



Mechanical and Manufacturing Engineering

Course Outline  
Term 3 2019

**ENGG2500**

**FLUID MECHANICS**



# 1. Staff contact

## Contact details and consultation times for course convenor

Name: Dr Shaun Chan

Office location: Room 402D, Building J17

Email: [qing.chan@unsw.edu.au](mailto:qing.chan@unsw.edu.au)

Research: <https://research.unsw.edu.au/projects/advanced-combustion-diagnostics-laboratory>

For questions regarding demonstration/example problems, the demonstrators in your demonstration will be the first contact. Administrative enquiries that are personal and confidential in respect of an individual student can be made to the course convenor (Dr Shaun Chan), if the circumstances require it.

## Head demonstrator (contact for online assignment and laboratory etc.)

Name: Mr Paul Yip (Online assignment)

Email: [h.l.yip@unsw.edu.au](mailto:h.l.yip@unsw.edu.au)

Name: Mr Mark Zhai (Lab)

Email: [g.zhai@unsw.edu.au](mailto:g.zhai@unsw.edu.au)

## Contact details and consultation times for additional lecturers/demonstrators/lab staff

Please see the course [Moodle](#).

# 2. Important links

[Moodle](#)

[Lab Access](#)

[Computing Facilities](#)

[Student Resources](#)

[Course Outlines](#)

[Engineering Student Support Services Centre](#)

[Makerspace](#)

[UNSW Timetable](#)

[UNSW Handbook](#)

[UNSW Mechanical and Manufacturing Engineering](#)

# 3. Course details

## Credit points

This is a 6 unit-of-credit (UoC) course and involves ~5 hours per week (h/w) of face-to-face contact.

The normal workload expectations of a student are approximately 25 hours per term for each UOC, including class contact hours, other learning activities, preparation and time spent on all assessable work.

You should aim to spend about 10 h/w on this course. The additional time should be spent in making sure that you understand the lecture material, completing the set assignments, further reading, and revising for any examinations.

### Contact hours

The class contact will include the following sessions:

	<b>Day</b>	<b>Time</b>	<b>Location</b>
<b>Lectures</b>	Wednesday	1400-1600	Ainsworth G03 (K-J17-G03)
	Thursday	1700-1800	Ainsworth G03 (K-J17-G03)
(Web stream)	Any	Any	Moodle
<b>Mid-session test</b>	Thursday (Week 7)	1900-2000	Mathews Theatre A (K-D23-201)
<b>Lab</b>	Refer to Section 5, Course outline	Refer to Section 5, Course outline	UTL

Please refer to your class timetable for the learning activities you are enrolled in and attend only those classes.

### *Laboratory periods*

You will have 3 compulsory two-hour laboratories to attend, commencing in Week 2. At the time of enrolment, you selected one of the 16 possible laboratory timeslots. Please refer to your class timetable for the laboratory you are enrolled in, and attend only that section.

### *Online assignments*

You will have 5 online assignments. Each assignment will cover the topics that were taught in the prior weeks, with work due at 23.59 on Saturdays at the end of Weeks 3, 5, 7, 9, and 11.

### *Consultation sessions*

There will be 1 two-hour non-compulsory drop-in consultation session (held in Week 10) at the UTL, during the two-hour laboratory time. The consultation session is intended for you to seek face-to-face contact with the academic staff and selected demonstrators in order to consult on issues related specifically to the lecture content, online assignment questions or past examination questions that you have attempted in the weeks prior. You are encouraged to prepare a list of the questions that you have before attending the consultation session, for maximum benefit.

## **Summary and Aims of the course**

This course introduces the student to the terminology, principles and methods used in engineering fluid mechanics. Fluid mechanics is a subject which deals with both fluid statics (fluids at rest) and

## 4. Teaching strategies

### Lectures

Lectures in the course are designed to cover the terminology and core concepts and



## Laboratory schedule

Willis Annex 116A UG Laboratory (K-J18-116A)

### *Laboratory time slots*

M09A	Mon	0900 – 1100	UTL
M09B	Mon	0900 – 1100	UTL
M11A	Mon	1100 – 1300	UTL
M11B	Mon	1100 – 1300	UTL
W09A	Wed	0900 – 1100	UTL
W09B	Wed	0900 – 1100	UTL
W11A	Wed	1100 – 1300	UTL
W11B	Wed	1100 –	





## Assignments

### *Online Assignments*

You will have 5 online assignments. Each assignment will cover the topics that were taught in the prior weeks, with work due at 23.59 on Saturdays at the end of Weeks 3, 5, 7, 9 and 11. The online assignments are an integral part of this course. In recognition of this, they will contribute 12.5% of your final grade. Each online assignment mark has a total mark out of 2.5.

Note:

- Your work on these must be your own work, but you are encouraged to discuss the methods required with other students.
- Each version of an online assignment will be slightly different.
- The online assignments are available from the beginning of the semester so that you have an extended period to complete them.
- No deadline extensions will be granted. You should attempt these assignments with sufficient remaining time to allow for unplanned service interruptions.

### *Lab Assignments*

There will be 3 laboratory experiments held as outlined in the “Laboratory Timetable”.

