

Module Plan for Unit A – Fitting & Machining

Teacher Guide

Version 1.0
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OVERVIEW

This module plan outlines the full scope and sequence of the five modules comprising **QCAA Unit A: Fitting and Machining**. Each module targets a distinct learning focus and features purposefully sequenced lessons aligned with the *Engineering Skills 2024 v1.2 Applied Senior Syllabus*, workplace health and safety (WHS) protocols, and assessment objectives.

THE FIVE MODULES

1. Careers

This module introduces students to careers in engineering and fabrication, establishing foundational knowledge that connects classroom learning to real-world pathways. Activities, discussion prompts, and resources help students explore how the skills they are developing apply across industry roles.

2. Work Health and Safety (WHS) & Tools

Students develop awareness of workshop safety, risk management, and tool identification. This module builds essential habits for safe and effective practice in fabrication environments.

3. Drawings & Technical Information

Focused on interpreting technical drawings, this module equips students with the skills to extract specifications, identify materials, and translate design into production. It includes scaffolded examples, practice tasks, and strategies for decoding engineering documentation.

4. Assessment 1: Workshop Stool

This project-based module guides students through the production of a **drill gauge**, addressing Assessment 1 requirements. It includes demonstration guidelines, skill checkpoints, and reflective prompts to support student progress and self-evaluation.

5. Assessment 2: Camp BBQ

The final module centres on the production of a **meat mallet**, aligned with Assessment 2. Students apply their technical knowledge, safety practices, and problem-solving skills to complete a functional product. The module encourages autonomy, decision-making, and iterative improvement.



SUPPORTING RESOURCES & FLEXIBILITY

This guide provides a suite of supporting resources—including lesson plans, PowerPoint slides, worksheets, practical examples — to support teachers in delivering **Unit A: Fitting and Machining**. The level of detail and support varies across modules, reflecting feedback gathered through workshops and consultations with teachers across Queensland. These discussions helped identify the areas where educators most often sought guidance, and this guide has been developed in direct response to those needs.

The table below provides an overview of the five modules that make up **Unit A: Fitting and Machining**. Each module is aligned to specific unit objectives and includes a breakdown of the number of lessons, lesson plans, PowerPoint presentations, and worksheets provided. These resources are designed to support flexible delivery and targeted skill development across the unit.

TABLE 1: MODULE SUMMARY

Module	Unit Objectives(s)	Number of Lessons	Number of Lesson Plans	Number of Powerpoints	Number of Worksheets
1. Careers	1	1	1	1	
2. WHS & Tools	1, 3	6	6	3	10
3. Drawings & Technical Information	2, 3	6	6	6	6
4. B1: Workshop Stool	1, 2, 3, 5	7	4	6	7
5. B2: Camp BBQ	1, 2, 3, 4, 5, 6	27		7	27
Total		47	17	23	50

A **Teacher Guide on Marking and Moderation** is provided to support teachers in using the worksheets effectively. It outlines examples of assessment approaches, clarifies expected standards, and describes types of evidence students may produce. This resource may be particularly helpful for new teachers as a starting point when planning or reviewing student work.

The included **lesson plans** are designed to serve as adaptable examples. Teachers are invited to use them as a reference point to fine-tune their own planning or to develop lesson plans tailored to their specific context. Each classroom, workshop setup, and student cohort is unique, and these resources are intended to support flexible, responsive teaching.

Each lesson includes:

- **Lesson Objectives** outlining expected learning outcomes
- **Teaching Strategies** including demonstrations, practice tasks, and discussion prompts
- **Student Activities** designed to build technical and conceptual understanding
- **Success Criteria** linked to assessment evidence and skill development
- **Resources & WHS Notes** to support safe and effective delivery

A plan for each module, including individual lesson breakdowns, is provided at the end of this document to support implementation and adaptation.

The following 16-week teaching plan outlines how lessons from each module can be sequenced across the term. It is intended as a flexible guide to support planning and delivery.

