FARNBOROUGH
SPENCER ACADEMY

Design Technology at Farnborough Spencer Academy

Curriculum Overview

SPENCER
ACADEMIES TRUST

Contents

1. Curriculum Statement

KS3 Design Technology provides students with an opportunity to develop practical skills, increase their knowledge of materials and understand more about how and why products are designed and made. It aims to meet the guidelines set out in the KS3 National Curriculum. There are links to the world of work, particularly the Engineering and Construction sectors.

2. Principles

In DT students learn by:

- Booklet activities, that build their knowledge and understanding of DT in the National Curriculum
- Focussed practical activities that are designed to teach core concepts and skills both in the National Curriculum for DT
- Year 7 develops skills, Year 8 is a development and design year, with Year 9 consolidating the NC

3. Key Stage 3 Content

- Year 7 Rotation: DT - Let's Get Making, Textiles - Monster Cushions
- Year 8 Rotation: DT - Clock Project, 3D - Introduction to 3D Design
- Year 9 Rotations: CADCAM, Mechanisms and Systems

4. Key Stage 4 Content

- OCR Engineering Design:
    - R105 Design briefs, design specifications and user requirements
    - R106 Product analysis and research
    - R107 Developing and presenting engineering designs
    - R108 3D Design Realisation

5. Extra-Curricular

- "Harry Potter Trip" to WB Studios to see technology in action
- Interventions
- STEM visit from RAF, BAE Systems

6. Exam Specifications

- https://www.ocr.org.uk/qualifications/cambridge-nationals/engineering-design-level-1-2-award-certificate-j831-j841/

Year 7 Design Technology Curriculum Map

Module: Overall focus

An introduction to the workshop

- Health & Safety
- Use of small hand tools
- Use of machinery
- Basic materials and their properties
- Quality
- Metal Casting

A series of varied focussed practical tasks using a range of materials, skills and equipment

Intent behind the module: Pupils have an introduction to the knowledge and understanding of RM including; timber, manufactured boards, plastics and metals. Also introduces basic marking out and measuring skills and use of small hand tools.

Assessment Focus

Initial assessment to establish baseline information.

Formative assessment point of pupil work against level descriptors

Summative assessment point of pupil's independent practical skill development (Photographic evidence) and written response.

Year 7 Textiles Curriculum Map

Monster Cushion by Jon Burgerman

Module: Overall focus

- Health & Safety in the workshop.
- Development of fine motor skills.
- Use of small hand tools.
- Use of machinery
- Natural and manufactured fibres and their sources
- Fabric construction – fibre, yarn, woven, knitted and non woven
- Fabrics in the real world
- Quality assurance
- Fabric enhancement and decoration
- Printing and the use of pattern

Intent behind the module

Pupils have an introduction to the knowledge and understanding of Textiles
looking at natural and man made fibres, fabrics and their sources. Pupils will learn about knitted, woven and non woven fabrics. Pupils will also handle fabrics from the world around them. They will develop experience of dyeing fabrics, fabric embellishments and the use of different tools and machinery. Pupils will also develop drawing skills, cutting skills and printing skills.

Assessment Focus

- Initial assessment to establish baseline information.
- Formative assessment point of pupil work against level descriptors
- Summative assessment point of pupil's independent practical skill development (Photographic evidence) and written response.

Year 8 Design Technology Curriculum Map

Module: Overall focus

Developing designing skills

Research 20th century design movements

- Analyse existing products
- Develop design ideas
- Model and evaluate ideas
- Use basic materials and tools to create a design "in the style of"

8 lessons using research and practical work to develop a high quality product.

Intent behind the module

Pupils are developing their knowledge of other designers and their work as well as starting to understand the process involved in designing products. They also have an opportunity to develop their creativity and problem solving skills as well as consolidating their practical skills further.

Assessment Focus

- Formative assessment point of pupil work against level descriptors
- Summative assessment point of pupil's independent practical skill development (Photographic evidence) and quality of practical outcome.

Year 8 3D Curriculum Map

Module: Overall focus

- Developing 3D modelling and prototyping skills
- Learn about renewable energy sources
- Research and explore alternatives to using fossil fuels
- Develop modelling and prototyping skills with an iterative approach.
- Introduce structures and classification

8 lessons using research and experimentation to produce high quality outcomes.

Intent behind the module

Pupils develop their awareness and knowledge of renewable energy. Expand and develop practical modelling skills. Learn about the classification of structures.

Pupils will trail and test their prototypes, recording their findings so improvements can be made and further testing take place.

Assessment Focus

- Formative assessment point of pupil work against level descriptors
- Summative assessment point of pupil's independent practical skill development (Photographic evidence) and quality of practical outcome.

Year 9 Engineering Curriculum Map

Module: Overall focus

Mechanisms & Systems

- Gears
- Cams
- Automatas
- Systems

A series of 8 lessons focussing on mechanisms and systems.

Intent behind the module

Pupils are developing their knowledge of how products can move and interact through mechanical and electronic systems

Assessment Focus

Formative assessment point of pupil work against level descriptors

Summative assessment-by quality of outcome and through end of module test.or 2019/2020 Module 2 will be the same as Y8 since this year's cohort will not have done it in Y8. This will be replaced with a new module in 2020/21

Year 10 Engineering Curriculum Map

Pupils will study:

R105 - This unit provides the opportunity for learners to develop their understanding of the requirements of design briefs and design specifications for the development of new products. Through research and practical activities, learners will understand how consumer requirements and market opportunities inform design briefs. Learners will understand the overall design process through study of the design cycle, existing product and life cycle analysis, study of new and improved materials and manufacturing processes, and how these and other factors influence a design solution. This unit is assessed through examination.

R106—This unit will enable learners to perform effective product analysis. They will research existing solutions and assess the development of engineered products. Learners will develop dextrous skills and gain practical experience of product assembly and disassembly to appreciate manufacturing processes, design features and materials used. This unit develops learner's creativity and critical analysis through an understanding of the principles behind good design. They will consider what makes a good product sell by analysing existing solutions. This unit is assessed through coursework.

Year 11 Engineering Curriculum Map

Pupils will study:

R107 —This unit develops techniques in generation, concept development and the communication of design ideas using hand rendering and computer-based presentation techniques including computer aided design software. This unit is assessed through coursework.

R108— This unit requires learners to apply practical skills to produce a prototype product or model using craft-based modelling materials alongside computer-controlled or rapid-prototyping processes. Learners will produce a prototype product in the form of a model and test design ideas in a practical context, to inform further development utilising more complex production processes. This unit is assessed through coursework.