



# Course Outline (Higher Education)

<b>School:</b>	School of Engineering, Information Technology and Physical Sciences
<b>Course Title:</b>	MANUFACTURING ENGINEERING
<b>Course ID:</b>	ENGIN3305
<b>Credit Points:</b>	15.00
<b>Prerequisite(s):</b>	ENGIN1003
<b>Co-requisite(s):</b>	Nil
<b>Exclusion(s):</b>	(ENMEC3110)
<b>ASCED:</b>	030701

## Description of the Course:

This course 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 course will engage in problem solving and research-based activities.

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

**Placement Component:** No

**Supplementary Assessment:** Yes

Where supplementary assessment is available a student must have failed overall in the course but gained a final mark of 45 per cent or above and submitted all major assessment tasks.

## Program Level:

Level of course in Program	AQF Level of Program					
	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 course the students are expected to be able to:

**Knowledge:**

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

**Skills:**

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

**Application of knowledge and skills:**

- A1.** Prepare 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.** Conduct relevant quality procedures to identify possible problems in a manufacturing process.

**Course 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.

**Values:**

- V1.** Recognise the importance and relevance of different manufacturing methods.

- V2.** Appreciate the need for innovation in manufacture.
- V3.** Recognise the advantages to manufacturing by process improvement.
- V4.** Adopt professional and ethical approaches in dealing with others.

### Graduate Attributes

The Federation University FedUni graduate attributes (GA) are entrenched in the [Higher Education Graduate Attributes Policy](#) (LT1228). FedUni graduates develop these graduate attributes through their engagement in explicit learning and teaching and assessment tasks that are embedded in all FedUni programs. Graduate attribute attainment typically follows an incremental development process mapped through program progression. **One or more graduate attributes must be evident in the specified learning outcomes and assessment for each FedUni course, and all attributes must be directly assessed in each program**

Graduate attribute and descriptor		Development and acquisition of GAs in the course	
		Learning Outcomes (KSA)	Assessment task (AT#)
GA 1 Thinkers	Our graduates are curious, reflective and critical. Able to analyse the world in a way that generates valued insights, they are change makers seeking and creating new solutions.	K1-K5, S3, S4, A4	AT1, AT2, AT3, AT4
GA 2 Innovators	Our graduates have ideas and are able to realise their dreams. They think and act creatively to achieve and inspire positive change.	K1-K5, S2-S4, A2-A4	AT1, AT2, AT3
GA 3 Citizens	Our graduates engage in socially and culturally appropriate ways to advance individual, community and global well-being. They are socially and environmentally aware, acting ethically, equitably and compassionately.	K4, S1, S2, A1	AT1, AT2, AT3, AT4
GA 4 Communicators	Our graduates create, exchange, impart and convey information, ideas, and concepts effectively. They are respectful, inclusive and empathetic towards their audience, and express thoughts, feelings and information in ways that help others to understand.	K1, K2, K3, S1, S2, A1	AT1, AT2, AT3, AT4
GA 5 Leaders	Our graduates display and promote positive behaviours, and aspire to make a difference. They act with integrity, are receptive to alternatives and foster sustainable and resilient practices.	S1, S2, A1	AT1, AT2, AT3

### Learning Task and Assessment:

Learning Outcomes Assessed	Learning Tasks	Assessment Type	Weighting
K1 - K5, S3, S4, A1 - A4	Within the course a selection of tutorial questions will be assessed.	Report	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 course by examination.	End of semester examination.	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](#)