**TABLE 2: EXAMPLE 16-WEEK TEACHING PLAN – UNIT B: WELDING & FABRICATION**

Week	Module(s)	Lesson Codes	Key Focus/Learning Sequence
1	M1, M2	1.1, 2.1, 2.2	Course overview, career pathways, PPE & SOPs, workshop layout & safety zones
2	M2	2.3, 2.4, 2.5	Hazard ID, risk matrix, tool safety, WHS quiz & logbook practice
3	M2, M3	2.6, 3.1, 3.2	Housekeeping & waste management, drawing introduction and conventions
4	M3	3.3, 3.4, 3.5	Drawing symbols, tolerancing, holes callout, Drill Gauge drawing analysis
5	M3, M4	3.6, 4.1, 4.2	Meat Mallet drawing analysis, material cut, marking out for Drill Gauge
6	M4	4.3, 4.4, 4.5	Hole drilling, chamfering, scale marking
7	M4, M5	4.6, 4.7, 5.1	Stamping, peer QA, A1 SUBMISSION, Meat Mallet begins
8	M5	5.2, 5.3, 5.4	Meat mallet plan, material prep
9	M5	5.5, 5.6, 5.7	Tooling selection, lathe rotations, lathe SOP & demo
10	M5	5.8, 5.9, 5.10	Turn handle, mid-project QA, mill rotations
11	M5	5.11, 5.12, 5.13	Mill SOP & demo, mill head, mark & mill teeth
12	M5	5.14, 5.15, 5.16	Continue mark & mill teeth, drill & tap hole in mallet head, tap thread
13	M5	5.17, 5.18, 5.19	Partial Assembly & QA, tolerance, final assembly & QA
14	M5	5.20, 5.21, 5.22	Photo-Journal & reflection, documentation, storyboarding & evidence draft
15	M5	5.23, 5.24, 5.25	Folio/video creation, peer review
16	M5	5.26, 5.27	Practice submission, final edits & submission (A2 SUBMISSION)



TABLE 1: MODULE 1 - CAREERS

Lesson	Plan	Title	Lesson Objectives	Activities	Success Criteria & Assessment	Resources	WHS Notes
1.1	✓	Industry Pathways in Fitting and Machining	<ul style="list-style-type: none">• Explore and identify career roles, qualifications, and pathways in the fitting and machining industry.	<ul style="list-style-type: none">• Unit Introduction and Industry Context (15 mins)• Show Sample Projects (5 mins)• Group Activity – Career Pathways Mind Mapping (15 mins)• Class Sharing and Discussion (15 mins)• Individual Reflection (10 mins)• Recap and What's Next (5 mins)	Students can identify career roles, relevant skills, and qualifications; complete mind maps and individual reflections connecting interests to pathways.	Powerpoint – Lesson 1.1	N/A



