6 Summer 2
Design, Tech & Engineering	Students study a 12-week programme focusing on Design influences. This is delivered through the following project: Influential Designers & Design Movements - Point of sales display project Students study a 12-week programme focusing on Engineering. This is delivered through the following project: Designer Jewelry Project Students study a 12-week programme focusing on Polymers. This is delivered through the following project: Mechanical Toy Project					

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Key Stage 4

KS4 Year 10	Half term 1 Autumn 1	Half term 2 Autumn 2	Half term 3 Spring 1	Half term 4 Spring 2	Half term 5 Summer 1	Half term 6 Summer 2
Design Tech	**During this half term students study a sequence of lessons developing essential knowledge of:** **New and emerging technologies** Industry and enterprise Sustainability and the environment People, culture and society Production techniques and systems Informing design decisions • Informing design decisions	**Energy generation and storage** Energy generation Energy storage Modern materials Smart materials Composite materials Systems approach to designing Electronic systems processing Mechanical Devices **Materials and their working properties** Paper & Boards Natural & Manufactured Timbers Metals & Alloys Polymers Textiles	**Common Specialist Principals** Forces & Stresses Improving functionality Ecology and social footprint The six R's Scales of production	**Timber** Sources Origins & Properties Working with Timber based materials Commercial manufacturing, surface treatments and finishes **Metal** Sources Origins & Properties Working with Metal based material and fixings. Commercial manufacturing, surface treatments and finishes **Polymers** Sources Origins & Properties	**Stock forms, types and sizes** **3.2.7 Scales of production** **Specialist techniques and processes** **Surface treatments and finishes**	**Designing Principals** Investigation Primary & secondary data Environmental social and economic challenge The work of others Design Strategies Communication of design ideas **Making Principals** Prototype development Selection of materials & components

				Working with Polymer based materials and fixings Commercial manufacturing, surface treatments and finishes		Tolerances & allowances Material management and marking out Specialist tools, equipment techniques and processes Surface treatments and finishes

KS4 Year 10	Half term 1 Autumn 1	Half term 2 Autumn 2	Half term 3 Spring 1	Half term 4 Spring 2	Half term 5 Summer 1	Half term 6 Summer 2
Construction	During this half term students study a sequence of lessons developing essential knowledge of: Construction Sectors Practical Construction skills Joinery	During this half term students study a sequence of lessons developing essential knowledge of: Consruction Life Cycle Practical Construction skills Joinery	During this half term students study a sequence of lessons developing essential knowledge of: Types of Structure Practical Construction skills Joinery	During this half term students study a sequence of lessons developing essential knowledge of: Technologies & Materials Practical Construction skills Painting & Decorating	During this half term students study a sequence of lessons developing essential knowledge of: Building Structures Practical construction skills Painting & Decorating	During this half term students study a sequence of lessons developing essential knowledge of: Sustainable Construction Practical Construction skills Tiling

KS4 Year 10	Half term 1 Autumn 1	Half term 2 Autumn 2	Half term 3 Spring 1	Half term 4 Spring 2	Half term 5 Summer 1	Half term 6 Summer 2
Engineering	During this half term students study a sequence of lessons developing essential knowledge of: **Material Properties** **Manufacturing processes**		During this half term students study a sequence of lessons developing essential knowledge of: **Investigating an Engineering Drawings** Learners will investigate the selection of components, materials and manufacturing processes, and learn how to understand and interpret Engineering Drawings (Components and materials)			**Responding to an Engineering Brief** Learners will investigate the best possible manufacturing methods for a successful outcome

KS4 Year 11	Half term 1 Autumn 1	Half term 2 Autumn 2	Half term 3 Spring 1	Half term 4 Spring 2	Half term 5 Summer 1
Design Tech	Identify, investigate and outline design possibilities Identifying & investigating design possibilities Producing a design brief &	Generating design ideas Students should explore a range of possible ideas for their chosen topic. These design ideas should	Students will develop and refine design ideas. This may include, formal and informal 2D/3D drawing including CAD, systems and schematic diagrams, and	Students will work with a range of appropriate materials/components to produce prototypes that are accurate and within close tolerances. This will involve using	Within this iterative design process students are expected to continuously analyse and evaluate their work, using their decisions to improve

	Specification	demonstrate flair and originality and students are encouraged to take risks with their designs. Students may wish to use a variety of techniques to communicate.	models. Students will develop at least one model high quality model.	specialist tools and equipment, which may include hand tools, machines or CAM/CNC. The prototypes will be constructed through a range of techniques, which may involve shaping, fabrication, construction and assembly.	outcomes. This should include defining requirements, analysing the design brief and specifications along with the testing and evaluating of ideas produced during the generation and development stages.

