A Level Product Design Cycle 3

Week	Lesson	Topic	Task/project	Spec point	Page No.	Homework	Independent study: *5 hours per week*	Assessment
UNIT 12 &13	1	**3D Printing project** **Career link**: CAD Designer; Graphic Designer	Introduction to different 3d printing processes, materials, industry links and product examples.	3.1.7 Digital design and manufacture	30	To research FDM printing , their materials and create a step by step guide to explain how to use the FDM printer. **Challenge:** Include health and safety rules. **Further challenge:** Explain how to maintain the 3d printer.	To create a design sketch of your chosen product to model and 3dprint following drawing techniques **jack straw or scruffitti.** Annotate your design ideas using D&T keywords.	Research skills Design skills
	2	**NEA** **Introduction to NEA** Section a—Analyse your chosen context and identify your client.		3.2.1 Design methods and processes 3.1.14 Design communication	39, 2		Continuation of: Section A context analysis, identifying design possibilities. Include conclusions and rational for chosen context.	Presentation Analytical skills Research skills
	3	**3D Printing project**	Introduction to 123D Design CAD software to start making Cad model	3.1.13 Enterprise and marketing in the development of products	37	To use your learning of software tools to complete your CAD model ready to 3dprint. **Challenge:** Render your cad model with material and environment to create a visual for your client. **Further challenge:** Plan and record client feedback on your cad model. Make the improvements needed.		CAD Skills Analytical skills Research skills
	4	**NEA** **Skills**: 2D CAD skills - making nets; Practical skills; CAD: 3D printing researching & analytical skills	Section A—(project planning) set up questions and plan a client interview and/or survey.				Continuation of: Section A complete client survey and interview and conclude your research findings. Use Learning made from NEA client interview and survey to complete PG online worksheet and homework sheet **Unit 12— 3. Collecting data.**	Research skills Presentation Self assess answers on worksheets
	5	**3D Printing project**	Introduction to Adobe Illustrator to create packaging nets for 3D printed models.			To use your learning of software tools to complete your net packaging ready to laser cut. **Challenge:** Research and create a step by step guide how to use the Laser cutter in the most efficient way. **Further challenge:** Include health and safety rules in your step by step and how to maintain the laser cutter.		Presentation CAD Skills Design skills
	6	**NEA**	Section A—review and analyse and evaluate interview outcomes. Create initial concept sketches.				Continuation of: Section A complete initial concept sketches and obtain client feedback.	Design skills Drawing skills
	7	**3D Printing project**	Practical introduction to Laser cutter, materials and 3d printer– To be signed off as confident user on Workshop passport. Laser cut nets and 3d print projects	3.2.9 Design for manufacture and project management	47	Research different paper and boards used to create packaging and explain the different process used such as die cutting. **Challenge:** Research and explain different paper and boards packaging finishes such as foil lined paper and embossing . **Further challenge:** Research different pacaking printing processes such as lithography printing.		Research skills Presentation
	8	**NEA** **Knowledge**: responsible design: ethical & social factors; classification of papers and boards; properties of materials; primary & secondary research methods	Section A— Carry out a relevant piece of investigation e.g. product analysis (preferably primary research with photos/videos etc)	3.1.13 Enterprise and marketing in the development of products	37		Use Learning made from 3dprint project to complete PG online worksheet and homework sheet **Unit 12— 2. Enterprise.**	Presentation Self assess answers on worksheets
	9	**3D Printing project**	Practical Laser cutter and 3d printer Laser cut nets and 3d print projects and make final adjustments.					Practical skills Project management skills

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UNIT 12 &13	10	**NEA** **Building challenge**: students will build on previous experience of the GCSE NEA project and use this as a foundation for their A Level NEA. Students will develop CAD skills further	Section A— Carry out a relevant piece of investigation e.g. disassembly (preferably primary research with photos/videos etc)	3.2.10 National and international standards in product design	48	Complete final 3D printed model and Laser cut packaging including ready present in next lesson. **Challenge:** Gather client feedback and make the suggested improvements. **Further challenge**: research and explain a more sustainable method or material for your packaging and 3D printed product.	Continuation of: Section A -Product testing and investigations relevant to your research. Use Learning made from NEA to complete PG online worksheet and homework sheet **Unit 13— 7. Product lifecycle**	Design skills Self assess answers on worksheets
	11	**3D Printing project**	Presentation of work, evaluation and reflection of learning.					Analytical skills
	12	**NEA**	Section A—Development of initial concept sketches using multiple drawing techniques. -Drawing activities; 2point perspective, crating, colour blocking and rendering	3.1.14 Design communication	38		Continuation of: Section A complete development initial concept sketches and obtain client feedback. Use Learning made from NEA to complete PG online worksheet and homework sheet **Unit 12— 4. Design communication**	Design skills Drawing skills Self assess answers on worksheets Presentation
	13	**3D Printing project**	Final lesson— Unit 13 - 5. Development in technology and **Unit 12— 1. Feasibility** .	3.1.12 Feasibility studies 3.1.6 Modern industrial and commercial practice & 3.1.6.2 Efficient use of materials	37 &27			Analytical skills
	14	**NEA**	Research analyse and articulate social and economic challenges.	3.2.8 Responsible design	46		Continuous of : Section A complete social and moral research analysis. Use Learning made from NEA to complete PG online worksheet and homework sheet **Unit 13– 4&6 social / economics influences and consideration.**	Self assess answers on worksheets Presentation
	15	**NEA**	Understanding how to apply ergonomics and anthropometrics to create successful designs. **Unit 13—1 Design processes.**	3.2.9 Design for manufacture and project management	47	Complete all **Unit 12& 13** Worksheet and home worksheets. **Challenge:** Explain how do designers analyse and solve these issues during the design and development of new products? **Further Challenge**: Explain what design process is used for the NEA and how it applied in your work.		Self assess answers on worksheets Presentation
	16	**NEA**	Researching into the work of others and apply principles to NEA. **Unit 13—2 & 3 Design influences and work of others.**					Self assess answers on worksheets Presentation
	17	**Theory**	Final revision for upcoming end of unit 12 &13 exam.			Revise for upcoming **Unit 12 & 13** exam using lesson worksheets and homework.		Self assess answers on worksheets
	18	**End of Unit 12& 13 Assessment**	Examination style questions.					End of Unit assessment