TABLE 2: MODULE 2 – WHS & TOOLS

Lesson	Plan	Title	Lesson Objectives	Activities	Success Criteria & Assessment	Resources	WHS Notes
2.1	✓	Intro to Risk Assessments, PPE & SOPs	<ul style="list-style-type: none"> Define hazard and risk Identify PPE Interpret SOP steps 	<ul style="list-style-type: none"> Warm-up and Key Concepts (15 mins) PPE Matching Activity (10 mins) Intro to SOPs (15 mins) Safety Quiz (20 mins) Review and Reflection (10 mins) 	Students explain hazard vs risk, identify PPE, and sequence SOP steps	<ul style="list-style-type: none"> PowerPoint – 2.1 Intro to RA, PPE & SOPs Safety Quiz Worksheet Safety Quiz – Answer Key & Grading 	Ensure classroom is quiz-ready; prep visuals and PPE
2.2	✓	Workshop Tour & Safety Zones	<ul style="list-style-type: none"> Locate emergency exits and signage Identify PPE and hazard zones Recognise safe movement paths 	<ul style="list-style-type: none"> Pre-Tour Briefing (10 mins) Workshop Safety Tour (30 mins) Zone Sketch (20 mins) Review and Sign-Off (10 mins) 	Students label floorplan and complete safety induction checklist	<ul style="list-style-type: none"> Workshop Tour & Safety Zones Worksheet Induction Sign-Off Sheet Workshop Induction (background info) 	Machines off; PPE worn; emergency signage visible
2.3	✓	Hazard Identification & Risk Matrix	<ul style="list-style-type: none"> Distinguish hazard vs risk Use 3x3 Risk Matrix Apply Hierarchy of Controls 	<ul style="list-style-type: none"> Introduction: Hazards and Risks (10 mins) Explore the Risk Matrix (10 mins) Apply the Matrix (30 mins) Class Discussion and Review (10 mins) Reflection and Wrap-Up (10 mins) 	Complete risk matrix and identify controls for each scenario	<ul style="list-style-type: none"> PowerPoint – 2.3 Hazard ID & Risk Matrix Hazard ID & Risk Matrix Worksheet 	Use prop tools; no active machinery; highlight control strategies
2.4	✓	Tool Identification & Safety	<ul style="list-style-type: none"> Identify tools and functions Apply tool safety practices 	<ul style="list-style-type: none"> Introduction: Tool Categories & Safety (10 mins) Teacher Demo and Power Tools (15 mins) Station Rotations + Tool ID & Safety Worksheet (40 mins) Group Debrief (5 mins) 	Students match tools to names and safety tips	<ul style="list-style-type: none"> PowerPoint – 2.4 Tool ID & Safety Tool ID & Safety Worksheet Glossary of Workshop Terms Tools Summary Sheet 	Tools remain stationary; enforce PPE and safe movement
2.5	✓	WHS Quiz & Logbook Practice	<ul style="list-style-type: none"> Complete safety quiz Record WHS info using codes 	<ul style="list-style-type: none"> WHS Quiz Introduction (10 mins) WHS Quiz Completion (25 mins) Debrief and Discussion (10 mins) Logbook Introduction and Modelling (10 mins) Logbook Entry Practice (15 mins) 	80%+ quiz score; logbook includes correct codes and reflection	<ul style="list-style-type: none"> WHS Quiz Worksheet WHS Logbook Worksheet WHS Quiz – Answer & Grading Guide 	Provide quiet space for quiz; scaffold log entry format
2.6	✓	Housekeeping & Waste Management	<ul style="list-style-type: none"> Demonstrate cleaning tasks Handle oily rags and waste Report hazards 	<ul style="list-style-type: none"> Teacher Demo: Safe Cleaning Practices (10 mins) Student Rotations: Housekeeping Stations (30 mins) Tool Damage Reporting Activity (5 mins) 	Checklist complete; quiz correct; broken tool log accurate	<ul style="list-style-type: none"> Clean-Up & Reset Checklist Broken Tool Log Sheet Post-Lesson Safety Quiz Activity Setup Guide Safety Rotation – Answer & Grading 	PPE required; use staged messes and clean-up materials safely



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- Debrief and Reflection (10 mins)
 - Post-Lesson Safety Quiz (15 mins)
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TABLE 3: MODULE 3 – DRAWING & TECHNICAL INFORMATION

