

HIGHFIELDS SCHOOL

CURRICULUM OVERVIEW 2023-2024



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SUBJECT: GCSE DESIGN AND TECHNOLOGY

EXAMINATION BOARD: OCR

AUTUMN TERM - YEAR 10	SPRING TERM - YEAR 10	SUMMER TERM - YEAR 10
<p>DSLR Camera In this project, students have a deeper focus on 3 key elements of design and technology. These are:</p> <ul style="list-style-type: none">• Highly accurate card modelling to replicate an existing product• 3D CAD modelling to enable students to accurately replicate a product digitally• Technical drawing of the product in isometric to showcase students hand drawing skills <p>Additionally, students further develop how to accurately measure an existing product when replicating in a high-quality card model that is highly accurate in scale and proportion.</p> <p>Finally, during this term, students will go through a rigorous scheme of technical knowledge looking at:</p> <ul style="list-style-type: none">• Material classifications, material properties,• Origin sources and stock forms, papers and boards, technical drawing• Subject specific mathematics such as area and shape <p>Scandinavian Coat Hook In this project, students focus on 4 key elements of design and technology. These are:</p> <ul style="list-style-type: none">• Card modelling to aid prototyping and testing• 3D CAD modelling to enable students to communicate their designs digitally• Technical drawing of the product in isometric and exploded view to showcase students hand drawing skills• Manufacturing a working product to practice and showcase manufacturing skills	<p>Ergonomic Chair In this project, students continue to focus on 3 key elements of design and technology. These are:</p> <ul style="list-style-type: none">• Accurate card modelling to appropriate scale and size• 3D CAD modelling to further enable students to realise their designs digitally• Technical drawing of the chair in a variety of different views to further develop their hand drawing skills <p>Additionally, students will be introduced to the importance of anthropometrics (measurements of the human body) to help form their designs. They shall learn about ergonomics (the way humans interact safely and efficiently with products within their environments)</p> <p>Finally, during this term, students will go through a rigorous scheme of technical knowledge looking at:</p> <ul style="list-style-type: none">• Polymers, metals, fibres• Scales of manufacture• Subject specific mathematics such as volumes and triangles <p>Drawer Organiser In this project, students are introduced to a mini-NEA (Non-exam assessment) style project which develops skills that will be used within Y11. These are:</p> <ul style="list-style-type: none">• Creating a design brief and specification• Identifying a primary user• Analysing existing products• Design idea creation, and the iterative design process	<p>CAD & CAM Skills In this series of mini projects, students have an in-depth focus on developing their CAD and CAM skills. This will increase their understanding and use of:</p> <ul style="list-style-type: none">• 2D CAD drawing (2D Design),• 3D CAD modelling (OnShape)• the use of CAM using the laser cutter and 3D printers <p>These are invaluable skills that will be required within Year 11.</p> <p>Additionally, students shall be challenged further in terms of ensuring accuracy and quality in the products that they make. This enables them to produce higher quality products.</p> <p>Finally, during this term, students will go through a rigorous scheme of technical knowledge looking at:</p> <ul style="list-style-type: none">• Polymer manufacturing processes• Accuracy in manufacturing, finishes, structures, mechanisms, electronics• Controlled movements• Sources of energy• Subject specific mathematics such as tessellation, tolerance, scaling, converting units, and percentages <p>Non-Exam Assessment (NEA) After half term, the exam board OCR releases the contexts for the student's NEAs. Students will begin to work on their Iterative Design Challenges. This accounts for 50% of their final GCSE grade. In preparation for this, students will have completed a NEA style assessment page per project, ensuring a</p>

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Additionally, students learn how to develop a product through disassembly and prototype testing when manufacturing a product, while ensuring accuracy and quality can be assured during manufacture of a high quality, functioning product.

Finally, during this term, students will go through a rigorous scheme of technical knowledge looking at:

- Timbers
- User and stakeholder needs
- Technical drawing
- Subject specific mathematics such as costs and quantities

Additionally, students learn how the importance of continuous development of their drawer organiser helps to meet their design brief, specification, and primary user needs and requirements. While using all previous skills such as technical drawings and 3D CAD modelling to showcase their work.

Finally, during this term, students will go through a rigorous scheme of technical knowledge looking at polymer manufacturing processes, standard components, wastage/addition/redistribution processes and subject specific mathematics such as bar charts, pie charts, and histograms.

clear understanding is gained of the expectations of an NEA project.

Additionally, once the NEA is released students will be expected to complete parts 1-5 before the end of the academic year, these parts are:

1. Investigations of the context
2. Design Brief and Stakeholder Identification
3. User and Stakeholder Research
4. Existing Products Research
5. Design Specification

Finally, students will gain an insight into the systems used internally to submit, monitor, and track progress with their projects.

