

Year 10/11 Big Picture – GCSE D&T 2023-54

Year 10 Overview

Over the course of this year the students will have the opportunity to learn the core theory and specialist technical theory that will prepare them for being able to start the NEA in July and help get them ready for the external exam next year. This year will be a combination of theory lessons and focussed practical activities.

Core Technical Principles

The core knowledge will form the foundation of this subject and the students will need to demonstrate their understanding of the following areas in the external examination and the NEA. The core will cover the following areas;

new and emerging technologies - energy generation and storage - developments in new materials - systems approach to designing - mechanical devices - materials and their working properties.

Specialist Technical Principles

Alongside the core the students should also develop an in-depth understanding of the following Technical principles that relate to Design and Technology

selection of materials or components - forces and stresses - ecological and social footprint - sources and origins - using and working with materials stock forms, types and sizes - scales of production - specialist techniques and processes - surface treatments and finishes.

These principles will be taught within the context of Timber based materials.

| <p><i>Autumn 01</i> <i>2023</i> <i>Weeks 1 – 7 (7 weeks)</i> <i>OCTOBER HALF TERM</i></p> | <p><i>Autumn 02</i> <i>2023</i> <i>Weeks 8 – 15 (7 weeks)</i> <i>CHRISTMAS</i></p> | <p><i>Spring 01</i> <i>2024</i> <i>Week 16- 22 (7 weeks)</i> <i>FEBRUARY HALF TERM</i></p> |
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| <p>Content The theory the students will be to cover this term will be;</p> <p>Unit 5 B Timber based Materials</p> | <p>Content The students will continue to study theory based around how materials are manufactured on an industrial scale.</p> <p>Unit 3 Materials and their working properties</p> | <p>Content Technology is a fast moving and ever changing subject and students need to appreciate how these technologies are continuing to influence and</p> |

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| <ol style="list-style-type: none"> 1. Sources and origins 2. Working with Timbers 3. Commercial manufacturing <p>Skills:</p> <ul style="list-style-type: none"> • Recall the main processes involved in producing workable forms of timber • Recognise common faults in natural timber • Explain sustainability and ethical factors in timber production and in use • Identify FSC and PEFC timber • Name the common commercial stock forms, types and sizes of timber based materials • Identify different types of knock-down fittings • Describe school based cutting, forming and processing techniques, tools and equipment • Explain how timbers and boards are selected and processed for commercial products • Know how materials are cut, shaped and formed to a tolerance • Identify techniques for preparation and application of treatments and finishes to enhance functional and aesthetic properties • Explain why manufactured board is suitable for flat pack furniture | <ol style="list-style-type: none"> 1. Timbers 2. Papers and Boards 3. Textiles 4. Polymers 5. Metal and Alloys <p>Skills:</p> <ul style="list-style-type: none"> • Know the primary sources of materials for producing a variety of materials in each of five key material areas • Be able to recognise and characterise different types of materials in each key area | <p>change the way in which we manufacture and interact with products</p> <p>Unit 1 New and emerging Technologies</p> <ol style="list-style-type: none"> 1. Industry and enterprise 2. Sustainability and the Environment <p>Skills:</p> <ul style="list-style-type: none"> • Explain the impact of new and emerging technologies on tools and equipment • Explain how robotics have affected the workplace • Understand that new technologies need to be developed and produced in a sustainable way • Be aware of the impact that excessive use of certain resources has on the environment |
| <p>Assessment Objectives</p> | <p>Assessment Objectives Attitude to Learning (ATL) - Data capture</p> | <p>Assessment Objectives</p> |

