Subject:	Product Design	Teachers:	Mr Williams/ Miss Wells	Exam Board:	AQA

NEWPORT GIRLS' HIGH SCHOOL KS5CURRICULUM OVERVIEW

Curriculum Intent & Organisation
This creative and thought-provoking qualification gives students the practical skills, theoretical knowledge and confidence to succeed in a number of careers, especially those in the creative, problem solving industries. Student's have the opportunity to experiment with innovative design, materials and manufacturing process whilst producing a portfolio of evidence to support UCAS application. Course theory is timely delivered considering the practical outcomes and the expectations of the course.

Examination Information	Facilitating Subject?
Option subject examined end of Year 13 by two examination papers (50%) and with A3 coursework folder (50%).	Yes

Impact of Prior Learning from KS4
GCSE prepares students for this course by delivering introductions to new and emerging technologies, materials and their working properties, manufacturing processes, designing and making principles. Students are also equipped with the knowledge of the design process and making links with clients and end users. It is important to note that some students enter course from other schools with different learning experiences. Students may or may not have experience of GCSE Design and Technology. The Summer project focuses on preparing students for KS5 studies by recognising historical design movements and the work of past and present designers. Students obtain this directly from the school website.

Equipment Required for this course
• Standard classroom stationery • Mathematical calculator • A3 folder

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Curriculum Implementation – Areas of Focus Year 12		
Autumn Term	**Spring Term**	**Summer Term**
• Review of Summer Project – Design Movements • Graphic Communication Portfolio. Increasing skills in Isometric, 2 point perspective, Orthographic Projection, Cross-sectional Views, Rendering, enhancement. • Seasoning of woods and conversion of timber. • Performance characteristics of woods. • Timber categories: softwoods, hardwoods and Manufactured boards • Performance characteristics of woods • Wood processes • Health and Safety • Wasting processes – Woods • Modelling • Project • Formed 3D products (timber) • Knock Down Fittings • Adhesives and fixings • Wood finishing • Redistribution - Polymers • Classification of materials – polymers • Thermoplastic polymers • Thermosetting polymers • Performance characteristics of polymers • Polymer processes • Polymer enhancement • Polymer finishing	• Polymer Elastomers • Anthropometrics and Ergonomics • Responsible design • Mini Project and focus task – Polymers and forming • Conservation of energy and resources • Product development and improvement • Design process • Development of a prototype from design proposals • Third party feedback	• Project • Papers and boards • Efficient use of materials in the construction of containers through 2D net design. • Safe working Practices - Industry • Effective selection of materials to allow for recyclability, biodegradability and stability. • Biodegradable Polymers • Digital design and manufacture • Computer aided manufacture (CAM) • Critical analysis, testing and evaluation • Modern Materials • Smart material applications • Mathematical Skills – Section 1 (percentages, decimals, average and ratio) • Mathematical Skills – Section 2 (perimeter, area, volume and sections) • Mathematical Skills – Section 3 (Trigonometry, graphs and vectors)

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Curriculum Implementation – Areas of Focus Year 13		
Autumn Term	**Spring Term**	**Summer Term**
• Coursework Section 'A' – 'C' • Mining and extraction • Metals (ferrous, non-ferrous, alloys) • Metals based on their physical and working characteristics • Different stock forms of metals • Calculation of quantities of materials sizes and costs • Heat treatment methods of enhancing metals • Metal Manufacturing Processes • Metal Addition/ Fabrication Processes • Temporary Fasteners and Joining Methods • Wasting Processes • Enhancing Metals and Finishing Processes • Methods for investigating and Industrial testing of metal materials • Composites	• Coursework Section 'D' – 'E' • Health and Safety in working practices and in manufacture of products • Protecting designs • Product Life cycle • Quality Assurance • National and international standards • Scales of production • Use of computer systems in industry • Virtual modelling page • Modern and new materials	• Examination preparation

Impact / Outcomes

Learning will be assessed throughout the course by:

- Homework, classwork, quizzes and end-of unit tests for practical and theory
- Examination weeks 2 for year 12
- Mock exam in spring term prior to A-level exams.
- Tutorials with individual students with focus on coursework

Homework / Self Study

Independent study time gives the opportunity to consolidate theory. Case studies allows the student to investigate historical, social, cultural, environmental and economic influences along side with researching industrial practices widely used by industry today.

Ways to support learning

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- Design and Technology Product Design, AQA approved text book provided. The textbook is an excellent resource and must be used as often as possible. Useful websites are communicated to students during the course. How's it made videos support understanding the manufacturing processes.
- Students should have a quiet area to work both at home and in school. Visual displays can support the creative mind. The DT room will be made available with supervision during practical coursework stages.
- A-level requires good time management skills as a good deal of independent learning takes place. Pupils should make use of their time wisely.

Field Work / Extension / Enrichment Opportunities

- Arkwright scholarships and STEM opportunities offered to students in year 11.
- Support with lower school clubs (example Eco fashion club)

Next Steps

This course gives the practical and theoretical skills and understanding for various careers. These careers may be a result of gaining a degree or a high level apprenticeship. Construction, as well as engineering, product design, industrial design, architecture are popular career progressions. Problem solving skills and the ability to visualise new ideas can be useful in many careers such as advertising, marketing, arts crafts and design, broadcast media and performing arts, journalism and publishing.

For more information, contact Miss Wells