Description: Public Health Engineering

<table>
<thead>
<tr>
<th>Subject</th>
<th>Cat-nbr</th>
<th>Class</th>
<th>Term</th>
<th>Mode</th>
<th>Units</th>
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<td>ENV</td>
<td>4203</td>
<td>66416</td>
<td>2007</td>
<td>ONC</td>
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Academic group: FOENS  
Academic org: FOES03  
Student contribution band: 2  
ASCED code: 030907

STAFFING
Examiner: Vasantha Aravinthan  
Moderator: Mark Porter

REQUISITES
Pre-requisite: ENV1101 or ENV2103

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
The course objectives define the student learning outcomes for a course. The assessment item(s) that may be used to assess student achievement of an objective are shown in parenthesis. On completion of this course, students should be able to:

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

**TOPICS**

<table>
<thead>
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<th>Description</th>
<th>Weighting (%)</th>
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<tr>
<td>1. Sanitary microbiology</td>
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<tr>
<td>2. Water chemistry</td>
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<td>3. Water supply treatment and distribution</td>
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<td>4. Wastewater collection and treatment</td>
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<td>5. Design of water supply and wastewater treatment systems</td>
<td>18.00</td>
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<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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**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](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 text storage capabilities

**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.


Institution of Engineers, Australia 1998, *Australian Rainfall and Runoff, a guide to flood estimation*, 3rd edn,
STUDENT WORKLOAD REQUIREMENTS

<table>
<thead>
<tr>
<th>ACTIVITY</th>
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<td>Examinations</td>
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<td>Lectures</td>
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ASSESSMENT DETAILS

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<th>Marks out of</th>
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<td>ASSIGNMENT 2</td>
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<td>70.00</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 satisfactorily complete an individual assessment item a student must achieve at least
   50% of the marks or a grade of at least C-. (Depending upon the requirements in Statement
   4 below, students may not have to satisfactorily complete each assessment item to receive
   a passing grade in this course.)

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 receiving a passing grade a student must submit all of the assessment
   items and achieve at least 50% of the available marks for each of those items. Should a
   student gain more than 50% of the total weighted marks for the course but fail to achieve
50% of the available marks for an assessment item, they will be awarded a supplementary examination and/or assigned additional work to allow them to demonstrate to the Examiner that they have achieved the required standard in the objectives assessed by that assessment item.

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 can expect that questions in assessment items in this course may draw upon knowledge and skills that they can reasonably be expected to have acquired before enrolling in the course. This includes knowledge contained in pre-requisite courses and appropriate communication, information literacy, analytical, critical thinking, problem solving or numeracy skills. Students who do not possess such knowledge and skills should not expect to achieve the same grades as those students who do possess them.

2 Students can expect that questions in assessment items in this course may draw upon knowledge and skills that they can reasonably be expected to have acquired before enrolling in the course. This includes knowledge contained in pre-requisite courses and appropriate communication, information literacy, analytical, critical thinking, problem solving or numeracy skills. Students who do not possess such knowledge and skills should not expect to achieve the same grades as those students who do possess them.