



Unit Outline (Higher Education)

Institute / School: Institute of Innovation, Science & Sustainability

Unit Title: FLUID DYNAMICS

Unit ID: ENGIN3301

Credit Points: 15.00

Prerequisite(s): (ENGIN2304)

Co-requisite(s): Nil

Exclusion(s): Nil

ASCED: 030701

Description of the Unit:

The unit will consolidate and further extend the principles of fluid dynamics and apply them to a range of engineering and industrial applications and provide the underlying fluid mechanic concepts involved in fluid flow to enable students to analyse more complex applied phenomena.

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

Work Experience:

No work experience: Student is not undertaking work experience in industry.

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	■	■	■	■	■	■
Intermediate	■	■	■	■	■	■

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Advanced	■	■	✓	■	■	■

Learning Outcomes:

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

Knowledge:

- K1.** Discern and identify advanced fluid dynamics concepts in industrial applications.
- K2.** Interpret and relate appropriate analytical and numerical problem-solving methods to industrial applications involving advanced fluid dynamics concepts.

Skills:

- S1.** Translate theoretical knowledge into a controlled laboratory environment.
- S2.** Utilise a range of analytical and numerical methods to explicit and implicit advanced fluid dynamics problems.
- S3.** Distinguish between different solution techniques and methodologies.

Application of knowledge and skills:

- A1.** Apply advanced analytical and numerical techniques to solve fluid dynamics problems related to industrial applications.
- A2.** Apply advanced fluid dynamics principles and interpret results gained in a controlled laboratory environment.

Unit Content:

Topics may include:

- Fluid Dynamics
- Models, Dimensional Analysis and Similitude
- Compressible Flow
- Applications and simulations

Graduate Attributes

The Federation University Federation 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 Courses. Graduate attribute attainment typically follows an incremental development process mapped through Course progression.

One or more graduate attributes must be evident in the specified learning outcomes and assessment for each FedUni Unit, and all attributes must be directly assessed in each Course

Graduate attribute and descriptor	Development and acquisition of GAs in the Unit	
	Learning Outcomes (KSA)	Assessment task (AT#)

Graduate attribute and descriptor		Development and acquisition of GAs in the Unit	
		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-K2, S1-S3, A1, A2	AT1 - AT3
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.	Not applicable	Not applicable
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.	Not applicable	Not applicable
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.	S1,A2	AT3
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.	K1-K2, S2-S3, A1	AT3

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1-K3, S2-S3, A1	Numerical problems to improve problem-solving skills.	Numerical assignment	20-30%
K3, S1, A2	Practical experience of the advanced fluid dynamics system	Lab report	15-20%
K1-K3, S2-S3, A1	Numerical problems and real engineering scenarios to test students application of key fluid dynamics concepts and problem solving methodology.	Quiz/Tests/Final Exam	10-50%

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](#)