

Engineering	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 10	Aluminium Lamp Manufacture (unit 1 skills) -Understanding engineering drawings -sketching parts -engineering tools & equipment -planning and evaluation processes - Materials and properties	Aluminium Lamp Redesign (unit 2 skills) -Existing product research -Designing products to meet a brief -Modelling designs -Creating engineering drawings -Creating a manufacturing plan -Using mathematics to solve problems.	Unit 1 Mock project (Unit 1 Skills) -Understanding engineering drawings -sketching parts -engineering tools & equipment -planning and evaluation processes - Materials and properties	Unit 2 Mock Project (Unit 2 Skills) -Existing product research -Designing products to meet a brief -Modelling designs -Creating engineering drawings -Creating a manufacturing plan -Using mathematics to solve problems.	Unit 3 exam preparationengineering contexts of developments -Material developments -Environmental issues -Materials properties and justification -Processes tools and equipment -Industrial Processes -Risk assessment and safety	Engineering knowledge and principles (mock exam paper) -engineering contexts of developments -Material developments -Environmental issues -Materials properties and justification -Processes tools and equipment -Industrial Processes -Risk assessment and safety
Year 11	Unit 1 Controlled Assessment (Manufacturing - 20 hours) -Understanding engineering drawings -sketching parts -engineering tools & equipment -planning and evaluation processes - Materials and properties	Solving Engineering problems, mock exam feedback and revision (mock paper 3) -engineering contexts of developments -Material developments -Environmental issues -Materials properties and justification -Processes tools and equipment -Industrial Processes -Risk assessment and safety	Unit 2 Controlled Assessment (Designing - 10 hours) -Existing product research -Designing products to meet a brief -Modelling designs -Creating engineering drawings -Creating a manufacturing plan -Using mathematics to solve problems.	Unit 3 preparation - exam question practiceengineering contexts of developments -Material developments -Environmental issues -Materials properties and justification -Processes tools and equipment -Industrial Processes -Risk assessment and safety	Unit 3 External Exam - Solving Engineering Problems (1 hour 30 mins) (exam date in May 2025) -engineering contexts of developments -Material developments -Environmental issues -Materials properties and justification -Processes tools and equipment -Industrial Processes -Risk assessment and safety	



Ormiston Victory Academy

Unit 2 LAB - 2D CAD	Unit 2 LAC - Lamp
drawing of lamp	manufacture,
components.	manufacturing safely as
-2D CAD skills on 2D	a team
design V2.	-Planning and
-Understanding	manufacturing
engineering drawings	components based on
-Creating professional	engineering drawings
drawings of	-Choosing materials and
components	manufacturing
Unit 1 - Engineering	processes that are
Principles	suitable for the project.
- Recall basic	-Accurately document
engineering principles	progress of
and mathematical	manufacturing and
methods and formulae	reflect on potential
- Perform mathematical	improvements.
procedures to solve	Unit 1 - Engineering
engineering problems	Principles
- Demonstrate an	- Recall basic
understanding of	engineering principles
electrical, electronic	and mathematical
and mechanical	methods and formulae
principles to solve	- Perform mathematical
engineering problems	procedures to solve
- Analyse information	engineering problems
and systems to solve	- Demonstrate an
engineering problems	understanding of
- Integrate and apply	electrical, electronic
electrical, electronic	and mechanical
and mechanical	principles to solve
principles to develop an	engineering problems
engineering solution	- Analyse information
	and systems to solve
	engineering problems
	- Integrate and apply

electrical, electronic

engineering solution

principles to develop an

and mechanical

Year 12

Unit 2 LAA - Bike Brake **Analysis** -Material and component analysis -detailed understanding of manufacturing processes and material properties -identifying alternatives for manufacturing components. -How human factors affect the manufacture of components on an industrial scale. Unit 1 Engineering Principles - First attempt. (1 hour 30 mins) - Recall basic engineering principles and mathematical methods and formulae - Perform mathematical procedures to solve engineering problems - Demonstrate an understanding of electrical, electronic and mechanical principles to solve engineering problems - Analyse information and systems to solve engineering problems - Integrate and apply electrical, electronic and mechanical principles to develop an engineering solution

components. -Create 3D CAD models of lamp components accurately using fusion 360 -Translate 3D models to 2D orthographic models to professional standards using fusion -Propose 3 alternative designs to 3 components which should be 3D modelled and justified. Unit 1 - Engineering Principles - Recall basic engineering principles and mathematical methods and formulae - Perform mathematical procedures to solve engineering problems - Demonstrate an understanding of electrical, electronic and mechanical principles to solve engineering problems - Analyse information and systems to solve engineering problems - Integrate and apply electrical, electronic and mechanical

