Description: Public Health Engineering

<table>
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<tr>
<th>Subject</th>
<th>Cat-nbr</th>
<th>Class</th>
<th>Term</th>
<th>Mode</th>
<th>Units</th>
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<tr>
<td>ENV</td>
<td>4203</td>
<td>34558</td>
<td>2, 2004</td>
<td>ONC</td>
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Academic group: FOENS
Academic org: FOES03
Student contribution band: 2
ASCED code: 030907

STAFFING
Examiner: Ernest Yoong
Moderator: Mark Porter

OTHER-REQUISITES
Recommended Pre-requisite: ENV2103 or ENV1101

SYNOPSIS
A reliable supply of potable water, an efficient system of wastewater disposal, and an effective drainage system, are essential for the health and well being of modern urban communities and of mining and isolated industrial activities. The design, installation, operation and maintenance of these facilities are traditionally the responsibility of local government engineers or consulting engineers employed by local government. To understand the principles and processes of water and wastewater treatment, there is a need to appreciate the vectors of waterborne diseases, sanitary microbiology, as well as topics in water chemistry. Environmental matters (notably solid refuse management) and legislation likely to be included in the responsibilities of a local government engineer are also included in this course.

OBJECTIVES
On completion of this course, student should be able to:

1. identify the issues which are of significance to public health engineering;
2. list and describe the organisms of importance in sanitary microbiology and the vectors of disease;
3. explain the significance of oxygen in wastewater treatment and of the determination of oxygen demand and concentration of oxygen in water;
4. describe the characteristics of water and wastewater, and explain the principles involved in the relevant water chemistry;
5. appraise the water demand of a community;
6. describe the sources of supply, treatment processes and distribution of water;
7. describe the components and processes involved in primary, secondary and tertiary treatment of wastewater;
8. compare and contrast attached growth and suspended growth treatment processes;
9. design a drainage system for a small urban area;
10. analyse problems in water and wastewater treatment and design the major components of treatment systems;
11. describe the collection, storage, management and disposal of solid refuse;
12. apply the state guidelines for water supply and sewerage schemes and recognise the relevant legislations.

**TOPICS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting (%)</th>
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<tbody>
<tr>
<td>1. Sanitary microbiology</td>
<td>6.00</td>
</tr>
<tr>
<td>2. Water chemistry</td>
<td>8.00</td>
</tr>
<tr>
<td>3. Water supply treatment and distribution</td>
<td>20.00</td>
</tr>
<tr>
<td>4. Wastewater collection and treatment</td>
<td>27.00</td>
</tr>
<tr>
<td>5. Design of water supply and wastewater treatment systems</td>
<td>18.00</td>
</tr>
<tr>
<td>6. Urban drainage design</td>
<td>15.00</td>
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<tr>
<td>7. Solid waste management</td>
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</table>

**TEXT and MATERIALS required to be PURCHASED or ACCESSED:**

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For costs, further details, and internet ordering, use the 'Textbook Search' facility at http://bookshop.usq.edu.au click 'Semester', then enter your 'Course Code' (no spaces).

*ENG4203 Public Health Engineering External Study Package*, USQ Publication,
A hand held battery operated calculator which does not have keys for the alphabet.

**REFERENCE MATERIALS:**

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.


**STUDENT WORKLOAD REQUIREMENTS:**

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>HOURS</th>
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<tbody>
<tr>
<td>Assessment</td>
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<tr>
<td>Examinations</td>
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<tr>
<td>Lectures</td>
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<tr>
<td>Private Study</td>
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<td>Tutorial</td>
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**ASSESSMENT DETAILS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Marks out of</th>
<th>Wtg(%)</th>
<th>Due date</th>
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<tbody>
<tr>
<td>ASSIGNMENT 1</td>
<td>200.00</td>
<td>20.00</td>
<td>23 Aug 2004</td>
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<tr>
<td>ASSIGNMENT 2</td>
<td>100.00</td>
<td>10.00</td>
<td>17 Sep 2004</td>
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<tr>
<td>3 HOUR RESTRICTED EXAMINATION</td>
<td>700.00</td>
<td>70.00</td>
<td>END S2 (see note 1)</td>
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NOTES:

1. Student Administration will advise students of the dates of their examinations during the semester.

**IMPORTANT ASSESSMENT INFORMATION**

1. Attendance requirements:
   
   It is the students' responsibility to attend and participate appropriately in all activities (such as lectures, tutorials, laboratories and practical work) scheduled for them, and to study all material provided to them or required to be accessed by them to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration.

