



# ENGINEERING - KS5

## Year 12

### Half Term 1

Engineering principles.  
Engineering product design and manufacture.  
Engineering product design and manufacture.  
Computer aided design in engineering.  
Mechanical behaviour of non-metallic materials.  
Fabrication manufacturing processes.

### Half Term 2

Engineering principles.  
Engineering product design and manufacture.  
Engineering product design and manufacture.  
Computer aided design in engineering.  
Mechanical behaviour of non-metallic materials.  
Fabrication manufacturing processes.

### Half Term 3

Engineering principles.  
Engineering product design and manufacture.  
Engineering product design and manufacture.  
Computer aided design in engineering.  
Mechanical behaviour of non-metallic materials.  
Fabrication manufacturing processes.

### Half Term 4

Engineering principles.  
Engineering product design and manufacture.  
Engineering product design and manufacture.  
Computer aided design in engineering.  
Mechanical behaviour of non-metallic materials.  
Fabrication manufacturing processes.

### Half Term 5

Engineering principles.  
Engineering product design and manufacture.  
Engineering product design and manufacture.  
Computer aided design in engineering.  
Mechanical behaviour of non-metallic materials.  
Fabrication manufacturing processes.

### Half Term 6

Engineering principles.  
Engineering product design and manufacture.  
Engineering product design and manufacture.  
Computer aided design in engineering.  
Mechanical behaviour of non-metallic materials.  
Fabrication manufacturing processes.

## Year 13

### Half Term 1

Engineering Principles  
Engineering Product Design and Manufacture.  
Delivery of Engineering Process Safely as a Team  
Applied Commercial and Quality Principles in Engineering  
A Specialist Engineering Project  
Analogue Electronic Circuits

### Half Term 2

Engineering principles.  
Engineering product design and manufacture.  
Delivery of engineering process safely as a team.  
Applied commercial and quality principles in engineering.  
A specialist engineering project.  
Analogue electronic circuits.

### Half Term 3

Engineering principles: exam.  
Engineering product design and manufacture: exam.  
Delivery of engineering process safely as a team.  
Applied commercial and quality principles in engineering.  
A specialist engineering project.  
Analogue electronic circuits.

### Half Term 4

Engineering principles.  
Engineering product design and manufacture.  
Delivery of engineering process safely as a team.  
Applied commercial and quality principles in engineering.  
A specialist engineering project.  
Analogue electronic circuits.

### Half Term 5

Engineering principles: exam.  
Engineering product design and manufacture: exam.  
Delivery of engineering process safely as a team.  
Applied commercial and quality principles in engineering.  
A specialist engineering project.  
Analogue electronic circuits.

### Half Term 6





# PRODUCT DESIGN - KS5

## Year 12

### Half Term 1

Chair design project.

Materials and their applications: classification, investigating and testing materials, selection. Woods: processes, wasting processes, forming processes, adhesives and fixing, finishing. 3D drawing, mixed media and rendering, illustration, modelling, rapid prototyping, aesthetics, ergonomics and anthropometrics.

### Half Term 2

Sheet metal animals project;

Metals: processes, addition/fabrication processes, wasting processes, finishing.  
Desk tidy project.

Polymers: processes, finishing. CAM processes. Eco tent project.  
Paper and boards: forming, finishing, printing processes. The six R's of sustainability. Maintenance and disassembly.

### Half Term 3

Educational toy project.

Packaging design, advertising and promotion, entrepreneurs and collaborative working with designers, safe working practices, risk assessment. The Trade Descriptions Act, the safety of toys. Material selection: composites, smart materials, modern materials. The use of the design process, development of a design specification, evaluation and testing.

### Half Term 4

Retro radio project.

Feasibility modelling in design, graphs, tables and charts, design methods and processes, design theory, investigations and analysis, using inspiration materials, the iterative process in industrial and commercial contexts, responsible design.

### Half Term 5

Retro radio project continued.

Efficient use of materials, the use of computer systems, sub assembly, scales of production, testing prototypes, planning in commercial manufacture, the iterative process in industrial and commercial contexts, responsible design.

### Half Term 6

NEA Section A: identifying and investigating.  
Section B: Design brief and specification.

## Year 13

### Half Term 1

NEA Section C: Development of design proposal.

Material Enhancement: polymers, wood, metal; Production planning and control networking; critical analysis; design considerations for control interfaces; inclusive design.

### Half Term 2

NEA Section C: development of design proposal continued.

Socio-economic influences, major developments in technology, new materials, new methods of manufacture, the internet of things, advancements in CAD/CAM, social moral and ethical issues, poverty, health and wellbeing, migration, product life cycle.

### Half Term 3

NEA Section D: development of design prototype.

Critical analysis and evaluation, selecting appropriate tools and equipment, responsible design, design for manufacture and project management, national and international standards in product design, mathematical skills.

### Half Term 4

NEA Section E: evaluation.

Revision of Year 12 topics.

### Half Term 5

Exam preparation.

### Half Term 6

Exam preparation.