Unit 10 LAA - 3D CAD

drawings of lamp

-Create 2D CAD drawings of all lamp components using 2D Design -Propose 3 alternative designs to 3 components which should be drawn in 2D design and justified. Unit 1 - Engineering Principles - Recall basic engineering principles and mathematical methods and formulae - Perform mathematical procedures to solve engineering problems - Demonstrate an understanding of electrical, electronic and mechanical principles to solve engineering problems - Analyse information and systems to solve engineering problems - Integrate and apply electrical, electronic and mechanical principles to develop an engineering solution

Unit 10 LAB - 2D CAD

components generated

drawings of lamp

from 3D models.

Unit 10 LAC - 3D and 2D CAD drawings of thinwalled and fabricated components.
Create 3 3D components which show thin-walled components from a hairdryer and folded thermoplastic stand.
Unit 3 - Engineering Product Design and Manufacture preparation.

Unit 1 - Engineering Principles - Recall basic engineering principles and mathematical methods and formulae - Perform mathematical procedures to solve engineering problems - Demonstrate an understanding of electrical, electronic and mechanical principles to solve engineering problems - Analyse information and systems to solve engineering problems - Integrate and apply electrical, electronic and mechanical principles to develop an engineering solution



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				principles to develop an		
				engineering solution		
	Unit 3 - Exam	Unit 3 - Exam	Unit 3 - Engineering	Coursework Recap if	Unit 1 & 3 exam	Unit 1 & 3 exam
	preparation	preparation	product design and	required.	preparation (if required	preparation (if required
	-Demonstrate	-Demonstrate	manufacture - First	·	for resit)	for resit)
	knowledge and	knowledge and	Attempt (8 Hours)		,	,
	understanding of	understanding of	-Demonstrate			
	engineering products	engineering products	knowledge and			
	and design	and design	understanding of			
	- Apply knowledge and	- Apply knowledge and	engineering products			
	understanding of	understanding of	and design			
	engineering	engineering	- Apply knowledge and			
	methodologies,	methodologies,	understanding of			
	processes, features and	processes, features and	engineering			
	procedures to iterative	procedures to iterative	methodologies,			
	design	design	processes, features and			
	- Analyse data and	- Analyse data and	procedures to iterative			
	information and make	information and make	design			
	connections between	connections between	- Analyse data and			
Year 13	engineering concepts,	engineering concepts,	information and make			
	processes, features,	processes, features,	connections between			
	procedures, materials,	procedures, materials,	engineering concepts,			
	standards and	standards and	processes, features,			
	regulatory	regulatory	procedures, materials,			
	requirements	requirements	standards and			
	- Evaluate engineering	- Evaluate engineering	regulatory			
	product design ideas,	product design ideas,	requirements			
	manufacturing	manufacturing	- Evaluate engineering			
	processes and other	processes and other	product design ideas,			
	design choices	design choices	manufacturing			
	- Be able to develop	- Be able to develop	processes and other			
	and communicate	and communicate	design choices			
	reasoned design	reasoned design	- Be able to develop			
	solutions with	solutions with	and communicate			
	appropriate justification	appropriate justification	reasoned design			
	Unit 1 - Engineering	Unit 1 - Engineering	solutions with			
	Principles	Principles	appropriate justification			



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- Recall basic	- Recall basic	Unit 1 - Engineering		
engineering princip	les engineering principles	Principles - Second		
and mathematical	and mathematical	Attempt (1 Hour 30		
methods and form	ulae methods and formulae	mins)		
- Perform mathem	atical - Perform mathematical	- Recall basic		
procedures to solv	procedures to solve	engineering principles		
engineering proble	ms engineering problems	and mathematical		
- Demonstrate an	- Demonstrate an	methods and formulae		
understanding of	understanding of	- Perform mathematical		
electrical, electron	c electrical, electronic	procedures to solve		
and mechanical	and mechanical	engineering problems		
principles to solve	principles to solve	- Demonstrate an		
engineering proble	ms engineering problems	understanding of		
- Analyse informati	on - Analyse information	electrical, electronic		
and systems to sol	e and systems to solve	and mechanical		
engineering proble	ms engineering problems	principles to solve		
- Integrate and app	ly - Integrate and apply	engineering problems		
electrical, electron	c electrical, electronic	- Analyse information		
and mechanical	and mechanical	and systems to solve		
principles to develo	p an principles to develop an	engineering problems		
engineering solution	n engineering solution	- Integrate and apply		
		electrical, electronic		
		and mechanical		
		principles to develop an		
		engineering solution		