Lesson	Plan	Title	Lesson Objectives	Activities	Success Criteria & Assessment	Resources	WHS Notes
3.1	✓	Orthographic and Pictorial Views	<ul style="list-style-type: none"> Recognise front, top, and side views Identify isometric and orthographic views Interpret technical drawing conventions and symbols Describe the purpose of using multiple views in engineering 	<ul style="list-style-type: none"> What Are Technical Drawings (10 mins) Comparing Views (15 mins) Matching Views Group Activity (25 mins) Class Discussion (10 mins) Reflection and Recap (10 mins) 	Students explain differences between views, match views accurately, and use technical terms	<ul style="list-style-type: none"> PowerPoint – 3.1 Orthographic & Pictorial Views Worksheet – 3.1 Matching Activity Answer Sheet – 3.1 	N/A
3.2	✓	Dimensions, Scales, and Drawing Symbols	<ul style="list-style-type: none"> Interpret dimensions, scales, and drawing symbols Identify annotations (e.g. tolerances, finishes) Recognise material types and title block info 	<ul style="list-style-type: none"> Warm-up Activity (15 mins) Dimensions and Title Blocks (25 mins) Hazard ID from Drawings (30 mins) 	Explain dimensions, annotate drawings, detect hazards and controls	<ul style="list-style-type: none"> PowerPoint – 3.2 Dimensions, Scales and Symbols Technical Drawing – Punch Body 	N/A
3.3	✓	Hole Sizes & Tolerances	<ul style="list-style-type: none"> Recognise \varnothing, depth, Ra symbols Interpret tolerance notation and fit types Analyse technical drawings 	<ul style="list-style-type: none"> Intro to Hole Features (15 mins) Worked Example – Tolerances (15 mins) Paired Drawing Analysis (15 mins) Class Q&A + Self-Check (15 mins) Recap and Industry Link (10 mins) 	Identify hole callouts, interpret tolerances, match fit types	<ul style="list-style-type: none"> PowerPoint – 3.3 Hole sizes and Tolerances Worksheet – 3.3 Drawing Analysis 	Theory lesson – connect to machining in future
3.4	✓	Sections & Material Naming Conventions	<ul style="list-style-type: none"> Match standard sections and polymer codes Apply material knowledge to design context 	<ul style="list-style-type: none"> Intro to Material Shapes (15 mins) Visual Exploration (10 mins) Worksheet Application – Monkey Bars Task (25 mins) Peer Discussion (10 mins) Share & Reflection (10 mins) 	Identify sections and codes, justify design material choices	<ul style="list-style-type: none"> PowerPoint – 3.4 Sections and Material Naming Conventions Worksheet – 3.4 Steel Sections 	Supports accurate material selection for safety
3.5	✓	Interpret Drill Gauge Drawing	<ul style="list-style-type: none"> Extract drawing info: dimensions, materials, finish Identify PPE and hazards Plan production steps 	<ul style="list-style-type: none"> Drawing Overview – Spec Walk (15 mins) Q&A and Symbol Recap (10 mins) Complete Worksheet (25 mins) Peer Review (10 mins) Recap and Project Link (10 mins) 	Correct drawing interpretation and process planning on worksheet	<ul style="list-style-type: none"> PowerPoint – 3.5 Interpret Drill Gauge Drawing Worksheet – 3.5 Interpret Drawing 	Planning includes WHS controls and PPE selection
3.6	✓	Interpret Meat Mallet Drawing	<ul style="list-style-type: none"> Interpret exploded and orthographic views 	<ul style="list-style-type: none"> Drawing Walkthrough (15 mins) Complete Worksheet (30 mins) 	Completed worksheet with correct specs and WHS notes	<ul style="list-style-type: none"> PowerPoint – 3.6 Interpret Meat Mallet Drawing 	Ensure safe layout and



- Identify material, tolerances, sequence steps
- Apply WHS knowledge to build planning

- Peer Discussion (10 mins)
- Class Debrief (10 mins)
- Recap and Link to Project (5 mins)

