

Revision

Checklist - Engineering

Learning Aim	Topic	In class	✓	x
A	Carry out a process to meet the needs of an engineering brief Learners will develop an understanding of practical procedures and explore how to record, collect and interpret data in an engineering context.			
A1	Carry out a process			
	Following planned procedures.			
	Using and testing a prototype/model.			
	Assembling, handling and using materials, equipment and machinery			
A2	Recording the process			
	<ul style="list-style-type: none"> Measuring and recording data with accuracy and precision, using appropriate units. 			
	<ul style="list-style-type: none"> Tabulating appropriate data in the correct format accurately and to a suitable degree of precision. 			
	<ul style="list-style-type: none"> Displaying appropriate data graphically with accuracy: chart/graph <ul style="list-style-type: none"> line/curve of best fit axis scaling Labelling. 			
	<ul style="list-style-type: none"> Observation skills, e.g. noting problems with practical activities. 			
A3	Interpretation of data			
	<ul style="list-style-type: none"> Identifying anomalous results or sources of error. 			
	<ul style="list-style-type: none"> Comparison of trends/patterns in data, to include tables, charts and graphs. 			
	<ul style="list-style-type: none"> Evaluating the process, to include testing process used, recording/processing results. 			
	<ul style="list-style-type: none"> Drawing valid conclusions. 			
	<ul style="list-style-type: none"> Making recommendations related to engineering briefs 			

Learning Aim	Topic	In class	✓	x
B	Provide a design solution for an engineered product against the needs of an engineering brief Learners will develop an understanding of how to interpret a brief and explore design ideas, including their viability as a final solution.			
B1	Interpretation of a given brief for an engineered product			
	Analysing the existing product with reference to the brief.			
	Dimensions and tolerances, to include linear, radial, surface finish.			
	Physical form, to include 2D, 3D, flat, curved.			
	Attributes, to include low resistance, sharp corners, moisture traps.			
	Materials, e.g. aluminium, steels, polymers.			
	Processes, e.g. fabrication, drilling.			
	B2	Redesign		
Identifying relevant issues with existing design.				
Design sketching, to include 2D, 3D, exploded diagrams, annotation, circuit diagrams.				
Design for manufacture, e.g. fabricate, forge, cast, machined.				
Design ideas, e.g. variation in form, variation in approach, use of different methods, and use of different componentry.				
B3	Evaluation			
	Reviewing the credibility of the design ideas given the needs of the brief.			
	Selecting the most appropriate design solution.			
	Justification of the design solution.			
	Justification of the processes to be used.			

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C	Provide solutions to meet the needs of an engineering brief Learners will develop an understanding of how to analyse information in an engineering context and will explore how to select a suitable solution and implement it to meet the brief.			
C1	Analysing engineering information associated with the problem			
	Types of engineering information, to include production data, engineering drawings, job cards.			
	Interpreting patterns and trends related to the engineering information.			
	Identifying issues and causes associated with the problem.			
C2	Selecting a solution			
	Possible solutions for current and/or potential issues, e.g. design, tooling, process.			
	Extent to which these solutions have fulfilled their primary purpose.			
	Any wider factors that need to be considered in order to meet the brief, e.g. resources, need for batch production, safety restrictions, and environmental impact.			
	Ways in which the solution might be improved on against its primary purpose and/or other factors.			
	Using the best-fit approach to select the best solution.			

Learning Aim	Topic	In class	✓	x
C2	Identifying advantages and disadvantages/limitations/constraints.			
	Justifying the best solution.			
	Reflecting on processes and making recommendations for improvements to the best solution.			
C3	Problem solution			
	Resources required and their use, to include materials, tools, components, equipment, apparatus, e.g. instruments, sensors.			
	Designs of solution, to include diagrams, sketches, including measurements, labels/annotation.			
	Make processes, to include following the steps needed to create a prototype solution, e.g. rapid prototyping.			
	Processes to follow, e.g. in relation to using tools and equipment, and health and safety.			
	Manufacturing processes to use, e.g. casting, forging, welding, use of jigs and tools.			
	Data collection requirements, to include what quantitative and qualitative data must be recorded, resource material, data sources.			
	Data analysis and quality, to include trends, meeting specifications, possible solutions.			
	Safety considerations, to include hazards and requirements of Control of Substances Hazardous to Health (COSHH) Regulations 2002 where appropriate.			
	Considering timescales			

