Bridging the Gap
from School to College

Warlingham
Sixth Form College

Year 11 > Year 12 Transition

Summer Term

A Level Design Technology
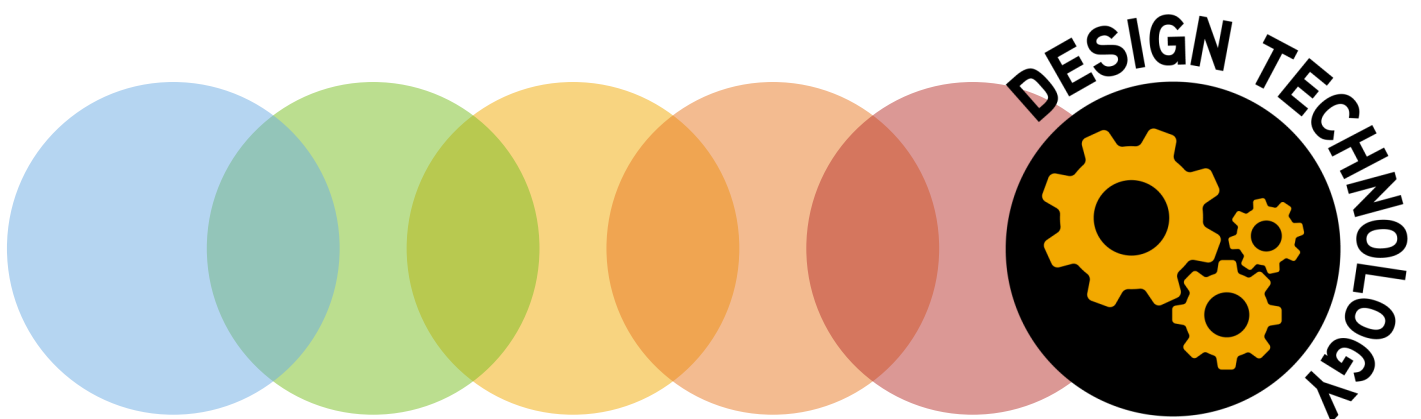
DESIGN TECHNOLOGY

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Title of Course: OCR A Level in Design and Technology: Product Design (H406)

Why should I study A Level Product Design?

Product design is all about designing, creating and developing innovative products to solve real life problems and make peoples lives better. The course is about understanding and using design to do this. Students are challenged to use and expand creative designing and making skills and learn to produce high quality innovative product designs. Students learn critical problem-solving techniques, manufacturing and materials selection, the use of digital technologies, drawing and modelling techniques and are supported to develop their own interests and become effective designers. It is an excellent pathway into creative, designing and engineering careers and for future study of these areas at university.

Course Overview

The course is all about innovative and creative designing – developing ideas and realising them. Students will be able to take their design aspirations into both 2D and 3D form choosing from a variety of areas – Resistant Materials, Graphics, Textiles, Engineering and Manufacturing. Students will extend and build on their knowledge of materials and processes, sustainable design, modelling innovation, and designing and presentation skills. Students will undertake short inputs and focussed skills tasks in:

• Sustainable design – the impact of products on the environment and the wider community.

• Industrial and commercial practices.

• Iterative design and development modelling –working with 2D and 3D modelling materials.

• Presentation techniques – development of drawing skills.

• Digital media – use of CAD/CAM, 3D printing, photos, video etc. to produce design portfolios.

• Materials – practical skills and theoretical tasks to develop knowledge of materials and processes.

Course entry qualifications

GCSE grade 5 or above in a Design and Technology subject. Grade 4 or above in Maths and English.

Possible Careers: Product Design, Interior Design, Graphic Design, Packaging Design, Engineering, Architecture, Textiles Design, Fine Art.

Recent students have gone on to University to study Architecture, Product Design, Mechanical Engineering, Automotive, Engineering, Aeronautical engineering, Graphic Design, Teaching. Others have gone on to Apprenticeships as Electricians, Furniture design, Mechanics.

Assessment Format

The following are the assessed units:

H406/01: Principles of Product Design	26.7% of total A level (Written exam)
H406/02: Problem Solving in Product Design	23.3% of total A level (Written exam)
H406/03: Iterative Design Project (NEA)	50% of total A level (Coursework)

College Expectations for Academic Success

The College will work closely with all students and parents to create a purposeful, creative and stimulating environment in which students are encouraged to fully develop - both academically and personally.

We will expect you to take responsibility for your own behaviour and learning. The current College Committee along with the student body have discussed and agreed that students should commit to:

- Ensuring academic success through regular attendance and punctuality at all required registrations, lessons, supervised study lessons and Inspire Periods. Attendance which drops below 95% reduces Key Stage 5 performance by at least one grade, so it is taken very seriously.

