Ursuline College

DT & Engineering Department

The Team

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The Design Technology and Engineering curriculum aims to ensure that pupils develop creative and practical skills whilst furthering their understanding of the design process and technological development. This will ultimately help them to become designers, engineers and discerning consumers. Through the iterative nature of the design process, that of regular evaluation and refinement of their own work, pupils are encouraged to become resilient and reflective technology students who strive for good quality outcomes.

Key Stage 3

By the end of Key Stage 3, pupils have studied the iterative design process which involves:

- Designing
- Making
- Evaluating
- Technical aspects of Design Technology

They can:

- Write a product specification
- Research products
- Generate designs
- Present designs
- Plan and record their making
- Make a prototype
- Evaluate their work
- Analyse the work of others
- Adhere to health and safety
- Identify materials
- Describe CAD CAM functions
- Analyse new technologies and developments in DT

Each KS3 year group spend half a year in DT and half a year in Food Tech, switching at February half term (middle of cycle 2).

YELLOW: Carousel A
BLUE: Carousel B

	Cycle 1	Cycle 2		Cycle 3
Year 7	Acrylic Key Fob Maze Game	Interlocking Toy	Acrylic Key Fob	Maze Game Interlocking Toy
Year 8	Model Aeroplane Bookends	Interlocking Toy	Model Aeroplane	Bookends Interlocking Toy
Year 9	Passive Amplifier Lightbox	Interlocking Toy	Passive Amplifier	Lightbox Interlocking Toy

Key Stage 4 Y11 2022+

Exam Board + Qualification: OCR - Cambridge National in Engineering Design 2022+

Link to Specification: https://ocr.org.uk/qualifications/cambridge-nationals/engineering-design-level-1-2-j822/

Future Careers: The skills developed in Engineering are applicable to a wide range of engineering careers including mechanical engineer, materials engineer, electrical engineer or electronics engineer. The course also lends itself to progression in careers such as architecture and product design / development. There are a wide range of engineering courses to follow at KS5 and university level, with many firms now offering degree apprenticeships (costs of degree covered by the company).

By the end of Key Stage 4, pupils have studied 4 units:

- **R038 principles of engineering design**- an externally examined unit in which pupils learn about the design process. Topics include designing processes, designing requirements, communicating design outcomes, and evaluating design ideas.
- **R039 Communicating designs**– a coursework unit in which pupils learn to use sketching and engineering drawings to communicate ideas. Topics include manual production of freehand sketches, manual production of engineering drawings, and use of computer aided design (CAD).
- **R040 Design evaluation and modelling**– a coursework unit in which pupils learn how to create and test models of their designs. Topics include product evaluation and modelling design ideas.

They can:
R038

- Explain the stages involved in various design strategies
- Apply the stages of the iterative design process (e.g. research, product analysis, ideas, evaluation)
- Describe the stages of making and evaluating products
- Write a design specification
- Consider how manufacturing affects designs (e.g. scales of production)
- Analyse influences on product designs (legal and cultural)
- Identify engineering drawings (e.g. isometric, exploded, assembly, circuits)
- Identify the standard conventions of a working drawing (e.g. scale, tolerance, measurements)
- Highlight advantages and limitations of CAD software

- Use methods to evaluate design ideas

R039

- Produce sketches for a design idea
- Develop a design idea
- Manually produce engineering drawings
- Use computer aided design to produce models of their design proposals

R040

- Evaluate products
- Carry out a product disassembly
- Create a 3D CAD model for testing
- Physically model a design proposal

	Cycle 1	Cycle 2	Cycle 3
Year 10	R039	R039	R040
Year 11	R040	R038	R038 Revision