- Worksheet – 3.6 Interpret Drawing

visibility when handling parts

SAMPLE



TABLE 4: MODULE 4 – DRILL GAUGE

Lesson	Plan	Title	Lesson Objectives	Activities (70 min)	Success Criteria & Assessment	Resources	WHS Notes
4.1	✓	Material Prep, Cut to Length, Deburr & SOPs	<ul style="list-style-type: none"> Source & identify material Cut blank to length Apply hacksaw/bandsaw SOP 	<ul style="list-style-type: none"> Introduction & Learning Intentions (10 mins) Material Prep Demo & Safety Brief (15 mins) Student Activity – Marking Out & Cutting (30 mins) Clean-Up & Debrief (10 mins) Reflection & Next Steps (5 mins) 	Material to length within tolerance; SOP followed; PPE correctly worn	<ul style="list-style-type: none"> PowerPoint – 4.1 Basic Bandsaw Operation PowerPoint – 4.1 Material Preparation Worksheet – Material Prep & SOP Compliance 	PPE and push sticks at saw; No loose clothing
4.2	✓	Marking Out & Center-Punching	<ul style="list-style-type: none"> Use tools to mark out holes & cut positions Centre-punch all hole locations 	<ul style="list-style-type: none"> Introduction & Tool Overview (10 mins) Marking Out Demonstration (10 mins) Student Activity – Marking Out (20 mins) Centre Punching (15 mins) Peer Review & Reflection (10 mins) Wrap-Up and Clean-Up (5 mins) 	At least 4 correct hole positions; clean punch marks with minimal drift	<ul style="list-style-type: none"> PowerPoint – 4.2 Marking Out and Center Punching Worksheet – 4.2 Marking Out & Center Punching Sample drill gauge or drawing for reference 	Gloves off during punch; PPE
4.3	✓	Drilling & Hole Deburring	<ul style="list-style-type: none"> Apply drill press SOP Drill marked holes to correct size and position Deburr all edges post-drill 	<ul style="list-style-type: none"> Demo: drill press setup clamping and SOP (10min) Students drill holes using marked layout (25min) Deburr holes and inspect (15min) QA partner check 	Holes drilled to correct diameter and position; edges clean; SOP followed	<ul style="list-style-type: none"> PowerPoint – 4.3 Drill Press, Tooling, Speeds and Feeds Worksheet – Drill Press 	Clamp required; no gloves at drill; PPE
4.4	✓	Profile Cutting & Chamfering	<ul style="list-style-type: none"> Cut angles & side edges to spec Chamfer web face Apply angle measuring tools 	<ul style="list-style-type: none"> Demo: band saw + angle guide (10min) File or sand to shape and chamfer face (30min) Check angles with protractor (10min) Chamfer depth feedback 	Profile matches drawing within tolerance; chamfer is clean and symmetric	<ul style="list-style-type: none"> Worksheet – Profile Cutting & Chamfering 	Secure workpiece during sanding and measuring, PPE
4.5		Scale Marking & Final Finishing	<ul style="list-style-type: none"> Mark scale along chamfer using scribe or height gauge Final deburr using chamfer or countersink bit on drill press or milling machine and QA ready 	<ul style="list-style-type: none"> Mark lines on chamfer (20min) Peer QA with measurement tools (30min) Teacher mini-review 	Scale visible and evenly spaced; edges smooth and tolerances met	<ul style="list-style-type: none"> Worksheet – Scale Marking & Final Finishing 	Steady hand needed for scale lines; gloves off during marking, PPE
4.6		ID Stamping & Peer QA	<ul style="list-style-type: none"> Stamp product ID Apply Peer QA 	<ul style="list-style-type: none"> Stamp station (15min); Peer QA and feedback (35min) 	Stamp is clear & central; student articulates one improvement area	<ul style="list-style-type: none"> PowerPoint – 4.6 ID Stamping Worksheet – ID Stamping & Peer QA 	Use stamping jig; control force and angle, PPE



			<ul style="list-style-type: none">• Reflection journal			
4.7	Evaluation & Submission	<ul style="list-style-type: none">• Complete self-evaluation• Submit product and documentation	<ul style="list-style-type: none">• Self-assessment rubric (20min)• Submit drill gauge with journal (30min)• A1 teacher sign-off	Journal reflection includes process, adjustments, and key learning	<ul style="list-style-type: none">• Worksheet – Evaluation & Submission• Worksheet – AI Checklist• Worksheet – Submission Cover Letter – Drill Gauge	Journals labelled; place gauges in moderation tray

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TABLE 5: MODULE 5 – MEAT MALLET

