COURSE DETAILS

Units of Credit  
6

Contact hours  
3 hours per week

Class  
Thursday, 9:00 – 12:00  Pioneer International Theatre (K-G27-G04). AGSM Building.

Laboratory  
Thursday, 9:00 – 12:00  Civil Engineering (H20) / Vallentine Annexe (H22)

See timetable for schedule

Course Coordinator and Lecturer  
Dr Stuart Khan  
email: s.khan@unsw.edu.au  
office: UNSW Water Research Centre, Vallentine Annexe  
phone: 02 9385 5082

Additional Lecturers  
Dr Richard Collins  
office: UNSW Water Research Centre, Vallentine Annexe

Prof Richard Stuetz  
office: Room 309, Civil Engineering Building

Dr David Roser  
office: UNSW Water Research Centre, Vallentine Annexe

Dr Gautam Chattopadhyay  
Office: Room 306, Civil Engineering Building

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**

<table>
<thead>
<tr>
<th>Private Study</th>
<th>Lectures/ Tutorials</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Review lecture material and additional reading</td>
<td>• Find out what you must learn</td>
</tr>
<tr>
<td>• Complete lab report and assignments</td>
<td>• Summarise essential course material from</td>
</tr>
<tr>
<td>• Download materials from UNSW Blackboard</td>
<td>lectures and associated reading</td>
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<tr>
<td>• Keep up with notices and find out marks via UN</td>
<td>• Hear announcements on course changes</td>
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<tr>
<td>SW Blackboard</td>
<td>• Be guided by discussion questions and</td>
</tr>
<tr>
<td></td>
<td>additional reading</td>
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<td></td>
<td>• Ask questions</td>
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<table>
<thead>
<tr>
<th>Assessments (examinations, assignments, laboratory reports)</th>
<th>Laboratory Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Enhance your knowledge by undertaking necessary research to complete these tasks</td>
<td>• Hands-on activities to set lecture materials and other studies in context</td>
</tr>
<tr>
<td>• Demonstrate your knowledge and skills</td>
<td>• Students must record results during the lab session and complete a laboratory report with these findings discussed.</td>
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<tr>
<td>• Demonstrate higher understanding and problem solving</td>
<td>• Ask questions for clarification during laboratory classes.</td>
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<tr>
<td>• Do not copy sections from textbooks, always use appropriate references for sourced material</td>
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**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>
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<tbody>
<tr>
<td>1. Assignment 1:</td>
<td>15%</td>
<td>22 April</td>
</tr>
<tr>
<td>2. Assignment 2:</td>
<td>25%</td>
<td>27 May</td>
</tr>
<tr>
<td>3. Laboratory Reports</td>
<td>10%</td>
<td>To Be Determined</td>
</tr>
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</table>

Assignments are to submitted before 17:00 on the due date to the submission box “Stuart Khan”, 1st floor Civil Engineering Building. Late assignments will receive a 10% penalty per week.

COURSE PROGRAM

SESSION 1 2010 (9 March – 5 June)

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Lecturer</th>
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<tbody>
<tr>
<td>1</td>
<td>4 March</td>
<td>Rationale for water quality monitoring and analytical principles</td>
<td>Khan</td>
</tr>
<tr>
<td>2</td>
<td>11 March</td>
<td>Australian water quality guidelines</td>
<td>Khan</td>
</tr>
<tr>
<td>3</td>
<td>18 March</td>
<td>Bulk parameter, physical, and inorganic chemical analysis - Lecture</td>
<td>Collins</td>
</tr>
<tr>
<td>4</td>
<td>25 March</td>
<td>Bulk parameter, physical, and inorganic chemical analysis - Laboratory class</td>
<td>Collins</td>
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<tr>
<td>5</td>
<td>1 April</td>
<td>Statistics of data analysis</td>
<td>Khan</td>
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<tr>
<td>6</td>
<td>8 April</td>
<td>MID SEMESTER BREAK</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>15 April</td>
<td>NO CLASS</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>22 April</td>
<td>Trace metals analysis - Lecture</td>
<td>Collins</td>
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<tr>
<td>9</td>
<td>29 April</td>
<td>Trace metals analysis – Laboratory class</td>
<td>Collins</td>
</tr>
<tr>
<td>10</td>
<td>6 May</td>
<td>Trace organic chemicals analysis – Lecture</td>
<td>Khan</td>
</tr>
<tr>
<td>11</td>
<td>13 May</td>
<td>Trace organic chemicals analysis – Laboratory class</td>
<td>Khan</td>
</tr>
<tr>
<td>12</td>
<td>20 May</td>
<td>Microbiology and microbiological analysis - Lecture</td>
<td>Roser</td>
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<tr>
<td>13</td>
<td>27 May</td>
<td>Online (continuous monitoring) analytical techniques</td>
<td>Stuetz</td>
</tr>
<tr>
<td>14</td>
<td>3 June</td>
<td>Water quality and public health in drinking and recycled waters (Sydney Water Presentation)</td>
<td>Storey</td>
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RELEVANT RESOURCES

- No specific textbook recommended.
- Useful reference books:
- Australian Water Quality Guidelines
- Useful journal articles:


- Web sites that may be of use:
  - International Water Association (http://www.iwahq.org.uk)
  - American Water Works Association (http://www.awwa.org)
  - Water Environment Foundation (http://www.wef.org)
  - Australian Water Association (http://www.awa.asn.au)
- Any additional materials provided on UNSW Blackboard: http://lms-blackboard.telt.unsw.edu.au/

### COMMON SCHOOL INFORMATION

Common School information may be found at: [http://www.civeng.unsw.edu.au/currentstudents/pg/](http://www.civeng.unsw.edu.au/currentstudents/pg/)

The Common School Information site has information on the following:

1. **Dates to Note** - important dates relating to enrolling and disenrolling, and a University website (via MyUNSW) with a calendar of other important UNSW dates (session dates, recess weeks, stuvac dates and exam periods).

2. **School Contacts**
   - i. for enrolment or timetable difficulties,
   - ii. referral chain of contacts for course difficulties:
     - Course Coordinator/Lecturer -> Year Coordinators -> Grievance Officer,
   - iii. Advanced Standing, and
   - iv. Mentoring.

3. **Course Requirements**
   - i. attendance at lectures, tutorials and laboratory classes,
   - ii. participation in laboratories
   - iii. completion of assessment work.

4. **Notes on Assessment**
   - i. plagiarism (with link to UNSW Learning Centre web site on plagiarism),
ii. keep a copy of written submissions,
iii. submitting assignments, and
iv. late submissions (obtaining extensions and special consideration)

5. Supplementary Exams – includes link to School website with School policy on supplementary exams.
   i. Special Consideration – includes link to UNSW website (New South Q) for downloading forms, requirements for lodging special consideration forms.

6. Solutions to Problems – Troubleshooters
   i. Learning Centre,
   ii. student counsellors, and
   iii. student support services.

7. CEVSOC – student committee membership and link to (unofficial) student CEVSOC website.