Description: Production Engineering

Subject | Cat-Nbr | Class | Term | Mode | Units | Campus
--------|---------|-------|------|------|-------|-------
MEC      | 3204    | 14623 | 2, 2002 | ONC | 1.00  | TW MBA

Academic Group: FOENS
Academic Org: FOES02
HECS Band: 2
ASCED Code: 030703

STAFFING
Examiner: Harry Ku
Moderator: Mick Morgan

PRE-REQUISITES
Pre-requisite: MEC2202

SYNOPSIS
The design and organisation of methods used in manufacturing is of fundamental importance to a manufacturing firm. Methods may also be termed the management of a process, the way in which physical facilities are arranged to provide an environment which is inductive to efficient, fast transformation. A measure of this efficiency is the time in which the transformation occurs. Time being one of the critical factors involved in the measurement of productivity. The transformation process requires an exact knowledge of the size, shape and finish desired on the finished product. In manufacturing, the ability to measure accurately both size and form, is of paramount importance to the quality and performance of the end product. Because of the wide diversity of types of processes, materials and products associated with manufacturing, the management function of a firm must be highly organised, efficient and responsive to provide an environment capable of meeting the demands and needs of its customers. Engineers must keep abreast with advancing production and operations techniques to ensure that their products remain competitive. Computer technology has made tremendous inroads into the manufacturing scene over the past decade and firms must incorporate computer monitoring and control in their operations if they are to remain in today's manufacturing arena.

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

- analyse various techniques and carry out a range of practical tests associated with metrology;
• analyse different types of robots and their application characteristics;
• discuss various types of automated material handling systems and their applications in the manufacturing industries;
• discuss automated inspection and testing systems and their applications in the manufacturing industries;
• explain how the study of methods and work measurement can help the engineer solve many problems associated with the manufacturing environment;
• interpret how the functions of production planning and control operate in a manufacturing organisation;
• analyse the concept of inventory control and in particular, its application to the ordering and costing of materials in store;
• analyse and apply methods for equipment selection and maintenance;
• evaluate various layouts associated with manufacturing and explain when and how to apply them;
• outline the principles of operation of flexible manufacturing systems, group technology, just in time systems and computer integrated manufacturing;
• examine the applications of health and safety management in manufacturing organisations.

**TOPICS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting (%)</th>
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<tbody>
<tr>
<td>1. Metrology</td>
<td>30.00</td>
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<tr>
<td>1.1. Linear Measurement</td>
<td></td>
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<td>1.2. Angular Measurement</td>
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<td>1.3. Limit Gauges</td>
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<td>1.4. Machine Tool Testing</td>
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<td>1.5. Gear Measurement</td>
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<td>1.6. Screw Thread Measurement</td>
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<td>1.7. Surface Finish Measurement</td>
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</table>
2. Advanced Manufacturing  

2.1. Industrial Robots

2.2. Automated Material Handling Systems

2.3. Automated Inspection and Testing

3. Industrial Engineering  

3.1. Method Study

3.2. Work Measurement

3.3. Group Technology, Flexible Manufacturing Systems and Just in Time

3.4. Equipment Selection and Maintenance

3.5. Production Planning and Control

3.6. Factory Location and Layout

3.7. Computer Integrated Manufacturing

3.8. Occupational health and safety management

**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.

*MEC3204 Production Engineering External Study Package,* USQ Publication,

International Labour Office *Introduction to Work Study,* Geneva,

Lockyer, Mulemann & Oakland *Production and Operations Management,* 6th edition, Pitman,
**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>
<td>3</td>
</tr>
<tr>
<td>Lectures</td>
<td>26</td>
</tr>
<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>Required</th>
<th>Due Date</th>
</tr>
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<tbody>
<tr>
<td>ASSIGNMENT 1</td>
<td>200.00</td>
<td>20.00</td>
<td>Y</td>
<td>13 Sep 2002</td>
</tr>
<tr>
<td>ASSIGNMENT 2</td>
<td>200.00</td>
<td>20.00</td>
<td>Y</td>
<td>11 Oct 2002</td>
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<td>3 HOUR RESTRICTED EXAMINATION</td>
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<td>60.00</td>
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<td>END S2</td>
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(see note 3)

**NOTES:**

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

**OTHER REQUIREMENTS**

1. Students must achieve at least 40% of marks in each assessment, and at least 50% of total marks for a pass in the 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.
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.

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.

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.

The final examination in this course is restricted and students may only bring a hand held battery operated calculator which does not have keys for the alphabet into the examination room. Half the final examination will be on industrial engineering and the other half on metrology and modern manufacturing.

In the restricted examination, Industrial Engineering will form Part A of the paper and Metrology and Modern Manufacturing will form Part B.

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.

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

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.

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).