ASSESSMENT OUTLINE
MATERIAL, DESIGN & TECH METAL – GENERAL YEAR 12: 2021
UNIT 3 AND UNIT 4

Assessment type	Assessment type weighting	Assessment task weighting	When/due date/ start and submission date	Assessment task	Syllabus content
Design	**25%**	**10%**	**Term 1 Weeks 1-5**	***Task 1: Parts Tray Folio***	***Task 1: Parts Tray Folio*** **Design** **Design fundamentals and skills** • investigate ▪ designs in practice ▪ needs, values and beliefs of the designer/developer ▪ sources of design inspiration ▪ performance criteria for products ▪ application of design fundamentals and factors affecting design ○ aesthetics ○ measurements ○ function ○ environmental impact and considera ○ cost ○ safety **Devise** • Using communication and documentation techniques • Sketching and drawing • Rendering • Annotating Understanding the elements and principles of design where applicable in context • Line • Shape • Form • Texture • Contrast • Proportion • Balance • Colour

					• Rapid concept development techniques to generate design ideas and concepts • Final design concept using design brief and performance criteria • Review of best idea using design brief and performance criteria • Design solution • Develop best concept using annotated hand or computer generated graphics (front, back views and detailed sketches as necessary) • 2D illustrations (working/technical drawings) • 3D illustration (presentation drawings) • Inspiration/concept/storyboard • Production plans • Materials list • Costing for all materials components • Time line for stages of production • Evaluate • Final product against design brief, initial design and performance criteria related to needs, values and beliefs of the end user **Skills and techniques** • ICT, portfolio development and communication skills

					• Context appropriate drawing and relevant technical information to produce the final product to demonstrate: select appropriate materials and calculate the quantities of materials required to complete the project
		15%	**Term 2 Weeks 6-11 Term 3 Weeks 1-5**	***Task 2: Tool Box Folio***	***Task 2: Tool Box Folio*** **Design Fundamentals and Skills** • Investigate • Devise • Evaluate **Skills and techniques** • ICT, portfolio development and communication skills • Context appropriate drawing and relevant technical information to produce the final product to demonstrate: select appropriate materials and calculate the quantities of materials required to complete the project
Production	**50%**	**5%**	**Term 1 Weeks 1 – 5**	***Task 3: Parts Tray***	***Task 3: Parts Tray*** **Production Management** • Production planning • Ongoing evaluation techniques: diary, journal or portfolio notes and use of photography, to record ongoing progress/decision changes made to the project **Safety** • Correct use of personal protective equipment (PPE)where applicable • Occupational safety and health (OSH) practices

					appropriate to tasks being undertaken in the workshop • Apply risk management strategies in the workshop/studio Assess the condition of tools and machinery
		10%	**Term 1** **Weeks 6 - 9** **Term 2** **Weeks 1 - 5**	***Task 4: Tool Box***	***Task 4: Tool Box*** **Production Management** • Production planning • Ongoing evaluation techniques: diary, journal or portfolio notes and use of photography, to record ongoing progress/decision changes made to the project **Safety** • Correct use of personal protective equipment (PPE)where applicable • Occupational safety and health (OSH) practices appropriate to tasks being undertaken in the workshop • Apply risk management strategies in the workshop/studio • Assess the condition of tools and machinery **Skills and Techniques** • Select and safely apply technical skills using a range of tools and machinery appropriate to context • Identify, remove and report blunt, dull or damaged tools and machinery appropriate to context
		10%	**Term 2**	***Task 5: Machine Vice***	***Task 5: Machine Vice***

			Weeks 6 – 11 **Term 3** **Weeks 1 - 5**		**Production Management** • Production planning • Ongoing evaluation techniques: diary, journal or portfolio notes and use of photography, to record ongoing progress/decision changes made to the project **Safety** • Correct use of personal protective equipment (PPE)where applicable • Occupational safety and health (OSH) practices appropriate to tasks being undertaken in the workshop • Apply risk management strategies in the workshop/studio • Assess the condition of tools and machinery **Skills and Techniques** • Select and safely apply technical skills using a range of tools and machinery appropriate to context Identify, remove and report blunt, dull or damaged tools and machinery appropriate to context
		10%	**Term 3** **Weeks 7 – 10** **Term 4** **Week 1**	***Task 6: Trivet***	***Task 6: Trivet*** **Production Management** • Production planning **Safety** • Correct use of personal protective equipment (PPE)where applicable