- Completing all set tasks on time to the best of your ability, making full use of study periods and homework to enable you to meet all deadlines.

- Using study time effectively by bringing all required equipment and resources with you and making full and regular use of the College study rooms and LRC, respecting the need for silent studying conditions.

- Working closely with all your teachers to develop an effective working relationship based on mutual respect and discussing your work with them on a regular basis and meeting targets set.

- Developing your skills as an independent, self-evaluative learner and work closely with your tutor in monitoring and discussing your academic progress. As an independent learner, if you miss a lesson, it is your own responsibility to find the teacher and catch up with the work missed.

- Organising your work efficiently and effectively into folders for each subject, making full use of individual subject expectations and using Cornell Notes daily to ensure work in your folders is relevant and meaningful.

- Keeping mobile phones out-of-sight in all classrooms and during assemblies so that lessons are not disturbed and/or important information is missed.

- Attending all parents' evenings and arrange appointments with your teachers to discuss your progress and work.

Course-specific Expectations for Academic Success

Attend all lessons – if unable to attend i.e. Doctors appointment or leaving school due to ill health see teacher first & collect work.

- Bring design folder to every lesson and other equipment needed.

- Always amend work ASAP when advised by your teacher to gain maximum marks.

- If absent, see teacher to collect missing work – which must be completed ASAP.

- Know your target grade and aim to produce work which exceeds this grade.

Homework Expectations

Always do work on night set, as next lesson you may need to use the homework for your classwork.

However, most homework's may be set on a weekly basis – when this is applicable your teacher will inform you of a deadline which MUST be met.

Independent Learning Expectations

- Attend art and design exhibitions – e.g. visit the *V&A* or *Design Museum*.

- Take pictures of products and objects that will *inspire* your designing.

- Spend time in the Library flicking through *design books* to get a better knowledge of design history.

- *Watch* design and technology programs on the TV or watch the videos in *FocusELearning*.

- Learn to use *CAD* programmes such as "*Fusion 360*" and "*2D Design*" – use the online tutorials to help you.

- *Collect* products, packaging, fabrics, wrapping paper etc which inspire you.

- Use online drawing and sketching tutorials to improve your *graphic skills*.

- Develop your knowledge of *materials* and *manufacturing processes* using the *FocusELearning* website.

Resources which will help you

- Good quality pencils and rubber

- Sketch pad to jot down ideas

- Colouring pencils / felt-tips / fine liners

- Scissors/ glue stick

- Laptop and memory stick

USING CORNELL NOTES

The Cornell Notes system is a note-taking system devised by Walter Pauk, an education professor at Cornell University. It is a proven method that establishes a more effective learning process.

It is designed to help the user think and reflect upon the notes they have made as well as making them more useful for revision purposes.

Please click here to watch a video that explains how to take Cornell Notes properly.

Try and use this method when watching some of the videos and listening to some of the programmes on the coming pages.

Try it out while watching the TED Talk: To design better tech, understand context

Compare your version with my one below. What similarities and differences are there?

Title:

TED TALK: _To Understand Better Tech, Understand Context_ *29/04/20*

	Notes:
If products and designs are not appropriate. They wont be used	*In Africa — Equipment graveyard - imported equipment—unsuitable heat , environment , unstable power supply, skills need.*
Understand context , users , culture.	*Not suitable for standard of care—Midwife using listening horn for heartbeats—not always audible—developed foetal heart monitor linking horn to smartphone.*
Observe the real needs of designs	*New Hearing aids? - batteries run out—solar battery charger for hearing aids - acoustic problems - cultural issues and stigma.*
Don't assume understanding	*Leprosy smart glove—developed through observations—nerve damage loss of feeling.*
Engage with the user and context	*Engineering mixed with healthcare—understand client, user and context*
Leads to better design	*Needs / people / context - don't assume you understand context .*
	Need deep engagement, emersion , empathy

Understanding the situation, context , environment , needs and culture of the user leads to better, more appropriate , more usable designs and technology.

REVIEW / REVISE

Use BBC Bitesize to review the following areas:

- Core technical principles
- In-depth technical principles
- Designing and making principles

Use revision worksheets to support your revision:

- Section 1 - Considering Usability when Designing
- Section 2 - New and Emerging technologies
- Section 3 - Energy generation and storage
- Section 4 - Developments in new materials
- Section 5 - Electronic systems
- Section 6 - Mechanical devices
- Section 7 - Material categories and properties

WATCH

Watch these videos and try to make some Cornell Notes from them:

Look at the example on page 5. How do your notes compare? Try and answer the questions associated with each video.

<u>Life cycle of a T-shirt</u>

Looking at sustainability of Textile products

How can life cycle assessment (LCA) help to understand the environmental impact of textile products and help reduce it?