2. Requirements for students to complete each assessment item satisfactorily:
   
   To complete each of the assessment items satisfactorily, students must obtain at least 50% of the marks available (or at least a grade of C-) for each assessment item.

3. Penalties for late submission of required work:
If students submit assignments after the due date without prior approval then a penalty of 20% of the total marks available for the assignment will apply for each working day late.

4 Requirements for student to be awarded a passing grade in the course:
To be assured of a passing grade, students must demonstrate, via the summative assessment items, that they have achieved the required minimum standards in relation to the objectives of the course by: (i) satisfactorily completing the examination and assignments as stated in 2 above; and (ii) obtaining at least 50% of the total weighted marks available for all summative assessment items.

5 Method used to combine assessment results to attain final grade:
The final grades for students will be assigned on the basis of the weighted aggregate of the marks (or grades) obtained for each of the summative assessment items in the course.

6 Examination information:
In a Restricted Examination, candidates are allowed access to specific materials during the examination. The only materials that candidates may use in the restricted examination for this course are: writing materials (non-electronic and free from material which could give the student an unfair advantage in the examination); calculators which cannot hold textual information (students must indicate on their examination paper the make and model of any calculator(s) they use during the examination).

7 Examination period when Deferred/Supplementary examinations will be held:
Any Deferred or Supplementary examinations for this course will be held during the examination period at the end of the semester of the next offering of this course.

8 University Regulations:
Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL http://www.usq.edu.au/corporateservices/calendar/part5.htm or in the current USQ Handbook.

ASSESSMENT NOTES

1 The due date for an assignment is the date by which a student must despatch the assignment to the USQ. The onus is on the student to provide proof of the despatch date, if requested by the Examiner.

2 Students must retain a copy of each item submitted for assessment. This must be despatched to USQ within 24 hours if required by the Examiner.

3 In accordance with University's Assignment Extension Policy (Regulation 5.6.1), the examiner of a course may grant an extension of the due date of an assignment in extenuating circumstances.

4 The Faculty will normally only accept assessments that have been written, typed or printed on paper-based media.

5 The Faculty will NOT accept submission of assignments by facsimile.
6 Students who do not have regular access to postal services or who are otherwise disadvantaged by these regulations may be given special consideration. They should contact the examiner of the course to negotiate such special arrangements.

7 In the event that a due date for an assignment falls on a local public holiday in their area, such as a Show holiday, the due date for the assignment will be the next day. Students are to note on the assignment cover the date of the public holiday for the Examiner's convenience.

8 Students who have undertaken all of the required assessments in a course but who have failed to meet some of the specified objectives of a course within the normally prescribed time may be awarded one of the temporary grades: IM (Incomplete - Make up), IS (Incomplete - Supplementary Examination) or ISM (Incomplete -Supplementary Examination and Make up). A temporary grade will only be awarded when, in the opinion of the examiner, a student will be able to achieve the remaining objectives of the course after a period of non directed personal study.

9 Students who, for medical, family/personal, or employment-related reasons, are unable to complete an assignment or to sit for an examination at the scheduled time may apply to defer an assessment in a course. Such a request must be accompanied by appropriate supporting documentation. One of the following temporary grades may be awarded IDS (Incomplete - Deferred Examination; IDM (Incomplete Deferred Make-up); IDB (Incomplete - Both Deferred Examination and Deferred Make-up).

**OTHER REQUIREMENTS**

1 Students will require access to e-mail and internet access to USQConnect for this course.