

SUMMER WORK PRODUCT DESIGN

Head of Department
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Exam Board
AQA

Specification
7552

COURSE DETAILS

Examination

The course is examined as a whole at the end of Year 13 over 2 exam papers (combined worth 50%) and the NEA (50%)

NEA – The NEA will begin in year 1 and will be completed in year 2. Practical activities will be carried out by students including some autonomous tasks and some focused practical tasks to prepare students for the self-directed NEA. The NEA is an iterative project where students are expected to explore the needs of intended users, generate solutions and continuously evaluate using third party feedback.

Theory

Paper 1 ‘Technical Principles’ – 30% of the overall A level. Examines the following units:

- Unit 1 – Performance characteristics of papers and boards**
- Unit 2 – Performance characteristics of polymers**
- Unit 3 – Performance characteristics of woods**
- Unit 4 – Performance characteristics of metals**
- Unit 5 – Composite, smart and modern materials**
- Unit 6 – Processing and working with papers and boards**
- Unit 7 – Processing and working with polymers**
- Unit 8 – Processing and working with woods**
- Unit 9 – Processing and working with metals**

Paper 2 ‘Designing & Making Principles’ - 20% of the overall A level. Examines the following units

- Unit 10 – Modern industrial and commercial practice**
- Unit 11 – Product design considerations**
- Unit 12 – Product design & development**
- Unit 13 – Design methods**
- Unit 14 – Design processes**
- Unit 15 – Responsible Design**

SUMMER WORK FOR INTRODUCTION TO YEAR 12

TASK	TOPIC	ALL WORK TO BE COMPLETED IN BOOKLET PROVIDED
1	Introduction to new spec materials	<ul style="list-style-type: none">• Research different materials presented from different categories, their properties and appropriate applications.
2	Practice ‘compare and contrast’ style questions.	<ul style="list-style-type: none">• Complete the compare and contrast activities in bullet point form to directly compare material properties and suitability for the products provided.
3	Introduction to new commercial processes	<ul style="list-style-type: none">• Research the 6 new commercial processes using some of the below websites and videos to use sketches and notes to explain the processes in detail.
4	Isometric drawing and rendering practice	<ul style="list-style-type: none">• Use the booklet to practice isometric drawing and rendering to a high standard as per the booklet instructions.

ESSENTIAL VIEWING

- AQA A Level Specification (linked in summer work booklet)
- Iterative Design in Action <https://www.youtube.com/watch?v=Rnsk5IA52ps>
- The Inclusive Design Toolkit <https://www-edc.eng.cam.ac.uk/downloads/idtoolkit.pdf>
- Re-thinking Process: The Circular Economy <https://www.youtube.com/watch?v=zCRKvDyyHml>
- Innovation Students of Product Design (Ep 1-4) <https://www.youtube.com/watch?v=CnKeVs-9zs>
- Isometric Drawing and Marker Rendering <https://www.youtube.com/watch?v=0zDGilTfLIE>
- Rendering Textures with markers <https://www.youtube.com/watch?v=9of1DAJWgWw>

WIDER READING TO PREPARE FOR COURSE

- Making It: Manufacturing Techniques for Product Design - Chris Lefteri
- Design: The Definitive Visual History – DorlingKindersley
- Inclusive Design Toolkit Issue 1-4 http://www.inclusivedesigntoolkit.com/VBA_bulletin_issue_1/
- Inclusive Design Calculator http://www.inclusivedesigntoolkit.com/VBA_bulletin_issue_3/#nogo
- Exploded Drawing Technique <https://www.youtube.com/watch?v=qr4V8Nr9FaI>

HELPFUL WEBSITES

- www.technologystudent.com

HELPFUL COMMERCIAL PROCESSES CLIPS:

Timbers

- <https://www.youtube.com/watch?v=vVswXx2m3el&t=166s> - Laminating plywood with a vacuum bag
- <https://www.youtube.com/watch?v=YHP0STc3Ghg> – routing
- <https://www.youtube.com/watch?v=S8cQz4rSit8> – laminating veneers
- <https://www.youtube.com/watch?v=ZD5JWP3qDdg> – steam bending
- <https://www.youtube.com/watch?v=TeOInBNEdiw> - turning

Polymers

- <https://www.youtube.com/watch?v=AZyq3TqskAY> – plastic bad production (includes calendaring)
- <https://www.youtube.com/watch?v=SqyrJUNhXwg> – extrusion
- <https://www.youtube.com/watch?v=xim1m2Bhvzc&feature=youtu.be> – injection moulding
- <https://www.youtube.com/watch?v=8W6P5KU5ONQ> – blow moulding
- <https://www.youtube.com/watch?v=xc9pKiV5wag> – rotational moulding
- https://www.youtube.com/watch?v=wYb_UjgJ5E0 – laying up (GRP)
- <https://www.youtube.com/watch?v=p5M0YI2BUjE> - thermoforming
- https://www.youtube.com/watch?v=ik39_sv-wgQ – FDM Rapid Prototyping (3D printing)

Metals

- <https://www.youtube.com/watch?v=r6U6P0Y0bRw> – deep drawing
- <https://www.youtube.com/watch?v=LIRof0K0OQ> – die casting
- <https://www.youtube.com/watch?v=iZvP6J3HvY> – gravity die casting
- <https://www.youtube.com/watch?v=iSyBsdJkQu8> – high pressure die casting
- <https://www.youtube.com/watch?v=npHQPXGGkgI> – investment casting
- <https://www.youtube.com/watch?v=npHQPXGGkgI> – press forming type 1
- https://www.youtube.com/watch?time_continue=1&v=5CuJsk4U38 – press forming type 2
- <https://www.youtube.com/watch?v=43N441CyUEU> – metal spinning
- https://www.youtube.com/watch?v=szOwGvYO_Tc – sand casting
- https://www.youtube.com/watch?v=6xnKmt_gsLs – rolling
- <https://www.youtube.com/watch?v=Sbs5BjM4wgk> – milling

Papers & Boards

- <https://www.youtube.com/watch?v=kaokWmrXslc> - Die Cutting
- https://www.youtube.com/watch?v=SljUVCho_xU – laser cutting

TV DOCUMENTARIES:

- Rams: Principles of good design