Boston High School
Leading Learning Together

Edexcel
A level Design and Technology
– Product Design (2017)

TRANSITION 2020

To help you along your way and ensure you are ready for the next two years ahead below are Compulsory tasks to be completed before your September start and some additional reading and tasks you can engage with to prepare yourself.

Compulsory Task 1 – Problem, Design & Draw

Decide on a problem using the below for inspiration. Once you have decided on your problem and who experiences it:

a) Create one 'Research' page which includes a mind-map, online research on the problem & possibly an interview with the person you are designing for.

b) Create another page or two 'Initial Ideas' showing ten possible design solutions. Have fun with this, your ideas can be quirky and unusual as well as sensible and functional.

You must include:

- An introduction explaining your problem and the person you are designing for
- x10 neat 3D ideas (you might choose to use Fusion 360 to draw these or hand draw in pencil). Do not use pen.
- Full sentence annotations explaining parts of each idea (how it works, why you have chosen certain materials, how the user uses it, possible ways you might improve it and why, why you have chosen certain colours)
- Some rendering to show materials, colours and textures.

You could include:

- Detail drawings of parts of the products
- Diagrams showing how the user uses the product
- Feedback from the person in your home hold who you are designing for on what they would like changed or improved.

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Compulsory Task 2 – Sustainability

The lifecycle of a product is a key responsibility for designers to consider to ensure the meet their duty to create sustainable products. This means researching the raw material used, energy used and waste created at each stage of a products lifecycle: collecting raw materials, manufacturing the product, distributing it, how it is used/maintained/can it be reused?, recycling and waste management.

a) Use the link below & click on the 'products' tab at the top of the screen. Research and choose a product from the list that catches your eye. Write an A4 report or create a poster of your own (digital or by hand) to explain the lifecycle of your chosen product and the impact it has on the environment - mentioning raw materials, energy used and waste at each stage of the lifecycle.

http://www.designlife-cycle.com/

b) Opinion – Write about whether you expected this environmental impact from the product you have chosen. Is there anything that could be done to reduce the impact on the environment?

Additional Task 3 – Fusion 360

Complete the Tutorial Videos and if you find these straight forward challenge yourself and try Extensions 1 & 2. The aim of this task is to get you comfortable drawing using a CAD programme so that you can draw up your ideas in Y12. If you have had experience Fusion 360 before you may want to skip down to the more advanced tutorials and start there. Bring in a printed copy for your first class in September.

HOW DO I GET THE SOFTWARE? On the Autodesk Fusion 360 website you can create a 1-month free trial – this means that the Fusion tasks must be completed in one month, if not you will need to set up another free trial with a different email address.

https://www.autodesk.co.uk/products/fusion-360/overview

Once you begin in September we will join you on our schools educational subscription so you can continue to utilise the software during your studies.

Tutorials Videos– From beginner onwards work through **one tutorial a day for a Month**
https://www.youtube.com/playlist?list=PLrZ2zKOtC_-DR2ZkMaK3YthYLErPxCnT

Extension 1 - Once finished complete the NASA Rocket project (see pdf instructions) If you are more comfortable with Fusion 360 show your skills by adding your own features to the rocket.

Extension 2. - After you have tried the previous tutorials choose two more from YouTube (which include curved surfaces & rendering) and draw up objects of your choice.

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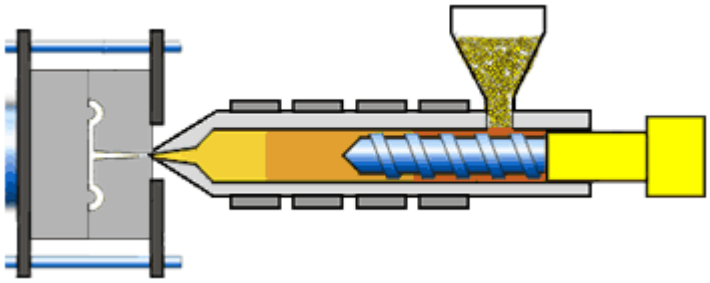
Additional Task 4 – Researching Manufacturing Techniques Understanding how products are manufactured is a key part of your product design A Level.



Processes to research: injection moulding, vacuum forming, blow moulding, compression moulding, die casting, sand casting, metal lathe turning, press forming, extrusion, CNC router machine, wood lathe

Research and sketch a step by step guide for any of the processes given.

To research you can use Google, Google images, YouTube videos (videos are useful for understanding the stages).

You should:

1) Explain what happens at each stage of the manufacturing process – there will usually be at least five stages.
2) Sketch each stage in pencil either in 2D or 3D
3) Label all parts of the machines
4) Explain what specific materials are used e.g. 'polypropylene' not 'plastic', 'stainless steel' not 'metal'
5) Give advantages and disadvantages for each process
6) Check if material needs heated to a certain temperature or if there is a die what it is made from
7) Research once the product come out of the machine how it is 'finished' – prepared before it is either used or sold.

Finally!!!

Keeping a sketch book and practicing your sketching during the summer would be good practice, preferred methods are oblique or isometric projection. Plenty of you tube videos are available for you to pick up the basics – become familiar with 'crating' and become familiar with 'not rubbing out!' Nothing is a mistake, just a development.

Link to the course specification, a little light bedtime reading 😊

https://qualifications.pearson.com/content/dam/pdf/A%20Level/Design%20and%20Technology%20-%20Product%20Design/2017/specification-and-sample-assessments/Specification-GCE-L3-A-level-in-Design-and-Technology.pdf

Take care and see you in September

Miss W