

ENGG2300: Engineering Fluid Mechanics

Singapore PSB

Trimester 2 - 2024 (Singapore)



THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

OVERVIEW

Course Description	In this course students are introduced to fluid mechanics concepts and their application in a range of engineering contexts. It lays the foundation for subsequent courses studied in the following years.
Academic Progress Requirements	Nil
Requisites	If you have successfully completed CHEE2315 Fluid Mechanics for Chemical Engineers, or CIVL2310 Fluid Mechanics or MECH2710 Fluid Mechanics 1, you cannot enrol in ENGG2300.
Assumed Knowledge	Content covered in MATH1110 Mathematics for Engineering, Science and Technology 1 and MATH1120 Mathematics for Engineering, Science and Technology 2, or equivalent.
Contact Hours	Singapore PSB Lecture Face to Face On Campus 1 hour(s) per week(s) for 13 week(s) starting Week 1 Lecture Face to Face On Campus 2 hour(s) per week(s) for 13 week(s) starting Week 1 Tutorial Face to Face On Campus 2 hour(s) per week(s) for 13 week(s) starting Week 1
Unit Weighting	10
Workload	Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.

COURSE OUTLINE

CONTACTS

Course Coordinator	Singapore PSB Associate Professor Mahshid Firouzi (Replacement course coordinator to be confirmed shortly) Consultation: By Email
Teaching Staff	Other teaching staff will be advised on the course Canvas site.
School Office	School of Engineering (Callaghan) SENG-ADMIN@newcastle.edu.au +61 2 4921 5798

SYLLABUS

Course Content	Topics to be covered in this course include: <ul style="list-style-type: none">• Properties of fluids and flows• Fluid statics• Flow types (e.g., ideal, viscous, compressible, turbulent)• Derive and apply continuity, momentum, and Bernoulli equations for dynamic fluid systems• Dimensional analysis to analyse fluid simulations• Internal and external flows• Analysis of systems containing fluids
Course Learning Outcomes	On successful completion of this course, students will be able to: <ol style="list-style-type: none">1. Solve fluid mechanics problems encountered by engineers2. Examine and analyse fluid systems3. Conduct an experimental simulation4. Demonstrate report writing skills commensurate with second year engineering students
Course Materials	Lecture Materials <ul style="list-style-type: none">• Lecture notes and class notes available on Canvas Recommended Text: <ul style="list-style-type: none">• Yunus A Cengel, John M Cimbala, Fluid Mechanics: Fundamentals and Applications, 2nd edition onwards (4th edition released recently).• White, F.M., Fluid mechanics, 1994 or later, McGraw-Hill, New York.• Potter, Wiggert and Ramadan, Mechanics of Fluids, (2017) or any previous edition.

ASSESSMENTS

This course has 2 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	Quiz/assignment	Quizzes/assignments are due in weeks 5, 8 and 11 during lectures	Individual	60%	1, 2, 3, 4
2	Exam	Exam Period	Individual	40%	1, 2

Late Submissions	The mark for an assessment item submitted after the designated time on the due date, without an approved extension of time, will be reduced by 10% of the possible maximum mark for that assessment item for each day or part day that the assessment item is late. Note: this applies equally to week and weekend days.
-------------------------	--

Assessment 1 - Quiz/assignment

Assessment Type	Quiz/Assignments
Description	3 x quizzes/assignments to be conducted in weeks 5, 8 and 11. Each quiz/assignment covers the lecture content of previous weeks
Weighting	60%
Due Date	Quizzes/Assignments are due in weeks 5, 8 and 11 during lectures.
Submission Method	Face to Face
Assessment Criteria	To be provided on Canvas.
Return Method	In Class
Feedback Provided	Marked quiz/assignment
Opportunity to Reattempt	Students WILL NOT be given the opportunity to reattempt this assessment.

Assessment 2 - Exam

Assessment Type	Formal Examination
Description	Two-hour comprehensive exam
Weighting	40%
Due Date	Exam Period
Submission Method	Face to Face
Assessment Criteria	To be confirmed on Canvas
Return Method	Not Returned
Feedback Provided	No Feedback
Opportunity to Reattempt	Students WILL NOT be given the opportunity to reattempt this assessment.

ADDITIONAL INFORMATION

Grading Scheme This course is graded as follows:

Range of Marks	Grade	Description
85-100	High Distinction (HD)	Outstanding standard indicating comprehensive knowledge and understanding of the relevant materials; demonstration of an outstanding level of academic achievement; mastery of skills*; and achievement of all assessment objectives.
75-84	Distinction (D)	Excellent standard indicating a very high level of knowledge and understanding of the relevant materials; demonstration of a very high level of academic ability; sound development of skills*; and achievement of all assessment objectives.
65-74	Credit (C)	Good standard indicating a high level of knowledge and understanding of the relevant materials; demonstration of a high level of academic achievement; reasonable development of skills*; and achievement of all learning outcomes.
50-64	Pass (P)	Satisfactory standard indicating an adequate knowledge and understanding of the relevant materials; demonstration of an adequate level of academic achievement; satisfactory development of skills*; and achievement of all learning outcomes.
0-49	Fail (FF)	Failure to satisfactorily achieve learning outcomes. If all compulsory course components are not completed the mark will be zero. A fail grade may also be awarded following disciplinary action.