KS4 Year 11	**Half term 1 Autumn 1**	**Half term 2 Autumn 2**	**Half term 3 Spring 1**	**Half term 4 Spring 2**	**Half term 5 Summer 1**	**Half term 6 Summer 2**
Construction	During this half term students study a sequence of lessons developing essential knowledge of: Trades in Construction	During this half term students study a sequence of lessons developing essential knowledge of: Health & Safety	During this half term students study a sequence of lessons developing essential knowledge of:	During this half term students study a sequence of lessons developing essential knowledge of: Undertaking Consruction projects Tiling	During this half term students study a sequence of lessons developing essential knowledge of: Undertaking Consruction projects Tiling	

	Planning construction projects Undertaking practical construction skills Joinery	Planning construction projects Undertaking practical construction skills Joinery	Undertaking construction projects Undertaking practical construction skills Painting & Decorating			

KS4 **Year 11**	Half term 1 Autumn 1	**Half term 2** **Autumn 2**	**Half term 3** **Spring 1**	**Half term 4** **Spring 2**	**Half term 5** **Summer 1**	**Half term 6** **Summer 2**
Engineering	During this half term students study a sequence of lessons developing essential knowledge of: **Explore Engineering through interpreting Engineering Drawings** **Responding to an Engineering Brief** Materials	During this half term students study a sequence of lessons developing essential knowledge of: **Explore Engineering through interpreting Engineering Drawings** **Responding to an Engineering Brief** Functionality	During this half term students study a sequence of lessons developing essential knowledge of: **Explore Engineering through interpreting Engineering Drawings** **Responding to an Engineering Brief**	During this half term students study a sequence of lessons developing essential knowledge of: **Explore Engineering through the design process.**	During this half term students study a sequence of lessons developing essential knowledge of: **Explore Engineering through interpreting Engineering Drawings**	Component 3 Responding to an Engineering Brief

	Processes Tolerance	Interpreting Engineering drawings	Manufacturing processes and interpretation of data.	• Materials • Processes • Sketching • Aesthetics • Modelling	**Responding to an Engineering Brief** Producing Ideas Justifying decisions in terms of functionality and effectiveness Producing Engineering Drawings	

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Key Stage 5

KS5 Year 12	Half term 1 Autumn 1	Half term 2 Autumn 2	Half term 3 Spring 1	Half term 4 Spring 2	Half term 5 Summer 1	Half term 6 Summer 2
Design, Tech & Engineering	During this half term students study a sequence of lessons developing essential knowledge of: **Engineering principals.** **Design process,**	During this half term students study a sequence of lessons developing essential knowledge of: **Engineering principals.** **Design process** **Computer Aided Design in Engineering**	During this half term students study a sequence of lessons developing essential knowledge of: **Engineering principals.** **Design process** **Computer Aided Design in Engineering**	During this half term students study a sequence of lessons developing essential knowledge of: **Engineering principals** **Design process** **Computer Aided Design in Engineering**	During this half term students study a sequence of lessons developing essential knowledge of: **Engineering principals** **Design process**	During this half term students study a sequence of lessons developing essential knowledge of: **Delivery of Engineering Processes Safely as a Team** **Design process**

KS5 Year 13	Half term 1 Autumn 1	Half term 2 Autumn 2	Half term 3 Spring 1	Half term 4 Spring 2	Half term 5 Summer 1	Half term 6 Summer 2
	Delivery of Engineering Processes Safely as a Team **Maintenance of Mechanical Systems**	**Maintenance of Mechanical Systems**	**Manufacturing Secondary machining Processes**	**Manufacturing Secondary machining Processes**	**Applied Commercial and Quality Principles in Engineering**	**Applied Commercial and Quality Principles in Engineering**