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| <p>This is the knowledge, application and skills assessed by the Progress check Unit 1 Mini test 1 Class feedback sheets to be completed based on the skills covered during the unit of work. This is to raise and rectify all the misconceptions, so students perform better</p> <p>Attitude to Learning (ATL) - Data capture</p> | | <p>Attitude to Learning (ATL) & Big test % - Data capture</p> |
| <p><i>Spring 02</i> <i>Weeks 23 – 27 (5 weeks)</i> <i>EASTER</i></p> | <p><i>Summer 01</i> <i>Weeks 28 – 33 (6 weeks)</i> <i>WHIT</i></p> | <p><i>Summer 02</i> <i>Weeks 34 – 40 (7 weeks)</i></p> |
| <p>Content The student will continue to investigate new and emerging Technologies covering the following areas</p> <p>Unit 1 New and emerging Technologies – cont.</p> <ol style="list-style-type: none"> 3. People, culture and society 4. Production techniques and systems 5. Informing design decisions <p>Skills:</p> <ul style="list-style-type: none"> • Describe co-operative and fair trade organisations • Understand how technology push and market pull affect consumer choice and employment • Describe how changes in fashion and trends affect designers and manufacturers • Understand contemporary and potential future use of automation, Computer Aided Design | <p>Content The students will undertake a short practical investigation investigating the work other designers and manufacturers. This will lead into their NEA and the external exam</p> <p>Unit 6 Designing Principles 2. The work of Others.</p> <p>The main theory that will be looked at this term will be</p> <p>Unit 4 Common Specialist Technical Principles</p> <ol style="list-style-type: none"> 1. Forces and Stresses 2. Improving functionality <p>Skills:</p> <ul style="list-style-type: none"> • Name and describe each of the different forces and stresses | <p>Content Skills: The students will have the opportunity towards the end of spring 2 to start the NEA. The theme will be set by the exam board and will not be released until around June. Once released the students will be able to start establishing how they will interpret that theme and turn that into a brief they can work from.</p> <p>The theory will look at the remaining part of Unit 4</p> <p>Unit 4 Common Specialist Technical Principles - Cont</p> <ol style="list-style-type: none"> 3. Ecological and social footprint 4. The six r's 5. Scales of production <p>Skills:</p> <ul style="list-style-type: none"> • Define an ecological and social footprint |

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| <p>(CAD) and Computer Aided Manufacturing (CAM)</p> <ul style="list-style-type: none"> Understand how products can be designed to be repaired and recycled | <ul style="list-style-type: none"> Recognise how materials have been stiffened or reinforced Give examples of the use of bending, lamination, folding, webbing and interfacing | <ul style="list-style-type: none"> Understand how deforestation, mining, drilling and farming affect our ecology Understand that carbon dioxide is produced during the manufacture of products and its influence on global warming Explain each of the six Rs Explain how safe working conditions and pollution impact on others Explain how products are produced in each of the four main scales of production |
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Year 11

Year 1 Overview

Over the course of this year the students will be mainly completing their NEA for this subject. This will represent 50% of their assessed work for the course. There will be some theory content taught which will be some new content but will also focus reflective work on theory taught last year

Core Technical Principles

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new and emerging technologies - energy generation and storage - developments in new materials - systems approach to designing - mechanical devices - materials and their working properties.

Specialist Technical Principles

Alongside the core the students should also develop an in-depth understanding of the following Technical principles that relate to Design and Technology

selection of materials or components - forces and stresses - ecological and social footprint - sources and origins - using and working with materials stock forms, types and sizes - scales of production - specialist techniques and processes - surface treatments and finishes.

These principles will be taught within the context of Timber based materials.

| <p><i>Autumn 01 2023 Weeks 1 – 7 (7 weeks) OCTOBER HALF TERM</i></p> | <p><i>Autumn 02 2023 Weeks 8 – 15 (7 weeks) CHRISTMAS</i></p> | <p><i>Spring 01 2024 Week 16- 22 (7 weeks) FEBRUARY HALF TERM</i></p> |
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| <p>Content The theory the students will be to cover this term will be;</p> <p>Unit 5 B Timber based Materials</p> <ol style="list-style-type: none"> 4. Sources and origins 5. Working with Timbers 6. Commercial manufacturing <p>Skills:</p> <ul style="list-style-type: none"> • Recall the main processes involved in producing workable forms of timber • Recognise common faults in natural timber | <p>Content The students will continue to study theory based around how materials are manufactured on an industrial scale.</p> <p>Unit 3 Materials and their working properties</p> <ol style="list-style-type: none"> 6. Timbers 7. Papers and Boards 8. Textiles 9. Polymers 10. Metal and Alloys <p>Skills:</p> <ul style="list-style-type: none"> • Know the primary sources of materials for producing a variety of materials in each of five key material areas | <p>Content Technology is a fast moving and ever changing subject and students need to appreciate how these technologies are continuing to influence and change the way in which we manufacture and interact with products</p> <p>Unit 1 New and emerging Technologies</p> <ol style="list-style-type: none"> 6. Industry and enterprise 7. Sustainability and the Environment <p>Skills:</p> <ul style="list-style-type: none"> • Explain the impact of new and emerging technologies on tools and equipment |

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