



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: Mechanical Practice 4

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
MEC	3904	90354	2, 2009	ONC	0.00	Toowoomba

<b>Academic group:</b>	FOENS
<b>Academic org:</b>	FOES02
<b>Student contribution band:</b>	2
<b>ASCED code:</b>	030799

## STAFFING

Examiner: Ruth Mossad  
Moderator: David Buttsworth

## RATIONALE

The successful practice of the profession of Mechanical Engineering requires a clear understanding of the relationship between engineering and engineering practice. An ability to recognise when a particular theory is applicable and an ability to accommodate the deviations from the theory that occur in the real world is essential. Some knowledge of a wide range of practical techniques, proprietary devices, materials, construction methods etc is also necessary. The engineer must be able to assess a complex situation, identify the critical elements and develop a workable, cost effective solution. All of this requires considerable self-confidence, and the ability to work with and lead teams.

## SYNOPSIS

This course aims at providing you with practical skills needed in many industrial processes. The course is designed to help you review and apply some of the basics of fluid mechanics and heat transfer to practical situations. You will conduct five tasks through which you will gain practical experience with flow visualization, measuring velocity of fluids (gases or liquids), pressures, forces due to fluids and temperature of a fluid or a solid. You will also learn how to experimentally estimate flow rates in pipes and ducts, head losses in fluid systems, and heat flux in steady and transient thermal systems. You will work as part of a team and will be given the opportunity to lead the team.

## 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. conduct tests in accord with a general requirement;
2. measure a variety of engineering quantities of an importance to many engineering processes such as pressure, velocity, temperature, forces, flow rate etc;

3. report on and discuss your findings;
4. participate constructively in and lead a team.

## TOPICS

Description	Weighting (%)
1. Liquid flow rate measurements	20.00
2. Measuring forces due to the flow of fluids	20.00
3. Flow rate of gases and forces due to the flow of gases over bodies	20.00
4. Head losses in straight pipes and fittings	20.00
5. Measuring temperature and estimate heat flux	20.00

## 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).

*MEC3904 Mechanical practice 4: external study package*, University of Southern Queensland, Toowoomba.

(will be provided to students by Examiner)

## 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.

Esposito, A 1998, *Fluid mechanics with applications*, Prentice Hall, Upper Saddle River, NJ. (International Edition)

Fox, RW & McDonald, AT 2004, *Introduction to fluid mechanics*, 6th edn, Wiley, New York. (S1 Version)

Holman, JP 1994, *Experimental methods for engineers*, 6th edn, McGraw-Hill, New York.

Kreith, F & Bohn, MS 2001, *Principles of heat transfer*, 6th edn, Brooks/Cole Publishing, Pacific Grove, CA.

## STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Directed Study	5.00
Laboratory or Practical Classes	20.00
Private Study	25.00

## ASSESSMENT DETAILS

Description	Marks out of	Wtg (%)	Due date
TASK 1	1.00	20.00	11 Sep 2009 (see note 1)
TASK 2	1.00	20.00	11 Sep 2009
TASK 3	1.00	20.00	11 Sep 2009
TASK 4	1.00	20.00	11 Sep 2009
TASK 5	1.00	20.00	11 Sep 2009

### NOTES

1. Each assessment must be completed within one week after conducting the experiment.

## 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 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 students must satisfactorily complete (as defined in Statement 2) at least 80% of the practical and other activities.
- 5 Method used to combine assessment results to attain final grade:  
As P is the only passing grade available for this course, all students who are qualified for a passing grade, under the requirements in 4 above, will be given a grade of P. Other students will be given either a Failing grade or an Incomplete grade.
- 6 Examination information:  
There is no examination in this course.
- 7 Examination period when Deferred/Supplementary examinations will be held:  
Not applicable.
- 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 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.
- 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).