



School of Civil and Environmental Engineering

Term 3, 2020

CVEN9625 FUNDAMENTALS OF WATER ENGINEERING

COURSE DETAILS

Units of Credit	6		
Contact hours	5 hours per week		
Class	Fri, 13:00 - 16:00		Online
Workshop	Fri, 16:00 - 17:00		Webster Th A
	Fri, 16:00 – 17:00		Online
Course Coordinators and lectures	Prof. Ashish Sharma (AS) email: a.sharma@unsw.edu.au office: School of Civil and Environmental Engineering, Kensington CE307 phone: 9385 5768		
	A/Prof. William Glamore (WG) email: w.glamore@unsw.edu.au office: UNSW Water Research Laboratory Manly Vale Campus phone: 9949 4188		

INFORMATION ABOUT THE COURSE

- to provide an overview of surface water hydrology and the atmospheric processes that lead to variability/change in rainfall and hence streamflow; and
- to provide an understanding of the rationale behind design flood estimation in hydrology.
- to introduce you to the theory of steady state closed conduit or pipe flows (i.e. pressurised flows) and free surface flows (open to the atmosphere).
- to give you an understanding of the properties of fluids, hydrostatics and the principles of fluid flow based on mass, energy and momentum.
- to enable you to apply the principles of fluid flow to different flow scenarios; to quantify energy losses due to pipe friction, pipe fittings and channel roughness for laminar and turbulent flows.
- to introduce you to the theory of channel transitions, rapidly varied flows and gradually varied flows.

Generally, the final exam and the assignments are designed to assess:

- Your understanding of the principles of Water Engineering

The course objectives, content and assessment focuses on encouraging the following attributes in you, with particular application to water engineering:

- Capacity for analytical and critical thinking and for creative problem solving. You will be exposed to, and be required to solve, numerous hydrologic problems in the Lectures, the workshops and the assignments --- "the learning is in the doing". All these problems will cover a variety of scenarios, and

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After successfully completing this course, you should be able to:

Learning Outcome		EA Stage 1 Competencies
1.	Conduct a hydrological assessment of a catchment.	PE1.1, PE1.5, PE2.2, PE2.3
2.	Quantify the size of design floods.	PE1.2, PE2.2, PE2.3
3.	Understand energy fluxes and calculate evaporation.	PE1.2, PE2.2, PE2.3
4.	Explain the basic properties of fluids and how these relate to fluid flow.	PE1.1, PE2.2, PE2.3, PE3.3

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ASSESSMENT

The final grade for this course will normally be based on the sum of the scores from each of the assessment tasks. The Final Examination is worth 60% of the Final Mark if class work is included and 100% if class work is not included. A mark of at least 40% in the final examination is required before the class work is included in the final mark. The formal exam scripts will not be returned.

PENALTIES

Penalties for late submissions will be accounted for. More specifically, late assignments will be penalised at the rate of 10% per day after the due time and date have expired.

FINAL EXAMINATION

Final examination will be held in the University examination period (Closed book, 2 hours duration) and has a value of 60% of the total mark; **You will be advised on how to appear in the exam as the term progresses.**

The final exam will assess your knowledge of the hydrological assessment of a catchment, estimation of design floods, evaporation, basic fluid properties, fluid flow in pipes and channels.

Short Course/Distance Courses: ho81TE00P5Sn(s)D.5

Appendix A: Engineers Australia (EA) Competencies

Stage 1 Competencies for Professional Engineers

	Program Intended Learning Outcomes
	PE1.1 Comprehensive, theory-based understanding of underpinning fundamentals

**PE1: Knowledge
and Skill Base**

PE1.2 Conceptual understanding of