



The University of Southern Queensland

Course specification

The current and official versions of the course specifications are available on the web at <http://www.usq.edu.au/coursespecification/current>.
Please consult the web for updates that may occur during the year.

Description: Production Engineering

| Subject | Cat-nbr | Class | Term | Mode | Units | Campus |
|---------|---------|-------|---------|------|-------|-----------|
| MEC | 3204 | 78373 | 2, 2008 | EXT | 1.00 | Toowoomba |

| | |
|-----------------------------------|--------|
| Academic group: | FOENS |
| Academic org: | FOES02 |
| Student contribution band: | 2 |
| ASCED code: | 030703 |

STAFFING

Examiner: Harry Ku
Moderator: Hao Wang

OTHER REQUISITES

Recommended prior or concurrent study: 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

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. analyse various techniques and carry out a range of practical tests associated with metrology; (Assignment 2; 2 Hour Restricted Examination)
2. analyse different types of robots and their application characteristics;

3. discuss various types of automated material handling systems and their applications in the manufacturing industries; (2 Hour Restricted Examination)
4. discuss automated inspection and testing systems and their applications in the manufacturing industries; (2 Hour Restricted Examination)
5. explain how the study of methods and work measurement can help the engineer solve many problems associated with the manufacturing environment; (Assignment 1; 2 Hour Restricted Examination)
6. interpret how the functions of production planning and control operate in a manufacturing organisation; (2 Hour Restricted Examination)
7. analyse the concept of inventory control and in particular, its application to the ordering and costing of materials in store; (2 Hour Restricted Examination)
8. analyse and apply methods for equipment selection and maintenance; (2 Hour Restricted Examination)
9. evaluate various layouts associated with manufacturing and explain when and how to apply them; (2 Hour Restricted Examination)
10. outline the principles of operation of flexible manufacturing systems, group technology, just in time systems and computer integrated manufacturing; (2 Hour Restricted Examination)
11. examine the applications of health and safety management in manufacturing organisations.
12. evaluate various investment options using net present value.

TOPICS

| Description | Weighting (%) |
|--|---------------|
| 1. Metrology | 30.00 |
| 1.1. Linear Measurement | |
| 1.2. Angular Measurement | |
| 1.3. Limit Gauges | |
| 1.4. Machine Tool Testing | |
| 1.5. Gear Measurement | |
| 1.6. Screw Thread Measurement | |
| 1.7. Surface Finish Measurement | |
| 2. Advanced Manufacturing | 20.00 |
| 2.1. Industrial Robots | |
| 2.2. Automated Material Handling Systems | |

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|------|---|-------|
| 3. | Industrial Engineering | 50.00 |
| 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 | |
| 3.9. | Net present value | |

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).

International Labour Office 1992, *Introduction to work study*, 4th edn, Geneva,

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.

Groover, MP 2007, *Automation, production systems and computer integrated manufacturing*, 3rd edn, Prentice Hall,

STUDENT WORKLOAD REQUIREMENTS

| ACTIVITY | HOURS |
|----------------|-------|
| Assessments | 30.00 |
| Directed Study | 52.00 |
| Examinations | 3.00 |
| Private Study | 70.00 |

ASSESSMENT DETAILS

| Description | Marks out of | Wtg (%) | Due date |
|-------------------------------|--------------|---------|------------------------|
| ASSIGNMENT 1 | 150.00 | 15.00 | 08 Sep 2008 |
| ASSIGNMENT 2 | 150.00 | 15.00 | 29 Sep 2008 |
| 2 HOUR RESTRICTED EXAMINATION | 700.00 | 70.00 | END S2 (see note 1) |

NOTES

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

IMPORTANT ASSESSMENT INFORMATION

- 1 Attendance requirements:
There are no attendance requirements for this course. However, it is the students' responsibility 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 40% 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 extenuating circumstances then a penalty of 5% of the assigned mark may apply for each working day late up to a maximum of ten working days at which time a mark of zero can be recorded for that assignment.
- 4 Requirements for student to be awarded a passing grade in the course:
To be assured of receiving a passing grade in a course a student must obtain at least 50% of the total weighted marks for the course.
- 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).