Lesson	Plan	Title	Lesson Objectives	Activities (70 min)	Success Criteria & Assessment	Resources	WHS Notes
5.1		Project Intro, Roles Assignment, & Communication	<ul style="list-style-type: none"> • Interpret drawings & instructions • Select roles & identify responsibilities • Demonstrate teamwork 	<ul style="list-style-type: none"> • Slide walkthrough + parts preview (20min) • Team role discussion and assignment (30min) 	Identify roles & responsibilities, and understand project requirements	<ul style="list-style-type: none"> • PowerPoint – 5.1 Project Overview & Role Assignment • Worksheet – Team Roles & Project Agreement 	N/A
5.2		Draft Production Plan, Machine and Hazard identification	<ul style="list-style-type: none"> • Sequence steps • Identify tools and hazards • Estimate timeline 	<ul style="list-style-type: none"> • Identify machines required, production processes, and timeline (40min) • Hazard planning (10min) 	Plan includes materials, tools, hazards, and realistic timing	<ul style="list-style-type: none"> • PowerPoint – 5.2 Production Plan, Machines & Hazard Identification • Worksheet – Production Planning & Hazard Identification 	Highlight unsafe or missing process steps
5.3		Peer Review & Final Plan	<ul style="list-style-type: none"> • Review peer plan • Finalise edits and submit 	<ul style="list-style-type: none"> • Peer swap plan & review (25min) • Self-revision + teacher sign-off (25min) 	Revised plan improves clarity, risk control, and logic	<ul style="list-style-type: none"> • Worksheet – Peer Review & Final Plan 	N/A
5.4		Material Verification and Rough-Cut Length for Mallet Parts	<ul style="list-style-type: none"> • Interpret cutting list and drawing to identify correct material • Measure and mark rough-cut lengths • Apply safe cutting techniques 	<ul style="list-style-type: none"> • Review cutting list and drawing (15min) • Locate and verify correct material (10min) • Measure and mark lengths (15min) • Cut to rough size using bandsaw or hacksaw (20min) 	<ul style="list-style-type: none"> • Material matches drawing specs; Cuts within ± 2mm of rough lengths; Safe handling observed 	<ul style="list-style-type: none"> • Worksheet – Material Verification & Rough0Cut Length 	Supervise cutting; PPE, Clear offcuts promptly
5.5		Tooling Selection for Lathe Tasks	<ul style="list-style-type: none"> • Identify appropriate lathe tooling to use 	<ul style="list-style-type: none"> • Slide + Tool ID activity (50min) 	Students correctly ID 3+ tool types and operations	<ul style="list-style-type: none"> • PowerPoint – 5.5 Tooling Selection for Lathe • Worksheet – Tool ID Lathe Operation Worksheet 	PPE, Handle tools under supervision only
5.6		Lathe Rotations & Setup Journals	<ul style="list-style-type: none"> • Operate lathe in rotation • Record setup settings 	<ul style="list-style-type: none"> • Slide & demo - students rotate through lathe in small groups (10-15min each); others calculate appropriate speed and feed rates for cutter, and drill settings for handle. • Record settings in journal (10min) 	Accurate recording of settings in journal	<ul style="list-style-type: none"> • PowerPoint – 5.6 Basic Operations and Movements of a Lathe • Worksheet – Lathe Rotation & Setup Journal • Worksheet – Lathe Machine 	PPE, Tool handovers monitored for safe transitions