*Skills are those identified for the purposes of assessment task(s).

Communication Methods	Communication methods used in this course include: <ul style="list-style-type: none">- Canvas Course Site: Students will receive communications via the posting of content or announcements on the Canvas course site.- Email: Students will receive communications via their student email account.- Face to Face: Communication will be provided via face to face meetings or supervision.
Course Evaluation	Each year feedback is sought from students and other stakeholders about the courses offered in the University for the purposes of identifying areas of excellence and potential improvement.
Oral Interviews (Vivas)	As part of the evaluation process of any assessment item in this course an oral examination (viva) may be conducted. The purpose of the oral examination is to verify the authorship of the material submitted in response to the assessment task. The oral examination will be conducted in accordance with the principles set out in the Oral Examination (viva) Procedure . In cases where the oral examination reveals the assessment item may not be the student's own work the case will be dealt with under the Student Conduct Rule .
Academic Misconduct	All students are required to meet the academic integrity standards of the University. These standards reinforce the importance of integrity and honesty in an academic environment. Academic Integrity policies apply to all students of the University in all modes of study and in all locations. For the Student Academic Integrity Policy, refer to https://policies.newcastle.edu.au/document/view-current.php?id=35 .
Adverse Circumstances	The University acknowledges the right of students to seek consideration for the impact of allowable adverse circumstances that may affect their performance in assessment item(s). Applications for special consideration due to adverse circumstances will be made using the online Adverse Circumstances system where: <ol style="list-style-type: none">1. the assessment item is a major assessment item; or2. the assessment item is a minor assessment item and the Course Co-ordinator has specified in the Course Outline that students may apply the online Adverse Circumstances system;3. you are requesting a change of placement; or4. the course has a compulsory attendance requirement. Before applying you must refer to the Adverse Circumstance Affecting Assessment Items Procedure available at: https://policies.newcastle.edu.au/document/view-current.php?id=236 .
Important Policy Information	The Help button in the Canvas Navigation menu contains helpful information for using the Learning Management System. Students should familiarise themselves with the policies and procedures at https://www.newcastle.edu.au/current-students/respect-at-uni/policies-and-procedures that support a safe and respectful environment at the University.

This course outline was approved by the Head of School on 17th April 2024. No alteration of this course outline is permitted approval. If a change is approved, students will be notified and an amended course outline will be provided in the same manner as the original.

© 2024 The University of Newcastle, Australia

ENGG2300 Graduate Profile Statements

This course builds students' capacity in the following University of Newcastle Bachelor of Engineering Graduate Profile Statements (based on 2011 Engineers Australia revised Stage 1 Competency Standards for Professional Engineers):

UON Att.	University of Newcastle Bachelor of Engineering Graduate Profile Statements/ Engineers Australia Stage 1 competency statements	Taught	Practised	Assessed	Skill Level (1-4)
	Professional Attributes				
11	3.1. Ethical conduct and professional accountability				
12	3.2. Effective oral and written communication in professional and lay domains.	✓	✓	✓	3
13	3.3. Creative, innovative and pro-active demeanour.				
14	3.4. Professional use and management of information.				
15	3.5. Orderly management of self, and professional conduct.				
16	3.6. Effective team membership and team leadership.				
	Engineering Ability				
7	2.1. Application of established engineering methods to complex engineering problem solving.	✓	✓	✓	3
8	2.2. Fluent application of engineering techniques, tools and resources.				
9	2.3. Application of systematic engineering synthesis and design processes.	✓	✓	✓	3
10	2.4. Application of systematic approaches to the conduct and management of engineering projects.				
	Knowledge Base				
1	1.1. Comprehensive, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline.	✓	✓	✓	3
2	1.2. Conceptual understanding of the, mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline.	✓	✓	✓	3
3	1.3. In-depth understanding of specialist bodies of knowledge within the engineering discipline.	✓	✓	✓	3
4	1.4. Discernment of knowledge development and research directions within the engineering discipline.				
5	1.5. Knowledge of contextual factors impacting the engineering discipline.				
6	1.6. Understanding of the scope, principles, norms, accountabilities and bounds of contemporary engineering practice in the specific discipline.				

This course outline was approved by the Head of School on 04/07/2023. No alteration of this course outline is permitted without Head of School approval. If a change is approved, students will be notified and an amended course outline will be provided in the same manner as the original.

© 2023 The University of Newcastle, Australia