



The University of Southern Queensland

Course specification

Description: Dynamics I

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
MEC	2401	54427	2, 2006	ONC	1.00	Toowoomba

Academic group:	FOENS
Academic org:	FOES02
Student contribution band:	2
ASCED code:	030701

STAFFING

Examiner: Talal Yusaf
Moderator: Chris Snook

REQUISITES

Pre-requisite: MAT1102 and CIV1501

SYNOPSIS

A working knowledge of the basic laws of motion and of the concepts of force, energy, momentum and impulse, is fundamental to the study of mechanics and the solution of many engineering problems. In this course these basic concepts are reviewed and a number of techniques are developed to assist in the analysis of the plane motion of particles, bodies, interconnected bodies, mechanisms and geared systems.

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. apply the Free Body Diagram Method to solve problems involving the forces on particles and rigid bodies, and to determine their resulting linear and curvilinear motions; (Assignment; Exam)
2. analyse mechanisms and derive the velocities and accelerations of their rigid body components; (Assignment; Exam)
3. apply the Work Energy method to the solution of problems involving the motions of systems of particles; (Assignment; Exam)
4. apply Newton's Laws of Motion, Principles of Conservation of Energy and Momentum and Coulomb's Laws of Friction to problems involving the plane motion of particles, bodies, interconnected bodies, and links within mechanisms; (Assignment; Exam)
5. select the most appropriate of these techniques for a given problem; (Assignment; Exam)
6. perform kinematics and force analysis of plane mechanisms; (Assignment; Exam); and
7. analyse free vibration of a single degree of freedom system. (Assignment; Exam)

TOPICS

	Description	Weighting (%)
1.	Introduction and problem solving strategies	5.00
2.	Kinematics of particles	15.00
3.	Kinetics of particles	15.00
4.	Work energy method	10.00
5.	Impulse and momentum	10.00
6.	Steady flow and systems gaining or losing mass	10.00
7.	Kinematics of rigid bodies	10.00
8.	Plane mechanisms	15.00
9.	Vibration with one degree of freedom	10.00

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).

Meriam, J. L. & Kraige, L. G 2003, *Engineering Mechanics: Dynamics*, 5th edn, Wiley, Vol 2.
(SI Version)

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.

Shigley, J. E. & Uicker, J. J. 1995, *Theory of Machines and Mechanisms*, McGraw Hill,

STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Assessment	7.00
Examinations	3.00
Lectures	52.00
Private Study	67.00
Tutorials	26.00

ASSESSMENT DETAILS

Description	Marks out of	Wtg(%)	Due date
ASSIGNMENT	300.00	30.00	13 Sep 2006
3 HOUR OPEN 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:
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 10% 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 achieve at least 40% in each of the weighted assessment items and at least 50% of the total weighted marks available 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 an Open Examination, candidates may have access to any material during the examination except the following: electronic communication devices, bulky materials, devices requiring mains power and material likely to disturb other students.
- 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 will require access to e-mail and internet access to USQConnect for this course.
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