You are required to obtain a bound laboratory book (alternate lined and graph pages) to record results of each experiment and analysis carried out whilst in the laboratory.

The laboratory demonstrators will mark your preliminary work at the start of the laboratory period and mark your data collection and analysis at the end of the laboratory period. Ensure that your work is marked before you leave the laboratory, that your mark is entered in the class record and that your laboratory book is initialled by the demonstrator.

You will not be admitted to the laboratory unless you are appropriately dressed for safe working, have a laboratory book, a calculator and present the assigned preliminary work.

The laboratory demonstrators will give instructions on how to operate the equipment and will explain what is required of you. If in doubt, ask. It is important that you fully understand the experiment at the time it is being carried out, when instruction is available. In some experiments, you are only required to take readings at intervals, use the intermediate time to ask questions and find out what other members of your group are doing. Little is learned merely by sitting and waiting to make a measurement - much is learned by inquiry and discussion.

**Attendance at all laboratory experiments to which you are assigned is compulsory and a register is taken.** If you are unable to attend due to illness, it is important that you inform the Head Demonstrator as soon as possible so that you may be reassigned to that experiment at a later date. You might be asked to present a medical certificate later.

**Transfer from other groups.** The laboratory groups are large, so transfers between groups are granted only for the circumstances that are unexpected and beyond your control. The transfers must be arranged through the Head Demonstrator. Please note that according to the university's rule for special consideration, "Students are expected to give priority to their University study commitments and work commitments are not normally considered a justification."

Lab report marks will be allocated for completion of preliminary analysis, results obtained and calculations made during the laboratory period (2 marks for preliminary work, 2 marks for measurements, data analysis and conclusions). You do not have to submit a formal report; results of any calculations must be shown to the laboratory demonstrators for checking during the laboratory period.

**Preparation prior to the laboratory periods is essential.** Study the laboratory notes so that you know what the experiment is about in advance of each laboratory session. If you arrive without the necessary preparation, you may not be allocated the laboratory mark. Bring a calculator to all laboratory periods. **Submission of preliminary work which is not your own, or copying during the laboratory period, will result in a mark of zero for the laboratory.**

#### *Presentation*

All submissions are expected to be neat and clearly set out. Your results are the pinnacle of all your hard work and should be treated with due respect. Presenting results clearly gives the marker the best chance of understanding your method; even if the numerical results are incorrect.

#### *Submission*

Work submitted late without an approved extension by the course coordinator or delegated authority is subject to a late penalty of 20 percent (20%) of the maximum mark possible for that assessment item, per calendar day.

The late penalty is applied per calendar day (including weekends and public holidays) that the assessment is overdue. There is no pro-rata of the late penalty for submissions made part way through a day.



## 7. ~~Course feedback~~

### Textbook

Cengel and Cimbala, Fluid Mechanics Fundamentals and Applications, 2nd Ed in SI unit.

The textbook is available from the UNSW Bookshop and the UNSW Library.

UNSW Library website: <https://www.library.unsw.edu.au/>

Moodle: <https://moodle.telt.unsw.edu.au/login/index.php>

## 8. ~~Course evaluation and development~~

Feedback on the course is gathered periodically using various means, including the UNSW myExperience process, informal discussion in the final class for the course, and the School's Student/Staff meetings. Your feedback is taken seriously, and continual improvements are made to the course based, in part, on such feedback.

In this course, recent improvements resulting from student feedback include incorporating more blended learning modules into the course.

## 9. ~~Academic honesty and plagiarism~~

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW students have a responsibility to adhere to this principle of academic integrity. Plagiarism undermines academic integrity and is not tolerated at UNSW. *Plagiarism at UNSW is defined as using the words or ideas of others and passing them off as your own.*

Plagiarism is a type of intellectual theft. It can take many forms, from deliberate cheating to accidentally copying from a source without acknowledgement. UNSW has produced a website with a wealth of resources to support students to understand and avoid plagiarism, visit:



# Appendix A: Engineers Australia (EA) Competencies

## Stage 1 Competencies for Professional Engineers

	<b>Program Intended Learning Outcomes</b>
<b>PE1: Knowledge and Skill Base</b>	PE1.1 Comprehensive, theory-based understanding of underpinning fundamentals
	PE1.2 Conceptual understanding of underpinning maths, analysis, statistics, computing
	PE1.3 In-depth understanding of specialist bodies of knowledge
	PE1.4 Discernment of knowledge development and research directions
	PE1.5 Knowledge of engineering design practice
	PE1.6 Understanding of scope, principles, norms, accountabilities of sustainable engineering practice
<b>PE2: Engineering Application Ability</b>	PE2.1 Application of established engineering methods to complex problem solving
	PE2.2 Fluent application of engineering techniques, tools and resources
	PE2.3 Application of systematic engineering synthesis and design processes
	PE2.4 Application of systematic approaches to the conduct and management of engineering projects
<b>PE3: Professional and Personal Attributes</b>	PE3.1 Ethical conduct and professional accountability
	PE3.2 Effective oral and written communication (professional and lay domains)
	PE3.3 Creative, innovative and pro-active demeanour
	PE3.4 Professional use and management of information
	PE3.5 Orderly management of self, and professional conduct
	PE3.6 Effective team membership and team leadership