<u>What really happens to the plastic you throw away</u>

How can life cycle assessment (LCA) help to understand the environmental impact of polymer products and help reduce it?

<u>Pirates, nurses and other rebel designers</u>

Alice Rawsthorn highlights the work of unlikely heroes, from Blackbeard to Florence Nightingale. She shows how the greatest designers are often the most rebellious. *TED Talk*

Why do you think Designers need a rebellious streak?

<u>The Future of Making Things</u> The use of Computers in Design.

How will the future of design be affected by technology?

<u>To design better tech, understand context</u>

Biomedical engineer Tania Douglas shares stories of how we're often blinded to real needs in our pursuit of technology -- and how a deeper understanding of the context where it's used can lead us to better solutions. *TED Talk*

Why is a deep understanding of a design context important?

<u>How to Make</u>

Designer and materials engineer Zoe Laughlin dismantles three classic items to understand the wonders of form, function and material that go into making them, before building her own bespoke versions. *BBC iplayer*

How does detailed product analysis help designers develop product?

<u>Focus eLearning</u>

DT Video library—a wide selection of DT related videos. *Improve your wider knowledge of DT subjects by watching some of these:*

- Ingenuity

- Quirky Products

- 3D Printing

- How its made

LISTEN TO

Listen to these podcasts while you're out on a walk and think about the impact of technology in the wider world. Alternatively, you could try to make some Cornell Notes from them:

The Best Thing Since Sliced Bread?

Sunscreen:

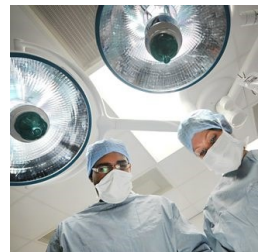Greg Foot puts sunscreen through the evidence mill.

BBC Sounds

Code Red

The innovation in trauma science that's saving the lives of bleeding
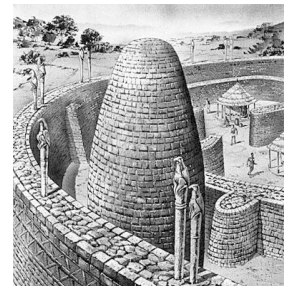
trauma patients.

BBC Sounds

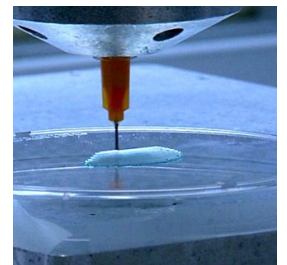## The Greatest Structures in the World

Great Zimbabwe

A study of the ancient ruins of Great Zimbabwe in the

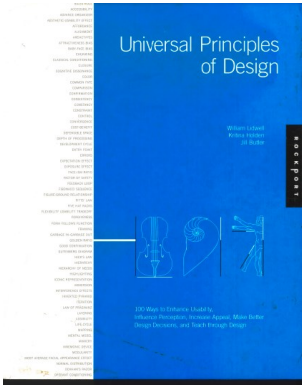southeastern hills of Zimbabwe.

BBC Sounds

3D Bioprinting

Howard Stableford investigates whether advances in 3D printing

can benefit nature.

Universal Principles of Design

Read these articles and answer the questions:

Affordance: Give 5 examples of everyday products that use affordances and explain how they give visual clues for the products use.

Hierarchy of Needs: Draw a diagram showing the hierarchy of needs in product design

Golden Ratio: Give 5 products that display manifestations of the golden ratio.

Fibonacci Sequence: Write out the first 10 numbers of a Fibonacci sequence

New and emerging Technologies:

Read about New and emerging technologies on Focus eLearning and their potential impact on:

- Industry
- Enterprise
- Environment
- Society
- Production

Identify and record 10 examples of positive impacts and 5 examples of negative impacts.

Designing With People:
http://www.inclusivedesigntoolkit.com/aboutus/idesign_publication.pdf

- **Identifying people's needs:**

    Read about at least **4** of the people on this website. Think about their needs and difficulties and think about some of the challenges they face. What sort of products could be designed to help them?

- **Case studies:**

    Read **2** of the case studies. How are Peoples needs identified? How are they being met?
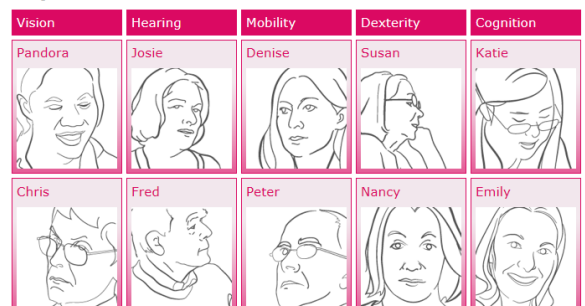
RESEARCH

Visit the V and A museum website.

