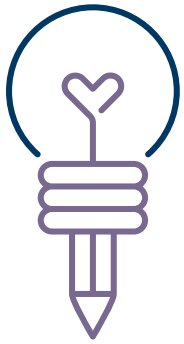
THE VI FORM ACADEMY

AN ACADEMIC SIXTH FORM

PRODUCT DESIGN

A-Level



TRANSITION PACK

Transition Pack Information

Studying A Levels or Level 3 Vocational subjects requires an excellent foundation knowledge of GCSE content as well as a commitment to independent study.

The Transition Packs are designed to support you as you prepare for your studies at The VI Form Academy. Baseline assessments in September will be based on the knowledge you will gain from Section 1 and 2 of these packs

There are 4 sections in each Transition Pack

Section 1: Revisiting GCSE

This will include revision resources for essential parts of the GCSE course which are fundamental for the A Level.

Section 2: Transition to A Level

This builds on knowledge and skills gained at GCSE and lays the foundations for the A Level/ Level 3 Vocational course

Section 3: Extension and Challenge

If you are aiming for an A / A* at A Level or D* in Vocational then you should aim to complete some of these tasks. Choose the ones which interest you most.

Section 4: Go Beyond the Spec

Here are ideas of how to develop and demonstrate your interest in your chosen subject by extending your subject knowledge beyond the specification.

You can find an electronic version of every Transition Pack on the VI Form Academy Portal.

Please bring your completed pack in when you start The VI Form Academy in September or submit electronically at VIFormEnquiries@cambornescience.co.uk

Section 1: GCSE Fundamentals

This section contains essential parts of the GCSE course which are fundamental to studying this subject at A Level.

Below is an overview of the GCSE specification as a reminder of the work you covered on your GCSE D&T course. Use Seneca online learning to revise each of the subject topics, then answer the end of topic tests and exam style questions. Take a screenshot of your test result and record your scores in the boxes below.

The link to AQA GCSE Design & Technology is below:

https://app.senecalearning.com/classroom/course/b4e64de8-a5d1-411b-81e2-aa4e2016e908

Section 1 New and emerging technologies

1) Industry and Enterprise
2) Sustainability and the environment
3) People, culture and society
4) Production techniques and systems
5) Informing design decisions

End of topic test – New & Emerging Technologies	
Exam style questions – Emerging Technologies	

Section 2 Energy, materials, systems and devices

6) Energy generation
7) Energy storage
8) Modern materials
9) Smart materials

Exam style questions – Smart Materials	

10) Composite materials and technical textiles
11) Systems approach to designing
12) Electronic systems processing
13) Mechanical devices

End of topic test – Designing and Mechanical Devices	

Section 3 Materials and their working properties

14) Papers and boards
15) Natural and manufactured timbers
16) Metals and alloys
17) Polymers
18) Textiles

End of topic test – Materials	
Exam style questions - Materials	

Section 4 Common specialist technical principles

19) Forces and stresses on materials and objects
20) Improving functionality
21) Ecological and social footprint
22) The six Rs
23) Scales of production

Section 5b Timber based materials

24) Sources, origins and properties
25) Working with timber based materials
26) Commercial manufacturing, surface treatments and finishes

End of topic test – Timber	
Exam style questions - Timber	

Section 6 Designing principles

27) Investigation, primary and secondary data

End of topic test – Investigation and data	
Exam style questions - Specifications	

28) The work of others

End of topic test – The Work of Others	

29) Design strategies
30) Communication of design ideas and prototype development

Section 7 Making principles

31) Selection of materials and components
32) Tolerances and allowances
33) Material management and marking out
34) Specialist tools, equipment, techniques and processes
35) Surface treatments and finishes

End of topic test result – Specialist Techniques	
End of topic test result – Designing and Making	

Section 2: Transition to A level

This section contains essential foundations for the A level course.

Paper 1 and 2 - Subject Content

Use your existing knowledge and/or the electronic scans of the GCSE text book to complete a short summary of each of the topics in the A Level Product Design text book.
https://m.youtube.com/watch?feature=youtu.be&v=d-L7xOmioIY&d=n This YouTube clip will help you get started.

Topic	Short Summary
Plastics	
Elastomers	
Composite Materials	
Ferrous Metals	

Topic	Short Summary
Non-ferrous metals	
Alloys and alloying	
Wood	
Veneers, laminates and composites	
Glass	

Topic	Short Summary
Ceramics	
Paper & Board	
Printing	
Smart and modern materials	
Glass	

Topic	Short Summary
Joining processes	
Joining metals	
Joining wood	
Joining polymers	
Joining ceramics	
Corrosion, decay and degradation	

Topic	Short Summary
Finishes and finishing processes	
Properties and materials testing	
Environmental and sustainability issues	
Ergonomics and anthropometrics	
Inclusive design	
Consumer safety	

Section 3: Extension and Challenge

If you are aiming for an A / A* at A level then you should aim to complete some of these tasks. Choose the ones which interest you most.

The James Dyson Foundation are very supportive and encouraging of design and engineering education.

Have a look at their website and the design competition in particular, that they run for undergraduate and graduate students.

https://www.jamesdysonaward.org/home/

https://www.jamesdysonaward.org/past-winners/

Although you are not eligible to enter we would like to see your response to the brief below.

"The brief is broad. We're looking for designers who think differently, to create products that work better.

Designers and engineers who follow an iterative design process. The judges – and James Dyson especially – are drawn to designs that employ clever yet simple engineering principles and address clear problems.

As well as proving your project's technical viability, we'd also love to see that it's commercially viable, too – so include any research you've done into manufacturing costs and retail prices.

This year the James Dyson will also looking for entries that address a sustainability issue, or have been designed, sourced or manufactured sustainably."

There are also a number of design and science challenges on a set of cards. Some may be too simple but consider having a try of the engineering challenges numbers 5, 8, 13 and 14.

https://www.jamesdysonfoundation.co.uk/content/dam/pdf/JDF_with%20cover%20challenge-cards_DIGITAL.pdf?

FixEd and Fixperts is also an interesting organisation

http://fixing.education/ Please have a look at their website, especially Fixperts.

Or some of their films on YouTube

https://www.youtube.com/channel/UCVYwsZAvnI8snvJ6aufbvCg

A link to a useful reading list is below.

https://www.innovationtraining.org/design-thinking-books-to-read/

https://www.futurelearn.com/courses

Section 4: Go Beyond the Spec

Develop and demonstrate your interest in your chosen subject by extending your subject knowledge beyond the specification. Start as you mean to go on!

Watch these lockdown lectures from Jude Pullen a lecturer at Bangor University. Please write a short review of them. There will be more to follow …

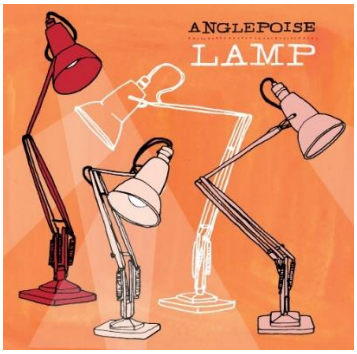
https://www.youtube.com/watch?v=r5J65bZRseA

https://www.youtube.com/watch?v=c_5vQex8two

https://www.youtube.com/watch?v=jcFFZWQjuOM

https://www.youtube.com/watch?v=lYpfTIQdgVU

Modelling and prototyping



The Anglepoise lamp is a design classic. We would also like you to complete this task. If you cannot access the materials or tools be creative and model your lamp using the step by step guide. Photograph each stage and annotate it like you would a plan or diary of making. Then evaluate your final prototype.

https://www.theguardian.com/lifeandstyle/house-and-homes-blog/2011/oct/05/how-to-make-anglepoise-jar-lamp

Designers and their work.

Have a look at some of the profiles and work of well-known and esteemed designers who have shaped the way we live today. Please pick at least one and produce an A3 piece of work about them. We are looking for creativity in presentation, a range of images both hand drawn and internet generated, your reaction to the work. Please do not just cut and paste !

https://designmuseum.org/designers

BBC Programmes

There is a great range of programmes about design and manufacture on BBC iplayer. Please try to watch some of the clips or programmes below and write about your views, what you have learnt etc in the appropriate table below.

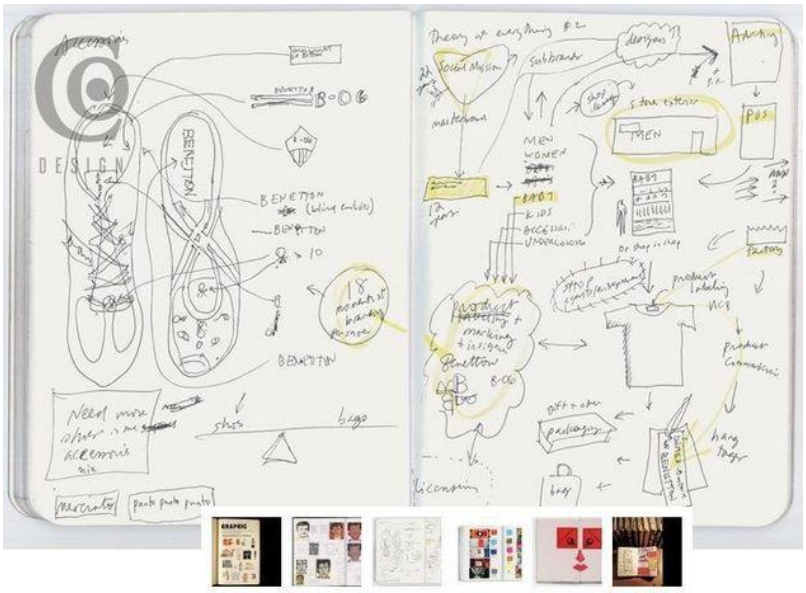
https://www.bbc.co.uk/programmes/b006m9ry/episodes/player

https://www.bbc.co.uk/iplayer/episode/m000h3cs/how-to-make-series-1-2-the-toothbrush

https://www.bbc.co.uk/iplayer/episode/m000hbdk/how-to-make-series-1-3-headphones

Drawing skills and scrap book

Please start collecting images of examples of good design either by photographing and/or sketching them. Also include examples of design that you feel could be improved upon or re thought or hacked, explain your changes.



Reading List

Author	Title	Comments
Will Potts, Julia Morrison, Ian Granger, Dave Sumpner	AQA A Level Product Design	
Simon Alderson and Ralph Ball	Mass Production: Products from Phaidon Design Classics	
Marcus Fairs	21st Century Design	
Tubal Cain	Hardening, Tempering and Heat Treatment	
Design Museum Enterprise Limited	Fifty Cars that Changed the World: Design Museum Fifty	

Ed Mae Cooper	Starck	
Rob Thompson	Manufacturing Processes for Design Professionals	

Website	Comments
www.designmuseum.org	
www.apple.com/uk	
www.jamesdysonfoundation.co.uk	
www.starck.com	
www.theartstory.org	
www.ted.com/playlists/28/sustainability_by_design	
www. http://cfsd.org.uk/	
www.hse.gov.uk	

Get in touch

viformenquiries@cambornescience.co.uk
theviformacademy.co.uk
@theviformacademy