5.7	Lathe SOP & Lathe Threading Demo	<ul style="list-style-type: none"> Follow safe lathe SOP Face blanks square 	<ul style="list-style-type: none"> Facing demo (15min) Hands-on student facing (35min) 	Faces square within tolerance; correct PPE and tool use	<ul style="list-style-type: none"> Worksheet – Lathe SOP & Facing 	PPE, Supervision at all times
5.8	Turn Handle to Diameter Spec	<ul style="list-style-type: none"> Machine part to \varnothing within tolerance Measure with calipers 	<ul style="list-style-type: none"> Turn shaft (40min) Measure and verify accuracy (10min) 	\varnothing tolerance achieved and measured independently	<ul style="list-style-type: none"> Worksheet – Turning to Diameter & Measurement 	PPE, Measurement stations spaced evenly
5.9	Mid-Project QA & Reflection	<ul style="list-style-type: none"> Conduct QA of parts Reflect on challenges and results 	<ul style="list-style-type: none"> Complete QA checklist (30min) Journal reflection on skills/defects (20min) 	QA form and reflection complete, showing error recognition	<ul style="list-style-type: none"> Worksheet – Mid-Project QA & Reflection 	No metal working active during reflection
5.10	Mill Rotations & Setup Journals	<ul style="list-style-type: none"> Observe and describe mill axis and rotation directions Record safe setup procedures and identify key safety features Interpret machine functions and controls through guided demonstration 	<ul style="list-style-type: none"> Students rotate through mill demos in small groups (10-15 min each); others update setup journal and complete rotation quiz 	All students complete journal with accurate notes; identify spindle direction and safe handling	<ul style="list-style-type: none"> PowerPoint – 5.10 Manual Milling Machining and Tooling Worksheet – Mill Rotations & Machine Setup Worksheet – Quiz-Answer&Grading Worksheet – Milling Machine 	Supervise moving spindles; maintain group spacing; PPE
5.11	Mill SOP & Demo	<ul style="list-style-type: none"> Understand and follow SOP for vertical mill 	<ul style="list-style-type: none"> Live demo of safe operation+ SOP (15min) Hands-on student milling (35min) 	Demonstrates safe startup and shutdown procedure	<ul style="list-style-type: none"> Worksheet – Vertical Mill SOP & Demonstration 	Emphasise PPE, no loose clothing, and emergency procedures
5.12	Mill Head to Size	<ul style="list-style-type: none"> Square up head stock Mill to length/ width/ depth 	<ul style="list-style-type: none"> Demo on squaring block (10min) Students mill blank to spec (40min) 	Accurate dimensions across 3 axes; Flatness and burr-free	<ul style="list-style-type: none"> Worksheet – Mill Head to Size 	PPE, Secure workpiece, Chip ejection awareness, Use brush - not hands
5.13	Mark and Mill Teeth on Head I	<ul style="list-style-type: none"> Mark layout for teeth Mill symmetrical pattern using appropriate tooling 	<ul style="list-style-type: none"> Layout lines with marking blue + dividers (15min) Mill tooth pattern to spec (35min) 	<p>Consistent tooth depth and spacing</p> <p>Clean edges</p> <p>Peer review of patter</p>	<ul style="list-style-type: none"> Worksheet – Tooth Layout & Milling 	PPE, sharp edge control, clamp checks
5.14	Mark and Mill Teeth on Head II	<ul style="list-style-type: none"> Refine milling technique Achieve uniformity across all teeth 	<ul style="list-style-type: none"> Continue milling remaining teeth (40min) Peer review and adjust (10min) 	All teeth match layout; Symmetry and finish improved from previous session	<ul style="list-style-type: none"> Worksheet – Tooth Layout & Milling (same as 5.13) 	PPE, Maintain tool sharpness,



