Description: Energy Technology

Subject  Cat-Nbr  Class  Term  Mode  Units  Campus
MEC  4104  10612  1, 2002  EXT  1.00  TWMBA

Academic Group:  FOENS
Academic Org:  FOES02
HECS Band:  2
ASCED Code:  030799

STAFFING
Examiner: John Eastwell
Moderator: Ruth Mossad

PRE-REQUISITES
Pre-requisite: MEC 2101 and MEC 3102 or MEC 2106

SYNOPSIS
Over the next decade or so, environmental concerns plus the depletion of the world's fossil fuel reserves accentuated by the industrialisation of presently third world countries, are going to force a reshaping of our use of energy. This course aims to prepare the student to play an informed and constructive part in that reshaping.

OBJECTIVES
On successful completion of this course students will be able to:

- evaluate conventional and renewable energy sources and their impact on the environment, and assess their potential for a particular energy application;
- share in the design of combustion systems based on the knowledge of the principles of combustion;
- estimate the heat load on a building, as a major energy consideration in buildings.

TOPICS

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting (%)</th>
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<tbody>
<tr>
<td>1. Introduction to combustion</td>
<td>2.00</td>
</tr>
<tr>
<td>2. Thermodynamics and mixtures</td>
<td>5.00</td>
</tr>
<tr>
<td>3. Conservation equations for reacting flows</td>
<td>5.00</td>
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</tbody>
</table>
4. Chemical reactions 6.00
5. Laminar and turbulent flows 6.00
6. Premixed flames 12.00
7. Diffusion flames 12.00
8. Emissions from combustion 2.00
9. Solar energy 8.00
10. Wind energy 8.00
11. Hydro energy 8.00
12. Other renewable energy sources 5.00
13. Energy storage and distribution 5.00
14. Heat loads on a building 16.00

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.

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.

Stoecker W F, Jones J W Refrigeration and Air Conditioning, McGraw Hill.
STUDENT WORKLOAD REQUIREMENTS

ACTIVITY  
Assessment 16 
Directed Study 110 
Examinations 3 
Private Study 26 

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>ASSIGNMENT 1</td>
<td>999.00</td>
<td>10.00</td>
<td>Y</td>
<td>04 Mar 2002</td>
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<tr>
<td>(see note 1)</td>
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<tr>
<td>ASSIGNMENT 2</td>
<td>999.00</td>
<td>20.00</td>
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<td>04 Mar 2002</td>
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<td>(see note 2)</td>
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<tr>
<td>3 HOUR RESTRICTED EXAMINATION</td>
<td>999.00</td>
<td>70.00</td>
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<td>END S1</td>
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<td>(see note 3)</td>
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</tbody>
</table>

NOTES:
1. Further details about the due dates are detailed in the assessment section of the Course Specifications.
2. Further details about the due dates are detailed in the assessment section of the Course Specifications.
3. Further details about the due dates are detailed in the assessment section of the Course Specifications.

OTHER REQUIREMENTS

1. In order to successfully complete the course students must normally achieve at least 45% of the marks for each assessment and 50% of the total marks available for the course.
2. 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.
3. Students must retain a copy of each item submitted for assessment. This must be produced within five days if required by the Examiner.
4. 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.
5. 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.
6. 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.

7 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.

8 The final examination is restricted. Students may take one original hand written double sided A4 sheet into the examination.

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

10 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.

11 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).

12 A minimum standard of communication skills must be demonstrated in order for a passing grade to be achieved.