Description: Mathematics Communication Level C

<table>
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<th>Subject</th>
<th>Cat-nbr</th>
<th>Class</th>
<th>Term</th>
<th>Mode</th>
<th>Units</th>
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<tr>
<td>UNP</td>
<td>7383</td>
<td>66786</td>
<td>2, 2007</td>
<td>EXT</td>
<td>1.00</td>
<td>Toowoomba</td>
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**Academic group:** INTOF  
**Academic org:** INT002  
**Student contribution band:** 2  
**ASCED code:** 010199

**STAFFING**

Examiner: Robyn Pigozzo  
Moderator: Lyndal Wood

**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 completion of this course students will 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. recognizing necessary distinctions in the meanings of words and phrases according to whether they are used in a mathematical or non-mathematical situation.

TOPICS

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Basic Algebra, arithmetic, graphing-expression, equations-linear, quadratic, polynomial, exponential, logarithmic and simultaneous, trigonometrical ratios and functions and matrices</td>
<td>27.00</td>
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<tr>
<td>2. Functions and Relations - polynomial, exponential, logarithmic functions and their inverses; functions over an integral domain (sequences and series).</td>
<td>16.00</td>
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<tr>
<td>3. Trigonometric Functions - radians, sketch functions, amplitude, vertical shift, phase, period; inverse; solve simple equations</td>
<td>12.00</td>
</tr>
<tr>
<td>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</td>
<td>12.00</td>
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<tr>
<td>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</td>
<td>15.00</td>
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<tr>
<td>6. Introductory calculus: Integratio - indefinite and definite integrals of basic polynomial, trigonometric, exponential and logarithmic functions; areas under curves using approximations and calculus</td>
<td>10.00</td>
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<tr>
<td>7. Statistics - data collection, classification, interpretation and display</td>
<td>8.00</td>
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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, University of Southern
Queensland, Toowoomba.
(Available from your service provider)
Students are expected to have a scientific calculator.
Galligan, L et al 2005, Applied communication/Mathematics communication - Problem solving
book, University of Southern Queensland, 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

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<thead>
<tr>
<th>ACTIVITY</th>
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<tr>
<td>Assessment</td>
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<td>Directed Study</td>
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<td>Private Study</td>
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## ASSESSMENT DETAILS

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<th>Wtg(%)</th>
<th>Due date</th>
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<tr>
<td>ASSIGNMENT 1</td>
<td>40.00</td>
<td>5.00</td>
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<td>(see note 1)</td>
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<tr>
<td>ASSIGNMENT 2</td>
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<td>(see note 2)</td>
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<td>ASSIGNMENT 5</td>
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<td>ASSIGN 7 - STUDENT PROBLEM</td>
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<td>ASSIGN 9 - REPORT</td>
<td>24.00</td>
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<td>ASSIGN 10 - STOCK MARKET</td>
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<td>ASSIGN 8 - LOGS</td>
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<td>(see note 11)</td>
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### 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 week 9 of term.
9. Due by week 11 of term.
10. Due last week of term.
11. Due by last week of term.

### IMPORTANT ASSESSMENT INFORMATION

1. Attendance requirements:
   Students are required to attend at least 80% of the scheduled class sessions and ensure their attendance is registered with the staff member in charge of the activity. An exception to this attendance level may be made by the university where the student can produce documentary evidence that clearly demonstrates compassionate and compelling circumstances. In this case attendance of at least 70% of the scheduled class sessions will be acceptable. It is the student's responsibility to access information regarding course-related activities and administration.
2 Requirements for students to complete each assessment item satisfactorily:
   Refer to statement 4 below for the requirements to receive a passing grade in this course.
   All assessment items must be received prior to the start of the examination period for the
   semester in which the course is offered. Students may be required to re-submit an
   assessment piece that is unsatisfactory.

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 may 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 at least 50% in the final test, 50% in the weighted marks in
   assignments 1-6, 50% of the weighted marks in assignments 7-10 and at least 50% of the
   total weighted marks available for the course. 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 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 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 the candidate may use in the restricted examination for
   this course are: writing materials, a non-programmable scientific calculator and one (1)
   A4 sheet of notes prepared by the candidate.

7 Examination period when Deferred/Supplementary examinations will be held:
   Any deferred or supplementary exam for this course will be held at a time arranged by
   the examiner in consultation with the students.

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 Part A requires you to work through a series of Assignments to demonstrate your
   understanding of mathematical topics.

2 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.