Description: Hydraulics for Technologists

Subject Cat-Nbr Class Term Mode Units Campus
ENV 1101 14646 2, 2002 ONC 1.00 TWMBA

Academic Group: FOENS
Academic Org: FOES03
HECS Band: 2
ASCED Code: 030999

STAFFING
Examiner: Ken Moore
Moderator: Rod Smith

SYNOPSIS
This course provides an introduction to engineering hydraulics in the Associate Degree and Bachelor of Engineering Technology programs. It seeks to provide the basic skills to undertake simple analyses and designs of water impounding structures, gravity and pumped pipeline systems, open channels and culverts. The course provides a solid grounding in the hydraulics of steady uniform incompressible flow in pipes and channels. There are no formal prerequisites for this course but students would be advantaged with prior studies in basic engineering statics.

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

- define the important properties of fluids;
- calculate pressures and forces on floating and immersed bodies;
- solve steady pipe and open channel flow problems;
- determine the operating point of a pump;
- explain the operation of common flow measurement devices and techniques for pipelines and channels; and
- undertake hydraulic design of pipelines and box culverts.

TOPICS

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting (%)</th>
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</thead>
<tbody>
<tr>
<td>1. Properties of Fluids</td>
<td>5.00</td>
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<tr>
<td>2. Fluid Statics</td>
<td>15.00</td>
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</table>
3. Fluid Flow Concepts 10.00
4. Flow of Incompressible Fluids in Pipelines 20.00
5. Pumped Systems 15.00
6. Open Channel Flow 15.00
7. Flow Measurement 10.00
8. Culvert Hydraulics 10.00

TEXT and MATERIALS required to be PURCHASED or ACCESSED:
Books can be ordered by fax or telephone. For costs and further details use the 'Book Search' facility at http://bookshop.usq.edu.au by entering the author or title of the text.

ENV1101 Hydraulics for Technologists External Study Package, USQ Publication,
Any hand held battery operated calculator.

Bugler, J. W. 1989, Fluid Mechanics for Technologists, Longman Cheshire,

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.

Kay, M. 1998, Practical Hydraulics, E & F N Spon,

STUDENT WORKLOAD REQUIREMENTS

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>HOURS</th>
</tr>
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<tbody>
<tr>
<td>Directed Study</td>
<td>45</td>
</tr>
<tr>
<td>Examinations</td>
<td>4</td>
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<tr>
<td>Lectures</td>
<td>26</td>
</tr>
<tr>
<td>Private Study</td>
<td>54</td>
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<td>Tutorial</td>
<td>26</td>
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## ASSESSMENT DETAILS

<table>
<thead>
<tr>
<th>Description</th>
<th>Marks Out of</th>
<th>Wtg(%)</th>
<th>Required</th>
<th>Due Date</th>
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<tbody>
<tr>
<td>1 HOUR TEST</td>
<td>100.00</td>
<td>10.00</td>
<td>Y</td>
<td>22 Jul 2002</td>
</tr>
<tr>
<td>ASSIGNMENT</td>
<td>200.00</td>
<td>20.00</td>
<td>Y</td>
<td>25 Oct 2002</td>
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<tr>
<td>3 HOUR CLOSED/RESTRICTED EXAM</td>
<td>700.00</td>
<td>70.00</td>
<td>Y</td>
<td>END S2</td>
</tr>
</tbody>
</table>

**NOTES:**
1. The 1 hour mid-semester test will be held in week 7 of the semester.
3. Student Administration will advise students of the dates of their examinations during the semester.

## OTHER REQUIREMENTS

1. Students should achieve at least 45% of the marks allocated for each assessment and at least 50% of the total allocated marks in order to successfully complete this course.
2. A minimum standard of communication skills must be demonstrated in order for a passing grade to be achieved.
3. The due date for an assignment is the date by which a student must submit the assignment to the USQ. The onus is on the student to provide proof of the submit date, if requested by the Examiner.
4. Students must retain a copy of each item submitted for assessment. This must be produced within five days if required by the Examiner.
5. 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.
6. If students submit assignments after the due date without prior approval then a penalty of up to 20% of the total marks for the assignment will apply for each working day late.
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. The Faculty of Engineering and Surveying will NOT accept submission of hand written or typed assignments by facsimile, e-mail or computer diskette. Students in remote locations who do not have regular access to postal services may be given special consideration. The final grades for students will be assigned on the basis of the aggregate of the marks obtained for each of the assessments in the course.
9. The final examination is part closed and part restricted. For the restricted part of the examination, students are permitted access to any type of hand held battery operated calculator.
10. A closed examination is an examination where the candidates are allowed to bring only writing and drawing instruments into the examination.
11 Students must note the make and model of the calculator used on the front of the Answer Book or Examination Paper where applicable. This may be subject to checking by the supervisor.

12 The Faculty of Engineering and Surveying does not offer supplementary examinations.

13 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 the temporary grade: IM (Incomplete - Make up). An IM 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.

14 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; IDSM (Incomplete Deferred Examination and Make-up).