

MARINA INTERNATIONAL SCHOOL

DESIGN & TECHNOLOGY SCHEME OF WORK

FORM 4 - TERM 1

WEEK	TOPIC	TOPIC DETAILS
1.1	Design brief/specification	Analyze and produce design specifications for problems which they, or others, have identified.
2.1	Identification/research	Identify the constraints imposed by knowledge, resource availability and/or external sources which may influence proposed solutions
2.2	Identification/research	Gather, order and assess information relevant to the solution of practical/technological problems
3.1	Identification/research	Produce and/or interpret data (e.g. diagrams, flow charts, graphs, experimental and test results).
4.1	Generation of possible ideas	Generate and record ideas as potential solutions to problems using a range of techniques
5.1	Generation of possible ideas	Identify what resources they need for solving practical/technological problems
6.1	Generation of possible ideas	Use a variety of media and equipment to produce models and mock-ups as a means of exploring a problem and as a means of testing and feasibility of a solution
7.1	Selection/organization	Select and develop a solution after consideration of time, cost, skill and resources
7.2	Selection/organization	Organize and plan in detail the production of the selected solution
8.1	Design and technology in society	Show awareness of the effect of design & technology activity on social, environmental and economic issues
9.1	Practical design application	Consider how existing products meet the needs of the users

WEEK	TOPIC	TOPIC DETAILS
9.2	Practical design application	Consider production manufacturing as: one-off, batch and mass production
10.1	Environment and sustainability	Recognize that different forms of energy sources exist, namely, fossil fuels, nuclear, renewable
10.2	Environment and sustainability	Understand the difference between the finite and almost infinite nature of energy sources and how design help to conserve all energy sources
11.1	Environment and sustainability	Use energy sources effectively and efficiently
11.2	Environment and sustainability	Be aware of the responsibilities of designers towards sustainability of materials and other resources
12.1	Control	Identify the features of a control system in terms of inputting devices, processing elements, output devices, feedback.
13.1	Evaluation	Evaluate existing products/systems, the work of others and their own work
13.2	Evaluation	Test the performance of the product/solution against the original specification
14.1	Implementation and realization	Show an awareness of correct procedures for the preparation of materials
15.1	REVISION	REVISION

DESIGN & TECHNOLOGY SCHEME OF WORK

FORM 4 - TERM 2

WEEK	TOPIC	TOPIC DETAILS
1.1	Design brief/specification	Analyse and produce design specifications for problems which they, or others, have identified
2.1	Generation of possible ideas	Recognize the need for continuous appraisal of their own progress, thinking and decision-making, in order to provide themselves with opportunities for review
2.2	Generation of possible ideas	Relate self-appraisal judgements to the purpose of their study, in particular the specification which they set themselves.
3.1	Developments (nets)/Ellipses GRAPHIC DESIGN	Construct developments of cubes, prisms, cylinders and cones, including simple truncations. Construct ellipses by any accurate method, including the use of trammel.
4.1	Freehand drawings GRAPHIC DESIGN	Use freehand drawing to communicate ideas, thoughts and information from written, visual and tabular data, presenting these ideas in pictorial, plane or orthographic mode.
5.1	Design and technology in society	Demonstrate awareness of the role of designers, artisans and technologist in industry and society
5.2	Design and technology in society	Take a range of human needs into account.

WEEK	TOPIC	TOPIC DETAILS
6.1	Practical design application	<ul style="list-style-type: none"> • Generate design proposals: <ul style="list-style-type: none"> <input type="checkbox"/> Identify the resources needed <input type="checkbox"/> Plan the stages of manufacture <input type="checkbox"/> Evaluate proposals against a specification <input type="checkbox"/> Understand the relevance of function and aesthetics (in terms of appreciation of the use of line, shape, form, proportion, space, colour and texture) as appropriate to their designed solutions and the work of others <input type="checkbox"/> Understand the importance of anthropometrics and ergonomics <input type="checkbox"/> Use modeling to test proposals.
7.1	Environment and sustainability	Select materials based on environmental and sustainable considerations
7.2	Environment and sustainability	Understand the need for recycling
7.3	Environment and sustainability	Identify materials that can be recycled and those that cannot, including the use of recycling symbols on products
7.4	Environment and sustainability	<ul style="list-style-type: none"> • Understand the importance of disassembly of products and the reuse of parts • Understand that products may be designed with a limited lifetime.
8.1	Control	Identify the features of a control system in terms of inputting devices, processing elements, output devices, feedback.
9.1	Evaluation	Use different methods and sources to assess the effectiveness of a product (e.g. sampling, questionnaires, interviews)
9.2	Evaluation	Suggest any possible modification and improvements (consideration to include functional, safety, aesthetic, ergonomic and economic factors).
10.1	Implementation and realization	Show an awareness of the correct and accurate methods of drawing, marking out and testing
10.2	Implementation and realization	Select appropriate processes for shaping, forming, cutting, joining, fitting, assembling and finishing a variety of materials.
11.1	Health and safety	<ul style="list-style-type: none"> • Show an awareness of the correct use of hand and machine tools and equipment • Understand the need to take all mandatory and necessary safety precautions when using a variety of tools, machines, materials and other resources

