



The University of Southern Queensland

## Course specification

<b>Description: Mathematics Communication Level C</b>						
Subject	Cat-nbr	Class	Term	Mode	Units	Campus
UNP	7383	45032	2, 2005	EXT	1.00	Toowoomba

<b>Academic group:</b>	OPACS
<b>Academic org:</b>	OPACSP
<b>Student contribution band:</b>	2
<b>ASCED code:</b>	010199

### STAFFING

Examiner: Robyn Pigozzo  
Moderator: Linda Galligan

### RATIONALE

This course is designed to provide students with the basic mathematical competencies for entry into the Bachelor of Science (other than Psychology and Mathematics), Bachelor of Technology, Associate Degrees of Engineering, Surveying, Mathematics and Computing, Bachelor of Engineering and Bachelor of Information Technology (Networking, Software Engineering and Applied Computer science). Students also need to develop and practise language and problem solving skills in English so that they can build upon their existing knowledge and express themselves adequately in the mathematical context. This course is designed to allow students to appreciate the diverse applications and power of mathematics; the precise language and structure of mathematics; and to develop confidence and reduce anxiety by using mathematics skills in a variety of problem solving sessions.

### SYNOPSIS

There are two compulsory parts of the course. Part A consists of the mastery of the content of selected topics within algebra for calculus, algebra and graphs, trigonometry, application of calculus and integral calculus. Students are also expected to show competence in communicating using mathematical language in English. Part B consists of group work designed to develop the mathematical communication and problem solving skills of students. This work utilises some of the content mastered in Part A of the course.

### OBJECTIVES

On successful completion of this course a student should be able to:

1. demonstrate an understanding of mathematical topics essential for tertiary study as detailed below;
2. demonstrate an ability to select and use appropriate technology such as calculators, measuring instruments and computers with selected software;
3. select and use appropriate mathematical procedures;
4. work accurately and manipulate formulae;

5. transfer and apply mathematical procedures to a range of situations;
6. demonstrate problem solving through using a range of problem solving strategies, selecting appropriate mathematical procedures, identifying the problem, reflecting on the solutions, extending and generalizing from problems:
7. on successful completion of this course, students will be able to demonstrate communication through:
8. understanding, organising and presenting information in a variety of forms (such as oral, written, symbolic, pictorial and graphical);
9. using mathematical terms and symbols accurately and appropriately;
10. using accepted spelling, punctuation and grammar in written communication;
11. translating material from one form to another when appropriate (eg words to formulas);
12. recognising necessary distinctions in the meanings of words and phrases according to whether they are used in a mathematical or non-mathematical situation.

## TOPICS

	Description	Weighting (%)
1.	Basic Algebra, arithmetic, graphing- expression, equations - linear, quadratic, polynomial, exponential, logarithmic and simultaneous, trigonometrical ratios and functions and matrices	27.00
2.	Functions and Relations - polynomial, exponential, logarithmic functions and their inverses; functions over an integral domain (sequences and series).	16.00
3.	Trigonometric Functions - radians, sketch functions, amplitude, vertical shift, phase, period; inverse; solve simple equations	12.00
4.	Analytical Geometry - rectangular, polar coordinates and vectors; distance and mid-points of a line; standard curves - polynomial, exponential, logarithmic, circular and hyperbolas and transformations on these; simple parametric equations	12.00
5.	Introductory calculus: Differentiation - calculate and describe rate of change and instantaneous rate of change certain polynomial, trigonometrical, exponential and logarithmic functions; stationary points and optimisations problems	15.00
6.	Introductory calculus: Integration - indefinite and definite integrals of basic polynomial, trigonometric, exponential and logarithmic functions; areas under curves using approximations and calculus	10.00
7.	Statistics - data collection, classification, interpretation and display	8.00

## 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).

UNP 7383 Mathematics Tertiary Preparation Level C - Study Package, USQ, Toowoomba.

Students are expected to have a scientific calculator.

Galligan, L. et al 2002, *Mathematics Communication: Problem Solving Book*, USQ, Toowoomba.

## 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

ACTIVITY	HOURS
Assessment	36.00
Directed Study	48.00
Private Study	80.00

## ASSESSMENT DETAILS

Description	Marks out of	Wtg(%)	Due date
ASSIGNMENT 1	45.00	5.00	21 Oct 2005 (see note 1)
ASSIGNMENT 2	43.00	10.00	21 Oct 2005 (see note 2)
ASSIGNMENT 3	42.00	10.00	21 Oct 2005 (see note 3)
ASSIGNMENT 4	40.00	10.00	21 Oct 2005 (see note 4)
ASSIGNMENT 5	45.00	13.00	21 Oct 2005 (see note 5)
ASSIGNMENT 6	32.00	12.00	21 Oct 2005 (see note 6)
REVISION TEST	40.00	10.00	21 Oct 2005 (see note 7)
ASSIGN 7 - STUDENT PROBLEM	20.00	6.00	21 Oct 2005 (see note 8)
ASSIGN 8 - REPORT 1	24.00	12.00	21 Oct 2005 (see note 9)
ASSIGN 9 - STOCK MARKET	30.00	12.00	21 Oct 2005 (see note 10)

### NOTES

1. Due by end of week 1.
2. Due by mid term.
3. Due by mid term.
4. Due by last week of term.
5. Due by last week of term.
6. Due by last week of term.

7. Due by last week of term.
8. Due by last week of term.
9. Due by week 9 of term.
10. \* Due by week 11 of term.

## **IMPORTANT ASSESSMENT INFORMATION**

- 1 Attendance requirements:  
Students are required to attend at least 80% of the mathematics communication group work sessions and ensure their attendance is registered with the staff member in charge of the activity. It is the students' responsibility to study all course material to pass the mathematics assignments. Students need to attend module sessions to correct these assignments and seek support as necessary.
- 2 Requirements for students to complete each assessment item satisfactorily:  
To complete each assignment satisfactorily, students must obtain at least 50% of the marks available in each assignment. Students may be required to re-submit an assignment that is unsatisfactory. Unless approved by the examiner, all assessment items must be received prior to the start of the exam period for the semester in which the course is offered.
- 3 Penalties for late submission of required work:  
If students submit assignments after the due date without an approved extension of time then a penalty of 5% of the total marks available for the assignments will apply for each 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 attempt all of the summative assessment items, achieve an aggregated mark of at least 50% in the total marks allocated for all summative assessment items and satisfactorily (as stated in Assessment 2) complete all assignments. Students who do not qualify for a Passing grade may, at the discretion of the Examiner, be assigned additional work to demonstrate to the Examiner that they have achieved the required standard. It is expected that such students have gained at least 40 % of the total marks available for all assessment items.
- 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 obtained for each of the summative assessment items in the course.
- 6 Examination information:  
There is no examination in this course.
- 7 Examination period when Deferred/Supplementary examinations will be held:  
N/A
- 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 Students must retain a copy of each item submitted for assessment. This must be produced within 24 hours if required by the Examiner. In accordance with the

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.

### **OTHER REQUIREMENTS**

- 1 Students should have a knowledge of Part A of UNIPREP Mathematics Communication Level B or equivalent.
  - 2 Part A is predominantly a self-paced course. Students work sequentially through the modules at their own pace, completing this part of the work by the end of the term.
  - 3 Part B consists of different activities each week. Students must participate actively in the group work of the problem solving sessions. Students also must submit written work as required.
-