



## School of Civil and Environmental Engineering

Term 1, 2020

# CVEN4503 GROUNDWATER CONTAMINATION | RESOURCE INVESTIGATION

### 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<br><a href="mailto:m.andersen@unsw.edu.au">m.andersen@unsw.edu.au</a><br>office: CE303  |   |
| <b>Lecturers</b>                          | A/Prof Will Glamore<br><a href="mailto:w.glamore@unsw.edu.au">w.glamore@unsw.edu.au</a><br>office: CE313<br>Dr Christian Anibas<br><a href="mailto:c.anibas@unsw.edu.au">c.anibas@unsw.edu.au</a>           |   |
| <b>Demonstrator</b>                       | Dr Mahmood Sadat-Noori<br><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
- <

**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**

| <b>Week</b> | <b>Date</b>                               | <b>Topic</b>  | <b>Assessments Due</b>        | <b>Lecturer</b>  |
|-------------|---|---|-------------------------------|--|
| 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<br>W. Glamore<br>C. Anibas<br>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<br>Chapter 2 and Chapter 3 | 18%    | Tuesday 25/02 | Tuesday 3/03<br>9 am  | Friday 6/03<br>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<br>Chapter 4               | 17%    | Tuesday 3/03  | Tuesday 10/03<br>9 am | Friday 13/03<br>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<br>Chapter 5               | 15%    | Tuesday 10/03 | Tuesday 24/03<br>9 am | Friday 27/03<br>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<br>5pm   | Monday 27/04<br>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).