WEEK	TOPIC	TOPIC DETAILS
11.2	Health and safety	Understand the responsibility of designers to ensure that products are safe to use
11.3	Health and safety	Understand the importance of personal safety and the safety of others when designing and making products
11.4	Health and safety	Recognize basic safety symbols used in the workshop
12.1	REVISION	REVISION
13.1	REVISION	REVISION

DESIGN & TECHNOLOGY SCHEME OF WORK

FORM 4 - TERM 3

WEEK	TOPIC	TOPIC DETAILS
1.1	Initiation and development of ideas, and recording of data	Extract relevant information from sources, and interpret and record information and data
2.1	Communication of design ideas	Use technical vocabulary, number skills, colour, shading and other media to produce sketches, models, diagrams, drawings and written materials, which communicate their ideas with precision and clarity.
3.1	Use of technology in design and making	<ul style="list-style-type: none">• Research existing products (for example by using the internet)• Understand the benefits of CAD/CAM when designing and manufacturing one-off or batch production
3.2	Use of technology in design and making	<ul style="list-style-type: none">• Understand how CAD can be used to generate 2D and 3D images• Understand how CAD/CAM is used in industry
3.3	Use of technology in design and making	Have an awareness and understanding of how computers can enhance stock control and quality control
3.4	Use of technology in design and making	Have an awareness and understanding of how computers can enhance stock control and quality control
4.1	Planometric	Understand and draw planometric views at 45° X 45° and 60° X 30°, including circles and arcs (scaling is not required).
5.1	Estimated one-point and two-point perspective	Understand and draw estimated perspective, using on- point and two-point starts and perspective grids

WEEK	TOPIC	TOPIC DETAILS
6.1	Sectional views	Select the most suitable section and draw whole, part, revolved and removed sections.
7.1	Exploded views and Assembly drawings	Draw exploded views of component parts along one axis only
7.2	Exploded views and Assembly drawings	Assemble given component parts into a single drawing, including parts lists
8.1	Enlarging and reducing	Use graphical methods to enlarge/reduce a shape to fit within a given size or location
8.2	Enlarging and reducing	<ul style="list-style-type: none"> • Apply one-point perspective to enlarge/reduce a shape • Use a graphical method to enlarge/reduce a line to a given scale or ratio.
9.1	Presentation	<ul style="list-style-type: none"> • Demonstrate the following range of techniques: <ul style="list-style-type: none"> <input type="checkbox"/> Thin and thick line <input type="checkbox"/> Light and shade to show form and mass <input type="checkbox"/> Textural representations to illustrate a range of materials <input type="checkbox"/> Colour rendering using a range of materials and aids
9.2	Presentation	Select the most relevant method to present information for a particular purpose
9.3	Presentation	Demonstrate the different modes of drawing diagrams and lettering necessary for the communication of information according to content, purpose and user
9.4	Presentation	<ul style="list-style-type: none"> • Demonstrate an awareness of varied lettering effects produced by the use of: <ul style="list-style-type: none"> <input type="checkbox"/> Different lettering styles <input type="checkbox"/> Different lettering spacing <input type="checkbox"/> Dry transfer methods <input type="checkbox"/> Stencils <input type="checkbox"/> Computer-generated lettering
10.1	Data graphics	Produce line, pie, bar and flow charts/graphs from data provided
10.2	Data graphics	Produce sequence drawings from data provided
10.3	Data graphics	Show an understanding of the range and purpose of standardized signs and symbols.
11.1	REVISION	REVISION
12.1	REVISION	REVISION

