



## School of Civil and Environmental Engineering

Term 1, 2020

# CVEN4503 GROUNDWATER

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### COURSE DETAILS

<b>Units of Credit</b>	6	
<b>Contact hours</b>	5 hours per week	
<b>Part 1: Classes and Workshops</b>	Tuesday, 9:00 – 11:00	<a href="#">Old Main Building Room 151</a> (OMB151)
	Tuesday, 11:00 – 13:00	<a href="#">Old Main Building Room 151</a> (OMB151)
<b>Part 2: Field Course at Wellington</b>	16 <sup>th</sup> March to 20 <sup>th</sup> March (Week 5). Travel to Wellington on Monday the 16 <sup>th</sup> of March in the afternoon and return to Sydney on Friday the 20 <sup>th</sup> March by noon.	
<b>Part 3: Workshops</b>	Tuesday, 9:00 – 13:00	<a href="#">Old Main Building Room 151</a> (OMB151)
<b>Course Coordinator and Lecturer</b>	A/Prof Martin S. Andersen <a href="mailto:m.andersen@unsw.edu.au">m.andersen@unsw.edu.au</a> office: CE303	
<b>Lecturers</b>	A/Prof Will Glamore <a href="mailto:w.glamore@unsw.edu.au">w.glamore@unsw.edu.au</a> office: CE313 Dr Christian Anibas <a href="mailto:c.anibas@unsw.edu.au">c.anibas@unsw.edu.au</a>	
<b>Demonstrator</b>	Dr Mahmood Sadat-Noori <a href="mailto:m.sadat-noori@unsw.edu.au">m.sadat-noori@unsw.edu.au</a>	

### INFORMATION ABOUT THE COURSE

This subject is offered in the 4th year of Civil and Environmental Engineering. The prerequisite is CVEN3501.

**IMPORTANT NOTE: The Wellington field component is mandatory. Students will be required to pay for food and accommodation while in Wellington. The costs will be communicated in the lecture.**

### HANDBOOK DESCRIPTION

Link to virtual handbook

<https://www.handbook.unsw.edu.au/postgraduate/courses/2020/CVEN4503>

### OBJECTIVES

The aim of this course is to develop the understanding of groundwater processes and provide students with techniques to investigate its occurrence and quality.

List of programme attributes:

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- < Ability to engage independent and reflective learning
- < Information literacy and the skills to appropriately locate, evaluate and use relevant information
- < A respect for ethical practice and social responsibility
- < Skills for effective communication List the objectives of the course.

## TEACHING STRATEGIES

### Private Study

- < Review course notes and lecture material
- < Do set problems and assignments
- < Join Moodle discussions of problems
- < Reflect on class problems and assignments
- < Download materials from Moodle
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**COURSE PROGRAM**

Lectures and exercises will be presented in Weeks 1-4 of Trimester 1. There will then be a 3 day short course at the UNSW Field Station in Wellington (NSW) where practical work will be undertaken to consolidate the understanding achieved in the 4 weeks of lectures. The field course will commence on Monday 16<sup>th</sup> of March and conclude on Friday 20<sup>th</sup> of March. A bus will be hired for the transport to and from Wellington. On the Monday evening we will hold a BBQ at the field course accommodation on arrival.

**TERM 1, 2020**

Week	Date	Topic	Assessments Due	Lecturer
1	18 <sup>th</sup> Feb	Introduction to hydrogeology		M. Andersen
2	25 <sup>th</sup> Feb	Physical properties of soil and water and equations of groundwater flow	Following Monday	W. Glamore
3	3 <sup>rd</sup> March	Geochemical investigation	Following Monday	M. Andersen
4	10 <sup>th</sup> March	Geophysical investigation methods	First day of the field course	C. Anibas
5	16 <sup>th</sup> – 20 <sup>th</sup> March	<b>Wellington Field Course</b>		M. Andersen W. Glamore C. Anibas M. Sadat-Noori
6	24 <sup>th</sup> March	Individual report work on Wellington data: Hydrogeology Q&A		W. Glamore
7	31 <sup>st</sup> March	Individual report work on Wellington data: Geophysics Q&A		C. Anibas
8	7 <sup>th</sup>			

## ASSESSMENT OVERVIEW

Details of each assessment, the marks assigned to it, criteria by which marks will be assigned, and the dates of submission are set out below.

Assessment item	Weight	Issue date	Due date/time	Deadline for absolute fail	Marks returned	Assessment criteria	Learning outcomes assessed
<b>Assignments:</b>							
Assignment 1 Chapter 2 and Chapter 3	18%	Tuesday 25/02	Tuesday 3/03 9 am	Friday 6/03 9 am	Tuesday 10/03	This assignment will assess how well the student understand material in Chapter 2 and Chapter 3 and ability to use the physical properties of water for calculating groundwater flow	PE1.1, PE1.2, PE1.3, PE2.1, PE2.3
Assignment 2 Chapter 4	17%	Tuesday 3/03	Tuesday 10/03 9 am	Friday 13/03 9 am	Tuesday 17/03	This assignment will assess how well the student understand material in Chapter 4 and ability to use methods groundwater chemistry in groundwater investigations	PE1.1, PE1.2, PE1.3, PE2.1, PE2.2
Assignment 3 Chapter 5	15%	Tuesday 10/03	Tuesday 24/03 9 am	Friday 27/03 9 am	Tuesday 31/03	This assignment will assess how well the student understand material in Chapter 5 and ability to use methods for surface and borehole geophysics in groundwater investigations	PE1.1, PE1.2, PE1.3, PE1.5, PE2.1, PE2.3
<b>Final Report:</b>							
Wellington assignment	50%	Monday 16/03	Friday 24/04 5pm	Monday 27/04 9 am	Monday 11/05	This assignment will assess the students understanding of the methods demonstrated in the field, ability to present and critically assess the quality of groundwater field data obtained by a range of methods and finally their ability to interpret the findings in relation to groundwater processes.	PE1.1, PE1.2, PE2.1, PE2.2, PE3.1, PE3.2, PE3.3, PE3.5, PE3.6

*NOTE: Feedback will be given for Assignment 1 before 15<sup>th</sup> of March*

*The final grade for this course will normally be based on the sum of the scores from each of the assessment tasks.*

## PENALTIES

*Late submissions will be penalised at the rate of 10% per day after the due time and date have expired. Submissions more than 3 days late without a valid reason will automatically receive a fail (0 marks).*



