

# Unit Outline (Higher Education)

**Institute / School:** Institute of Innovation, Science & Sustainability

**Unit Title:** Manufacturing Engineering

**Unit ID:** ENGIN3305

**Credit Points:** 15.00

**Prerequisite(s):** (ENGIN1003)

**Co-requisite(s):** Nil

**Exclusion(s):** (ENMEC3110)

**ASCED:** 030701

**Description of the Unit:**

This unit is intended to engage students with the field of manufacturing engineering and familiarise them with modern techniques and methods adopted for processing and product development. In so doing, attention will be given to such aspects as profitability, sustainability and appropriateness of manufacturing methods selected for a given design. Students enrolled in the unit will engage in problem solving and research-based activities.

**Grade Scheme:** Graded (HD, D, C, P, MF, F, XF)

**Work Experience:**

Not wholly work experience: Student is not undertaking work experience in industry or student is undertaking work experience in industry where learning and performance is directed by the provider.

**Placement Component:** No

**Supplementary Assessment:** Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment

**Course Level:**

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Introductory	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Learning Outcomes:

On successful completion of the unit the students are expected to be able to:

#### Knowledge:

- K1.** Describe and analyse different methods of manufacturing technology.
- K2.** Explain aspects of materials and their processing used in selecting a manufacturing method.
- K3.** Describe and investigate component assembly techniques.
- K4.** Analyse the role of sustainability in modern manufacturing operations.
- K5.** Classify and describe a range of production methods including the use of automation.

#### Skills:

- S1.** Communicate technical results effectively using appropriate technologies.
- S2.** Work effectively both independently and in teams.
- S3.** Demonstrate the use of quality procedures in manufacturing operations.
- S4.** Evaluate and select manufacturing processes appropriate to material type and finished component.

#### Application of knowledge and skills:

- A1.** Prepare essays, reports and presentations to communicate technical results.
- A2.** Apply Value Adding/Value Engineering principles to a manufacturing process.
- A3.** Use knowledge of materials and processes to select appropriate manufacturing methods for certain components.
- A4.** Construct relevant quality procedures to identify possible problems in a manufacturing process.

#### Unit Content:

Topics may include:

- Machining - machine tools such as turning, drilling, milling, grinding etc. Chip formation, tool wear, application to various materials and productivity.
- Metal shaping - rolling, forging, extrusion, drawing, bending etc. Machines, tools and forming forces. Applications or processes and materials.
- Casting - expendable mould and multiple use mould methods. Furnaces, injection and gravity methods.
- Rapid prototyping methods and applications.

- Automated production systems and applications
- Value adding and value engineering - quality and improvement.

**Learning Task and Assessment:**

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1 - K5, S3, S4, A1 - A4	Within the unit a selection of tutorial questions will be assessed.	Submitted solutions	20 - 30%
K1 - K5, S1 - S4, A1 - A4	Laboratory work and-or industry based assignment(s)	Written report(s) and/or oral presentation(s)	30 - 40%
K1- K5, S3, S4, A1 - A4	Assessment of all or part of the unit.	End of semester test.	40 - 50%

**Adopted Reference Style:**

Other (IEEE: Refer to the library website for more information)

Refer to the [library website](#) for more information

Fed Cite - [referencing tool](#)