					• Occupational safety and health (OSH) practices appropriate to tasks being undertaken in the workshop • Apply risk management strategies in the workshop/studio • Assess the condition of tools and machinery **Skills and Techniques** • Select and safely apply technical skills using a range of tools and machinery appropriate to context Identify, remove and report blunt, dull or damaged tools and machinery appropriate to context
		5%	**Term 1 Weeks 1 - 5**	***Task 7: Oxy Welding Exercises***	***Task 7: Oxy Welding Exercises*** • select and apply appropriate methods of fixing metals together through permanent and non-permanent joining, that could include: ▪ welding ▪ riveting ▪ types of nuts and bolts ▪ screws
		5%	**Term 2 Weeks 1 - 5**	***Task 8: MIG Welding Exercises***	***Task 8: MIG Welding Exercises*** • select and apply appropriate methods of fixing metals together through permanent and non-permanent joining, that could include: ▪ welding ▪ riveting ▪ types of nuts and bolts ▪ screws
		5%	**Term 3 Week 6 - 10**	***Task 9: Arc Welding Exercises***	***Task 9: Arc Welding Exercises*** • select and apply appropriate methods of fixing metals together through permanent and non-permanent joining, that could include: ▪ welding ▪ riveting

					▪ types of nuts and bolts ▪ screws
Response	**10%**	**2%**	**Term 1 Weeks 6 -9**	***Task 10: Ferrous, Non-Ferrous and Fixings Worksheet***	***Task 10: Ferrous, Non-Ferrous and Fixings Worksheet*** **Materials** **Nature and properties of materials** • investigate metals ▪ ferrous ○ functional differences between low, medium, high carbon steels, cast iron, cast steel • metal structure ▪ physical characteristics of mild steel • metal alloy types and classifications ▪ ferrous – steel, cast iron non-ferrous – aluminium alloys, copper alloys, nickel alloys
		2%	**Term 1 Weeks 7 - 8**	***Task 11: OSH Worksheet***	***Task 11: OSH Worksheet*** **Safety** • Correct use of personal protective equipment (PPE)where applicable • Occupational safety and health (OSH) practices appropriate to tasks being undertaken in the workshop • Apply risk management strategies in the workshop/studio • Recognise need and purpose of materials safety data (MSD) with regard to storage and Handling of hazardous substances and hazardous operations appropriate to situation
		1%	**Term 1 Week 9**	***Task 12: Tools Checklist Worksheet***	***Task 12: Tools Checklist Worksheet*** **Skills and techniques**

					• select and apply appropriate and accurate marking out tools and techniques for measuring and marking out in sheet metal, bar and tube projects, that include the use of: ▪ rule ▪ centre punch ▪ square ▪ inside/outside callipers ▪ scriber ▪ combination squares
		1%	**Term 3 Weeks 1 - 3**	***Task 13: Sustainable Materials Worksheet***	***Task 13: Sustainable Materials Worksheet*** • the environmental impact of metals production ▪ raw material extraction and processing – steel and aluminium end-of-life of a product – recycling and safe disposal **Materials in context** • examples of re-cycling methods for different metal materials
		2%	**Term 3 Weeks 4 - 7**	***Task 14: Identification, Aesthetics Worksheet***	***Task 14: Identification, Aesthetics Worksheet*** **Materials** • applications of the following metal finishes ▪ painting ▪ tin plating ▪ galvanising ▪ electroplating ▪ lacquering ▪ anodising ▪ enamelling ▪ plastic or powder coatings ▪
		2%		***Task 15: Physical Properties Worksheet***	***Task 15: Physical Properties Worksheet*** **Materials** **Nature and properties of materials** • the properties of materials ▪ non-ferrous – copper, aluminium • the properties of steel using the following terms ▪ malleable ▪ corrosion resistance ▪ ductile ▪ thermal conductivity

					▪ hardness ▪ electrical conductivity ▪ brittleness • relationship between properties and end uses of metals
EST	**15%**	**15%**	**Term 2 Weeks 3 - 4**	***Task 16: Externally Set Task***	***Task 16: Externally Set Task*** **Design** **Design fundamentals and skills** • investigate ▪ designs in practice ▪ needs, values and beliefs of the designer/developer ▪ sources of design inspiration ▪ performance criteria for products ▪ application of design fundamentals and factors affecting design ○ aesthetics ○ measurements ○ function ○ environmental impact and considera ○ cost ○ safety **Devise** • Using communication and documentation techniques • Sketching and drawing • Rendering • Annotating Understanding the elements and principles of design where applicable in context • Line • Shape • Form • Texture • Contrast

					• Proportion • Balance • Colour • Rapid concept development techniques to generate design ideas and concepts • Final design concept using design brief and performance criteria • Review of best idea using design brief and performance criteria • Design solution • Develop best concept using annotated hand or computer generated graphics (front, back views and detailed sketches as necessary) • 2D illustrations (working/technical drawings) • 3D illustration (presentation drawings) • Inspiration/concept/storyboard • Production plans • Materials list • Costing for all materials components • Time line for stages of production • Evaluate • Final product against design brief, initial design and performance criteria related to needs, values and beliefs of the end user **Skills and techniques** • ICT, portfolio development and communication skills • Context appropriate drawing and relevant technical information

					to produce the final product to demonstrate: select appropriate materials and calculate the quantities of materials required to complete the project
Total	**100%**	**100%**			

PLEASE NOTE: ASSESSMENT DATES MAY CHANGE DUE TO SCHOOL COMMITMENTS AND CHANGES TO THE SCHOOL CALENDAR