Assessment Task Notification

THE RIVERS SECONDARY COLLEGE
The heart of secondary education for Lismore

Task Number	4	Task Name	CAD Modelling Skills Test
Course	iSTEM 200-hour	Faculty	TAS
Teacher	Mrs Hodgman	Head Teacher	Ms Godden
Issue date	Term 3 Week 1	Due date	Monday 22nd September 2025 Term 3 Week 10
Focus (Topic)	Major Project	Task Weighting	10%

Context:

In industry, engineers and designers must interpret technical instructions and create accurate digital prototypes using CAD software. These models communicate precise design intent and often include multiple components, assemblies, and advanced features.

In this assessment, students will apply their CAD skills to construct a series of components using Onshape within a supervised 90-minute session. They will demonstrate proficiency in interpreting instructions, applying CAD tools, and organising their model within a professional workflow.

Task Summary:

In a 90-minute exam-style task, you will be required to complete a set of unseen CAD modelling challenges using Onshape. These challenges will include:

- Reading and interpreting a series of technical drawings and feature instructions

- Creating separate parts using different modelling tools (each in its own tab)

- Demonstrating skills in sketching, extruding, revolving, lofting, sweeping, and applying constraints

- Creating a simple assembly of at least two parts

- Providing screenshots of each part and the final assembly with correct views

You will not need to memorise tool steps but will be expected to follow instructions carefully and use Onshape confidently.

Assessment Components:

You will be asked to:

- Create multiple 3D models in separate part studio tabs
- Interpret technical instructions and/or orthographic sketches to create accurate parts
- Apply a range of CAD tools such as:
  - Sketching and dimensioning
  - Extrude, Revolve, Sweep, and Loft
  - Fillet, Shell, Mirror, and Pattern
- Use appropriate constraints and modelling techniques to maintain accuracy
- Assemble at least two parts using mate/connect tools in an Assembly tab
- Take screenshots of your final models (top, side, front and isometric views)
- Annotate screenshots briefly to identify key features and tools used

You will submit your work as a shared Onshape file and a Word/Google Doc with embedded screenshots and annotations.

Outcomes Assessed:

- **ST5-1:** Designs and develops creative, innovative, and enterprising solutions

- **ST5-2:** Demonstrates critical thinking, creativity, problem solving, and engineering design skills

- **ST5-6:** Selects and safely uses a range of technologies in the development, evaluation, and presentation of solutions

- **ST5-8:** Uses a range of techniques and technologies to communicate design solutions and technical information

Marking Criteria

Total: /50 Marks

Criteria	9–10 High Achievement	7–8 Commendable	5–6 Sound	3–4 Basic	0–2 Limited
1. Accuracy of Part Modelling (ST5-2, ST5-6)	All parts precisely match the given technical instructions; dimensions and geometry are accurate; excellent attention to detail.	Minor errors in dimensions or features; model closely follows instructions.	Most features correct; some misinterpretation or omissions in detail.	Parts are generally recognisable but contain multiple errors or missing features.	Significant inaccuracies; parts are incomplete or unrecognisable.
2. Use of CAD Tools and Features (ST5-1, ST5-6)	Effectively uses a wide range of tools (e.g. sketch, extrude, revolve, sweep, loft, pattern, fillet); tools are used appropriately for each part.	Most required tools are used effectively; some minor misuse or underuse.	Uses at least 3–4 tools with basic accuracy; inconsistent application.	Uses only basic tools (e.g. sketch + extrude); higher-level tools not attempted.	Limited or incorrect use of tools; CAD modelling lacks complexity.
3. Assembly Creation and Constraints (ST5-2, ST5-6)	Functional, complete assembly using correct mate/connect tools; constraints are realistic and precise.	Assembly is mostly functional with minor mate issues.	Basic assembly created with minimal constraints applied.	Attempted assembly; parts poorly aligned or disconnected.	No functional assembly or no attempt made.
4. Organisation and Evidence (Tabs, Screenshots, Annotations) (ST5-8)	All parts in clearly named tabs; all views (top, side, front, isometric) captured with labelled screenshots and brief annotations.	Most views/screenshots included; parts named and organised with some annotation.	Evidence submitted with some clarity; basic or missing annotation; some screenshots incomplete.	Limited screenshots or naming; lacks clarity in structure.	Poor or no visual evidence submitted; disorganised or missing work.
5. Communication and Technical Reasoning (ST5-1, ST5-8)	Clear explanation through annotations; design intent and modelling decisions are well-communicated; strong problem-solving demonstrated.	Communicates modelling intent with reasonable clarity; responds well to challenges.	Some evidence of design reasoning; annotations present but may lack depth.	Basic annotation; limited explanation of decisions; problem-solving not evident.	No communication of design thinking; annotations absent or unclear.