						monitor heat buildup
5.15	Drill & Tap Blind Hole in Mallet Head	<ul style="list-style-type: none"> Accurately position and drill the hole for handle thread Apply layout and drilling techniques to design specs Deburr using chamfer or countersink bit on drill press or milling machine 	<ul style="list-style-type: none"> Layout using scribe, square and marking blue (15min) Drill using milling machine (35min) 	Hole centered, correct depth and diameter; minimal burring	<ul style="list-style-type: none"> Worksheet – Drill & Tap Blind Hole 	PPE, Clamp workpiece securely, Check depth stop
5.16	Tap Thread to Spec	<ul style="list-style-type: none"> Use tap handle to create internal thread Apply correct technique and lubrication for clean cut 	<ul style="list-style-type: none"> Demo 3-stage tap set (taper / intermediate / bottoming) (15min) Tap and test fit (35min) 	Thread fits handle; clean start and finish; threading motion consistent	<ul style="list-style-type: none"> PowerPoint – 5.16 Tap Thread to Specification Worksheet – Tapping the Handle Thread 	PPE, Reinforce reversing technique, Align tap square to surface
5.17	Partial Assembly & QA	<ul style="list-style-type: none"> Fit head/handle and test for clearance 	<ul style="list-style-type: none"> Assemble mallet (30min) Peer QA form on alignment (20min) 	QA form complete with tolerances recorded	<ul style="list-style-type: none"> Worksheet – Fit Review Log – Mallet Assembly QA 	Test fit monitored for safety; uneven heads flagged
5.18	Tolerance Troubleshooting Workshop	<ul style="list-style-type: none"> Diagnose machining defects Propose tolerancing fixes 	<ul style="list-style-type: none"> Analyse defect samples (25min) Paired fault diagnosis (25min) 	Defect cause & correction identified in team task	<ul style="list-style-type: none"> PowerPoint – 5.18 Tolerance Troubleshooting Worksheet – Tolerance Troubleshooting 	All sharp edges flagged and safe
5.19	Final Assembly & Fit-Check	<ul style="list-style-type: none"> Fully assemble mallet Inspect fit, alignment, and balance 	<ul style="list-style-type: none"> Assemble (30min) Peer review using fit + function sheet (20min) 	Correct tool use; assembly smooth and to tolerance	<ul style="list-style-type: none"> Worksheet – Final Assembly & Fit-Check 	PPE, Threaded parts secured before checks
5.20	Photo-Journal & Lessons Learned	<ul style="list-style-type: none"> Photograph final product Collation of journal reflections 	<ul style="list-style-type: none"> Photo setup + capture (20min) Reflection journal (30min) 	Photo attached; entry includes build strengths and future focus	<ul style="list-style-type: none"> Worksheet – Photo-Journal & Reflection 	Cords taped down; files saved digitally
5.21	Team Documentation	<ul style="list-style-type: none"> Reflect on team decisions, outcomes, and improvements 	<ul style="list-style-type: none"> Assessment review (20min) Plan sections (30min) 	Layout shows sequence, captions, visual intentions	<ul style="list-style-type: none"> Worksheet – Team Documentation Worksheet – Team Submission Cover Sheet – Project Documentation 	N/A



5.22	Individual Documentation	<ul style="list-style-type: none"> Identify individual roles and contribution toward the project Map evidence to project steps 	<ul style="list-style-type: none"> Self-review of assessment review (50min) 	Clarify team vs. individual ownership of content	<ul style="list-style-type: none"> Worksheet – Individual Documentation 	N/A
5.23	Folio/Video Creation I	<ul style="list-style-type: none"> Plan folio/video structure Sequence layout of video/folio 	<ul style="list-style-type: none"> Draft intro and build summary Insert visuals and captions 	Draft has intro, timeline or process elements clear	<ul style="list-style-type: none"> Worksheet – Folio-Video Creation 	N/A
5.24	Folio/Video Creation II	<ul style="list-style-type: none"> Draft QA and reflection segments 	<ul style="list-style-type: none"> Continue creating project evaluation and challenges section (50min) 	Includes strengths, errors, improvements with visuals	<ul style="list-style-type: none"> Worksheet – Folio-Video Creation – Evaluation & Reflection 	N/A
5.25	Peer Review: Feedback for Revision	<ul style="list-style-type: none"> Provide assessment-linked peer review 	<ul style="list-style-type: none"> Peer swap + assessment notes (30min) Fix-it checklist begins (20min) 	Specific, constructive feedback recorded and considered	<ul style="list-style-type: none"> Worksheet – Peer Review – Feedback for Revision 	N/A
5.26	Practice Submission & Review Simulation	<ul style="list-style-type: none"> Simulate formal submission and moderation 	<ul style="list-style-type: none"> Folio check against assessment (30min) Peer QA as "teacher" (20min) 	Product + evidence meets full submission expectations	<ul style="list-style-type: none"> Worksheet – Practice Submission Review 	N/A
5.27	Final Edits + Teacher Conference	<ul style="list-style-type: none"> Finalise folio or video for submission Seek and apply teacher feedback 	<ul style="list-style-type: none"> Individual teacher check-ins (10-15mins each) Students edit folio/video independently (35-40min) 	All required sections complete; teacher feedback applied; submission-ready	<ul style="list-style-type: none"> Worksheet – Final Submission Worksheet – Submission Cover Letter – Meat Mallet 	N/A