ASSESSMENT

Students are assessed throughout the term more formally with a 50/50 split to reflect the nature of GCSE grading (50% NEA style assessments and 50% written assessment paper).

Formal grading of their NEA style assessments that assess:

- Students manufacturing skills
- 3D CAD modelling skills, technical drawing skills
- Evaluative writing

Formative assessments such as peer, and self-assessments are used that enable students to identify what they have done well (medal) and what could be developed/improved (mission).

Summative assessments such as mock exams are used to monitor and track the progress of students in relation to the technical knowledge requirements of the subject throughout their GCSE.

ASSESSMENT

Students are assessed throughout the term more formally with a 50/50 split to reflect the nature of GCSE grading (50% NEA style assessments and 50% written assessment paper).

Formal grading of their NEA style assessments that assess students manufacturing skills, 3D CAD modelling skills, technical drawing skills, and evaluative writing.

Formative assessments such as peer, and self-assessments are used that enable students to identify what they have done well (medal) and what could be developed/improved (mission).

Summative assessments such as mock exams are used to monitor and track the progress of students in relation to the technical knowledge requirements of the subject throughout their GCSE.

ASSESSMENT

Students are assessed throughout the term more formally with a 50/50 split to reflect the nature of GCSE grading (50% NEA style assessments and 50% written assessment paper).

Formal grading of the progress of their NEA is in line with GCSE grading mark bands provided within the OCR Assessment Objectives.

Summative assessments such as mock exams are used to monitor and track the progress of students in relation to the technical knowledge requirements of the subject throughout their GCSE.

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AUTUMN TERM - YEAR 11	SPRING TERM - YEAR 11	SUMMER TERM - YEAR 11
<p>NEA & Exam Preparation: The exam board releases the contexts at the end of June and therefore students have already started their NEA. Prior to summer, students should have completed parts 1-5 of their NEA project.</p> <ol style="list-style-type: none">1. Investigations of the context2. Design Brief and Stakeholder Identification3. User and Stakeholder Research4. Existing Products Research5. Design Specification <p>Additionally, students shall focus on the completion of section 1, up to part 6, and the design section of the NEA, up to part 10. These parts are:</p> <ol style="list-style-type: none">6. Initial Design Ideas7. Evaluation of Design Ideas8. Iterative Design Developments9. Presentation of Final Design10. Technical Specification <p>Finally, during this term, students will go through a rigorous scheme of technical knowledge looking at:</p> <ul style="list-style-type: none">• technical textiles• composite/smart/modern materials• subject specific mathematics such as mechanical devices and mechanical advantage <p>Iterative Design Challenge – Non exam assessment (NEA) - 100 marks (50% of GCSE)</p>	<p>NEA & Exam Preparation: Spring introduces the manufacturing elements of the NEA parts 11-12. Where a large part of this term is used to manufacture their products. These parts are:</p> <ol style="list-style-type: none">11. Manufacturing Plan12. Diary of Manufacturing <p>Additionally, students shall finish their NEA right up to completion, parts 13-14 with a comprehensive evaluation too, part 15. These parts are:</p> <ol style="list-style-type: none">13. Final Product Photos14. Product Viability and Feasibility15. Product Evaluation <p>Finally, during this term, students will go through a rigorous scheme of technical knowledge looking at:</p> <ul style="list-style-type: none">• Sustainability• Social/moral/cultural influences• Subject specific mathematics used in technical drawing <p>Theory: Principles of Design and Technology 100 marks (50% of GCSE)</p>	

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ASSESSMENT

Students are assessed throughout the term more formally with a 50/50 split to reflect the nature of GCSE grading (50% NEA style assessments and 50% written assessment paper).

Formal grading of the progress of their NEA is in line with GCSE grading mark bands provided within the OCR Assessment Objectives.

Summative assessments such as Mock Exams are used to monitor and track the progress of students in relation to the technical knowledge requirements of the subject throughout their GCSE.

ASSESSMENT

Students are assessed throughout the term more formally with a 50/50 split to reflect the nature of GCSE grading (50% NEA style assessments and 50% written assessment paper).

Formal grading of the progress of their NEA is in line with GCSE grading mark bands provided within the OCR Assessment Objectives.

Summative assessments such as Mock Exams are used to monitor and track the progress of students in relation to the technical knowledge requirements of the subject throughout their GCSE.

ASSESSMENT

Formal grading and moderation of their NEA is in line with GCSE grading mark bands provided within the OCR Assessment Objectives. These marks are then submitted to OCR for moderation and confirmation (this accounts for 50% of their overall GCSE grade).

Summative assessment shall be in the form of their formal GCSE examination (this accounts for 50% of their overall GCSE grade).