Go to the Collections section:

Look for products that you think are interesting. Note the name of the designer or country and era the product is from. Create a powerpoint with these products try to identify:
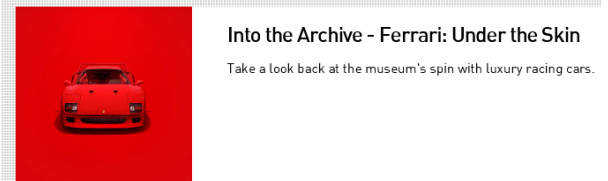
- 5 pieces of jewellery,

- 5 pieces of furniture,

- 5 pieces of Metal work,

- and 5 textiles products

Visit the Design Museum website:

In their archive investigate:

- The Designs of 2007

- The Ferrari exhibition

Use Focus eLearning to research 3 Designers or companies.

- Create a power point slide with information about them and examples of their work

Use Focus eLearning to research the manufacturing processes for:

- Metals

- Plastics

COMPLETE

Learn to Use Fusion 360 CAD Programme

- Sign up for a Free Educational Autodesk account:

- Download a free copy of Fusion 360

- **Fusion 360 CAD tutorials**: Follow the link to the University of Warwick Fusion 360 Tutorials.

   https://warwick.ac.uk/fac/sci/wmg/about/outreach/3d_design_printing/fusion_tutorials/

- Work your way through the tutorials to develop your knowledge of Fusion 360

- Fusion 360 Focus eLearning video tutorials
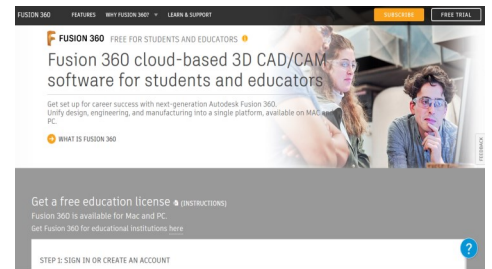
Product Design Sketching

Watch these videos and complete the exercises to improve your graphics skills

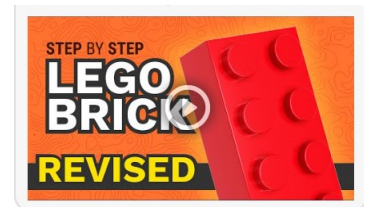Get a grip graphics Freehand Sketching Tutorials:

Sketching 1: https://youtu.be/-87X2obNdmg

Sketching 2: https://youtu.be/fZ0tK4vN4jc

Holes Project: https://youtu.be/j5pkLQIm5kw

Using Construction Lines: https://youtu.be/_uzSMAI5AuE

Using construction Lines 2: https://youtu.be/gotOLms4NaQ

Random Product sketching: https://youtu.be/QNNbpLO4mEl

Designing for others

http://www.inclusivedesigntoolkit.com/

Use the inclusive design toolkit to explore how designers consider the needs of others. Look through some of the case studies here. Try and redesign a product to make it more inclusive.
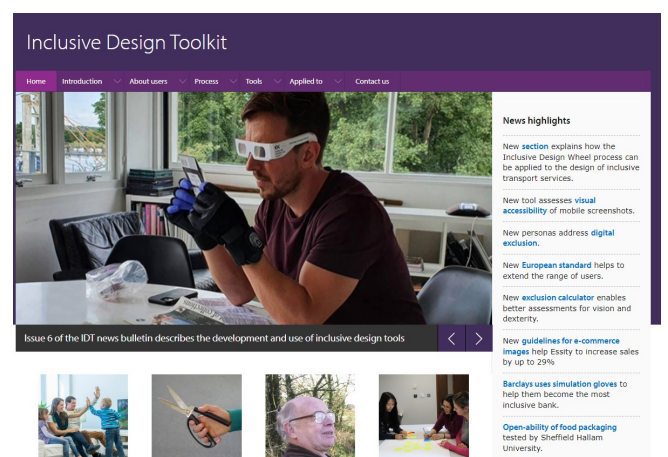
Designing in the style of

Draw some designs of a lamp or a chair in the style of one of the Designers you researched in the research section

Design and Technology Glossary

Click this Link

OCR Design Technology A Level Syllabus

Click this Link

Useful Websites

V & A Museum: www.vam.ac.uk/

V & A Collections: www.collections.vam.ac.uk/

Design Museum: www.designmuseum.org/

University of Cambridge: www.inclusivedesigntoolkit.com

Ted Talks: www.ted.com/talk

Core 77 Design Magazine: www.core77.com

BBC Bitesize OCR Design Technology: www.bbc.co.uk/bitesize

www.focuselearning.co.uk
Username: student@warlinghamschool4362
Password: 3hfi7z3bx