SCHOOL OF CIVIL AND
ENVIRONMENTAL ENGINEERING
SESSION 1, 2011

CVEN9855 WATER AND WASTEWATER ANALYSIS
AND QUALITY REQUIREMENTS

COURSE DETAILS

Units of Credit 6
Contact hours 3 hours per week
Class Thursday, 9:00 – 12:00 Red Centre Central Wing M032 (K-H13-M032).
Laboratory Thursday, 9:00 – 12:00 Level 3, Civil Engineering (H20).
See timetable for schedule
Course Coordinator and Lecturer Dr Stuart Khan
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Office: UNSW Water Research Centre, Vallentine Annexe
Phone: 02 9385 5082

Additional Lecturers Prof Richard Stuetz
Email: r.stuetz@unsw.edu.au
Office: Room 309, Civil Engineering Building
Phone: 02 9385 5944
Dr Gautam Chattopadhyay (Laboratory Manager)
Office: Room 306, Civil Engineering Building
Phone: 02 9385 5700

INFORMATION ABOUT THE COURSE

This course will address the presence and implications of impurities in water and wastewater. It will consider the impact of such impurities on the suitability of various beneficial uses and disposal options. Specific attention will be devoted to analytical methods for the detection and monitoring of water and wastewater contaminants.
HANDBOOK DESCRIPTION

The effects of impurities in water and wastewater on its suitability for various beneficial uses, and methods used for detecting impurities. Analytical methods used in water and wastewater treatment for monitoring and process.


OBJECTIVES

The objective of the course is to provide students with a sound understanding of the rationale behind water quality standards set for potable water supply and wastewater disposal. The course is intended to equip students with basic knowledge of laboratory and online analytical methods used for water analysis and quality assessment. With this, students are expected to be able to properly understand and interpret chemical and microbiological water quality data.

TEACHING STRATEGIES

Private Study
- Review lecture material and additional reading
- Complete lab report and assignments
- Download materials from UNSW Blackboard
- Keep up with notices and find out marks via UNSW Blackboard

Lectures/ Tutorials
- Find out what you must learn
- Summarise essential course material from lectures and associated reading
- Hear announcements on course changes
- Be guided by discussion questions and additional reading
- Ask questions

Assessments (examinations, assignments, laboratory reports)
- Enhance your knowledge by undertaking necessary research to complete these tasks
- Demonstrate your knowledge and skills
- Demonstrate higher understanding and problem solving
- Do not copy sections from textbooks, always use appropriate references for sourced material

Laboratory Work
- Hands-on activities to set lecture materials and other studies in context
- Students must record results during the lab session and complete a laboratory report with these findings discussed.
- Ask questions for clarification during laboratory classes.
EXPECTED LEARNING OUTCOMES

By the completion of this course students are expected to understand concepts relevant to the analysis of water and wastewater treatment objectives and verification. Students should have an appreciation for the rationale of water quality guidelines and practical aspects of water quality monitoring for potable water supplies, water reuse applications and wastewater disposal.

In addition to the formal lecture contact time students will be expected to read additional material provided during the lectures and will be given additional references for further background knowledge. Assignments will provide problem solving for individual sections of the course. Undertaking these assignments will put into practice and demonstrate the student’s overall understanding of sampling and analysis of water and wastewater treatment systems as well as the applications of water quality guidelines.

For each hour of lecture contact time it is expected that a student will undertake at least 1.5 hours of private study.

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 50% of the Final Mark and the class work (assignments and laboratory report) is worth 50% of the Final Mark. 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. Students who perform poorly in assignments are recommended to discuss progress with the lecturer during the semester.

Note: The lecturer reserves the right to adjust the final scores by scaling if agreed too by the Head of School.

Details of each assessment component, the marks assigned to it, and the dates of submission are set out below.