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UNIT	19	**NEA**	Assessing Prior NEA section A to understand mark scheme and make improvements.				Continuous of : Section A Complete section A use the examples provided to self assess your work and make improvements to meet deadline.	Peer and self assessment Analytical skills
	20	**Theory** **Literacy:** students will practice how to structure a response to 8 and 12 mark questions: SPAG	Quality control Equipment and metal processes (such as galvanising) and UV hardening	3.2.9 Design for manufacture and project management 3.1.2 Performance characteristics of materials: Metals 3.1.5 The use of finishes 3.1.4.5 The use of adhesives and fixings	47 , 8 & 26, 23	Complete homework sheet on theory learnt. **Challenge**: complete a exam style question based on topic from lesson and using marking criteria. **Further challenge:** Peer or self assess your work with green pen and make improvements needed to consolidate learning.		Research and Analytical skills Spelling, punctuation and grammar Response to examination question
	21	**Theory** **Looking forward to Examination:** students will further develop their question and response exam techniques and their understanding of command words	Kevlar, circular economy & JIT manufacturing	3.1.2 Performance characteristics of materials: Modern materials 3.2.8 Responsible design 3.1.6 Modern industrial and commercial practice & 3.1.6.2 Efficient use of materials	16 , 46 &27	Complete homework sheet on theory learnt. **Challenge**: complete a exam style question based on topic from lesson and using marking criteria. **Further challenge:** Peer or self assess your work with green pen and make improvements needed to consolidate learning.		Research and Analytical skills Spelling, punctuation and grammar Response to examination question
	22	**NEA**	Section A - ON GOING				Continuous of : Section A Complete section A use the examples provided to self assess your work and make improvements to meet deadline.	Presentation Project management
	23	**Theory** **Previous cycle links:** responsible design links to inclusive design and consumer needs	Drawing methods, inclusive design and Hardwoods	3.1.2 Performance characteristics of materials: Woods 3.2.1 Design methods and processes 3.1.8 The requirements for product design and development	7, 39 & 32	Complete homework sheet on theory learnt. **Challenge**: complete a exam style question based on topic from lesson and using marking criteria. **Further challenge:** Peer or self assess your work with green pen and make improvements needed to consolidate learning.		Research and Analytical skills Spelling, punctuation and grammar Response to examination question
	24	**Theory**	Environmental impact, metal finishes and ferrous/non ferrous metals	3.1.1 Materials and their applications 3.1.3 Enhancement of materials 3.2.1 Design methods and processes 3.1.2 Performance characteristics of materials	3, 4, 17 & 39	Complete homework sheet on theory learnt. **Challenge**: complete a exam style question based on topic from lesson and using marking criteria. **Further challenge:** Peer or self assess your work with green pen and make improvements needed to consolidate learning.		Research and Analytical skills Spelling, punctuation and grammar Response to examination question
	25	**NEA**	Section A — ON GOING				Continuous of : Section A Complete section A use the examples provided to self assess your work and make improvements to meet deadline.	Presentation Project management
	26	**Theory** **Maths:** students will use accurate measurements for their packaging nets. Students will also explore A level PD Maths questions	Third party feedback, calculating surface areas and final revision.	MATHS, 3.2.5 Critical analysis and evaluation	49, 44	**Revise for upcoming mock exam.**		Research and Analytical skills Spelling, punctuation and grammar Response to examination question
	27	Mock Exam—In class 2hours	End of transition assessments					

My Expected Grade				
Teacher Assessed Grade (circle)				
SBE	BE	E	AE	SAE
Comment:				

Student Self Evaluation

WWW	EBI

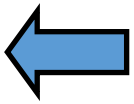
LEARNING TOOLS

Tick when you think you are able to define the meaning of the keyword

KEYWORDS	FDM	Feasibility	Filet	Sweep
Extrude	Render	JIT manufacturing	Planes	Intersect
Filament	Iterative	Revolve	Shell	
STL	Inclusive	chamfer	Loft	

Challenge!

Add more keywords/terms to the table



THE BIG PICTURE

Why are we learning to 3D print, 2D nets and packaging ?

You are so that you:

Apply CAD and CAM learning and experiences to your NEA project and develop skill and knowledge of career practises such as Graphic designers and CAD engineers.

Your experiences will also consolidate leaning and aid you to answer examination questions to demonstrate understanding.

Why are we learning how to create NEA?

To demonstrate our technical knowledge on materials, design process and manufacturing into a project. To develop project management skills and understand how projects are developed in industry.