ASSIGNMENTS

<table>
<thead>
<tr>
<th>Assessment details</th>
<th>Marks</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Assignment 1:</td>
<td>10%</td>
<td>24 March</td>
</tr>
<tr>
<td>2. Laboratory Report 1</td>
<td>10%</td>
<td>5 May</td>
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<tr>
<td>3. Assignment 2:</td>
<td>20%</td>
<td>19 May</td>
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<tr>
<td>4. Laboratory Report 2</td>
<td>10%</td>
<td>26 May</td>
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</table>

All assignments and reports are to be submitted electronically via UNSW Blackboard (by TurnItIn). No hard copies will be accepted. No emailed versions will be accepted. Assignments and reports are due before midnight on the due date. Late assignments will receive a 10% penalty per week or part thereof.
## COURSE PROGRAM

### SESSION 1 2011 (28 February – 3 June)

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Lecturer</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>March 3</td>
<td>Rationale for water quality monitoring and analytical principles</td>
<td>Stuart Khan</td>
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<tr>
<td>2</td>
<td>March 10</td>
<td>Australian water quality guidelines</td>
<td>Stuart Khan</td>
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<tr>
<td>3</td>
<td>March 17</td>
<td>Bulk parameter, physical, and inorganic chemical analysis</td>
<td>Stuart Khan</td>
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<tr>
<td>4</td>
<td>March 24</td>
<td>Trace organic chemicals analysis</td>
<td>Stuart Khan</td>
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<tr>
<td>5</td>
<td>March 31</td>
<td>Microbiology and microbiological analysis</td>
<td>Richard Stuetz</td>
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<tr>
<td>6</td>
<td>April 7</td>
<td>Odour measurement</td>
<td>Richard Stuetz</td>
</tr>
<tr>
<td>7</td>
<td>April 14</td>
<td>Trace organic chemicals analysis – <strong>Laboratory class</strong></td>
<td>Stuart Khan</td>
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<tr>
<td>8</td>
<td>April 21</td>
<td><strong>NO CLASS</strong></td>
<td>Stuart Khan</td>
</tr>
<tr>
<td>9</td>
<td>May 5</td>
<td>Trace metals analysis</td>
<td>Stuart Khan</td>
</tr>
<tr>
<td>10</td>
<td>May 12</td>
<td>Trace metals analysis and microbial analysis – <strong>Laboratory class</strong></td>
<td>Stuart Khan</td>
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<tr>
<td>11</td>
<td>May 19</td>
<td>Statistics of data analysis</td>
<td>Stuart Khan</td>
</tr>
<tr>
<td>12</td>
<td>May 26</td>
<td>Online (continuous monitoring) analytical techniques</td>
<td>Stuart Khan</td>
</tr>
<tr>
<td>13</td>
<td>June 2</td>
<td>Water quality and public health in drinking and recycled waters (Sydney Water Presentation)</td>
<td>Michael Storey</td>
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### MID SEMESTER BREAK

<table>
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### RELEVANT RESOURCES

- **No specific textbook recommended.**
- **Useful reference books:**
  


- **Australian Water Quality Guidelines**

Canberra.


• Useful journal articles:


- **Any additional materials provided on UNSW Blackboard:**
  [http://lms-blackboard.telt.unsw.edu.au/](http://lms-blackboard.telt.unsw.edu.au/)

**DATES TO NOTE**

Refer to MyUNSW for Important Dates available at:

[https://my.unsw.edu.au/student/resources/KeyDates.html](https://my.unsw.edu.au/student/resources/KeyDates.html)

**PLAGIARISM**

Beware! An assignment that includes plagiarised material will receive a 0% Fail, and students who plagiarise may fail the course. Students who plagiarise are also liable to disciplinary action, including exclusion from enrolment.
Plagiarism is the use of another person’s work or ideas as if they were your own. When it is necessary or desirable to use other people’s material you should adequately acknowledge whose words or ideas they are and where you found them (giving the complete reference details, including page number(s)). The Learning Centre provides further information on what constitutes Plagiarism at:

http://www.lc.unsw.edu.au/onlib/plag.html

COMMON SCHOOL INFORMATION

For information about:

- Notes on assessments and plagiarism,
- School policy on Supplementary exams,
- Special Considerations,
- Solutions to Problems,
- Year Managers and Grievance Officer of Teaching and Learning Committee, and
- CEVSOC.

Refer to Common School Information on the School website available at: