1. General Course Information

1.1 Course Details

**Course Code:** MATH1040  **Course Title:** Basic Mathematics  
**Coordinating Unit:** School of Physical Sciences  
**Semester:** Semester 2, 2008  
**Mode:** Internal  
**Level:** Undergraduate  
**Location:** St Lucia  
**Number of Units:** 2  
**Contact Hours Per Week:** 3L1T1C (6L2T Summer)  
**Incompatible:** HA in Year 12 Maths B or MT140 or MP107 or MP127  
**Assumed Background:** There is no assumed background for this course. However, the course will not be easy and students should expect to work hard to get good results.

1.2 Course Introduction

This course provides an introduction to the most important parts of the mathematics needed at University. It is designed for students with limited mathematical background and gives a knowledge of mathematics equivalent to Queensland high school Maths B.

Most students take MATH1040 to satisfy a prerequisite. But MATH1040 is also interesting in its own right and it will even be useful in everyday life. Many students from other fields take MATH1040 to strengthen their mathematical skills. A number of PhD students have completed MATH1040 so they can understand the mathematics used in their area. Happily a number of students have enjoyed MATH1040 so much that they have studied some of the follow-up courses.

1.3 Course Staff

**Course Coordinator:** Dr Barbara Maenhaut  
**Email:** b.maenhaut@uq.edu.au
Lecturer: Dr Nicole Bordes

UQ students: Please sign in to mySI-net to view your list of enrolled courses and click the relevant Profile link to access all course contributor details held in this profile.

1.4 Timetable

Timetables are available on mySI-net.

Additional Timetable Information

There are no repeat lectures in this course. You should attend all lectures on Tuesday and Thursday. You need to attend at least one tutorial. PASS classes are optional, but you are urged to attend if you feel your mathematics background is weak or you want to attend a different style of class. PASS classes are listed as ‘C’ in the timetable and exact times and days will be announced in the first week.

Nicole Bordes will be lecturing the first half of the course and Barbara Maenhaut will be lecturing the second half of the course.

Wednesday 13 August 2008 is a public holiday. The university will be closed on that day.

2. Aims, Objectives & Graduate Attributes

2.1 Course Aims

The aim of this course is for students to reach a standard of mathematics roughly equivalent to Queensland high school Mathematics B. This will enable them to tackle first level Mathematics courses such as MATH1050 and then MATH1051, as well as MATH1061 and/or STAT1201. It will also enable students to cope with a reasonable level of mathematics in their other (non-maths) courses.

Maths-phobia is a fear of maths. More than most courses at school, when you fall behind at maths, it can become very difficult to understand much of what is going on. For this reason, some students lose confidence in their mathematical ability, and spend the rest of their lives cowering in a state of maths-phobia, haunted by memories of maths teachers spouting unintelligible rubbish. Probably, many of you thought when you left school that you would never have to think of maths again, only to find you needed to take this course as a prerequisite. Others may have not done maths for a long time.

Mathematics is a bit like a foreign language; it has its own set of symbols and letters that are impossible to understand if you have never seen them before. When learning a language, at first we just hear a jumble of sound that makes no sense. Over time, some of the jumble begins to sound familiar, even if we can't quite grasp the overall meaning. Finally, after much practice, we understand words and complete sentences. Similarly with mathematics, there is a gradual process of familiarity and understanding. Do not panic if you find you feel lost initially when we introduce a new topic. Keep in mind that every student of mathematics goes through this process, regardless of their ability.

The great thing about MATH1040 is that we recognize that people find mathematics hard, so we teach the course accordingly. We provide you with an opportunity to start from the very beginning, we are keen to help you at every step, and no-one will laugh at you or call you stupid if you find it hard. The only background assumed is basic arithmetic. So this is a chance to go back to a point where you were more confident at mathematics, relearn some of the maths you might not have learned well the first time, and go on to learn maths you have never learnt before.

Maths is not easy for many people in this course, and they will need to work hard. However, if you attend lectures, tutorials and PASS classes, do some preparation, complete assignments and assessments and above all ASK QUESTIONS when you are lost or don't understand, you will provide yourself with a great opportunity to do well in this course. Many students find, to their surprise, they are much less maths-phobic at the end of the course than when they started.

2.2 Learning Objectives

After successfully completing this course you should be able to:

1. NUMBERS, ARITHMETIC AND ALGEBRA
   1.1 Recognise standard mathematical notation and understand its meaning
   1.2 Express mathematical ideas using mathematical notation
1.3 Manipulate basic mathematical expressions

2. SETS AND PROBABILITY
2.1 Understand the basic principles of the theory of sets
2.2 Solve problems in probability using the theory of sets

3. LINEAR EQUATIONS
3.1 Express a linear relationship in terms of an equation
3.2 Express a linear relationship graphically
3.3 Solve a system of two linear equations

4. FUNCTIONS
4.1 Identify simple functions and determine their domain and range
4.2 Graphically represent functions
4.3 Find the solution(s) of a quadratic equation
4.4 Understand basic trigonometric functions

5. CALCULUS
5.1 Understand the concept of rate of change and its connection to differentiation
5.2 Apply the techniques of calculus to solve physical problems
5.3 Understand the concept of integration as the reverse of differentiation, be able to integrate simple functions, and apply integration to solve practical problems in other fields.

2.3. Graduate Attributes

Successfully completing this course will contribute to the recognition of your attainment of the following UQ (Undergrad Pass) graduate attributes:

<table>
<thead>
<tr>
<th>GRADUATE ATTRIBUTE</th>
<th>LEARNING OBJECTIVES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. IN-DEPTH KNOWLEDGE OF THE FIELD OF STUDY</strong></td>
<td></td>
</tr>
<tr>
<td>A1. A comprehensive and well-founded knowledge in the field of study.</td>
<td>1.1, 1.2, 1.3, 2.1, 3.1, 3.2, 3.3, 4.4, 5.1, 5.3</td>
</tr>
<tr>
<td>A4. An understanding of how other disciplines relate to the field of study.</td>
<td>2.2, 3.2, 3.3, 4.4, 5.1, 5.2, 5.3</td>
</tr>
<tr>
<td>A5. An international perspective on the field of study.</td>
<td></td>
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<tr>
<td><strong>B. EFFECTIVE COMMUNICATION</strong></td>
<td></td>
</tr>
<tr>
<td>B1. The ability to collect, analyse and organise information and ideas and to convey those ideas clearly and fluently, in both written and spoken forms.</td>
<td>1.2, 2.1, 4.4</td>
</tr>
<tr>
<td>B2. The ability to interact effectively with others in order to work towards a common outcome.</td>
<td></td>
</tr>
<tr>
<td>B3. The ability to select and use the appropriate level, style and means of communication.</td>
<td>1.2, 2.2, 3.1, 4.4</td>
</tr>
<tr>
<td>B4. The ability to engage effectively and appropriately with information and communication technologies.</td>
<td>4.4</td>
</tr>
<tr>
<td><strong>C. INDEPENDENCE AND CREATIVITY</strong></td>
<td></td>
</tr>
<tr>
<td>C1. The ability to work and learn independently.</td>
<td>1.3, 3.1, 3.3, 4.1</td>
</tr>
<tr>
<td>C3. The ability to generate ideas and adapt innovatively to changing environments.</td>
<td>4.2, 4.4</td>
</tr>
<tr>
<td>C4. The ability to identify problems, create solutions, innovate and improve current practices.</td>
<td>2.2, 5.1, 5.2</td>
</tr>
<tr>
<td><strong>D. CRITICAL JUDGEMENT</strong></td>
<td></td>
</tr>
<tr>
<td>D1. The ability to define and analyse problems.</td>
<td>3.3, 4.1, 4.2, 4.4, 5.3</td>
</tr>
<tr>
<td>D2. The ability to apply critical reasoning to issues through independent thought and informed judgement.</td>
<td>2.2, 4.2, 4.4, 5.2, 5.3</td>
</tr>
<tr>
<td>D3. The ability to evaluate opinions, make decisions and to reflect critically on the justifications for decisions.</td>
<td>5.2</td>
</tr>
<tr>
<td><strong>E. ETHICAL AND SOCIAL UNDERSTANDING</strong></td>
<td></td>
</tr>
</tbody>
</table>
E1. An understanding of social and civic responsibility.
E2. An appreciation of the philosophical and social contexts of a discipline.
E4. A knowledge and respect of ethics and ethical standards in relation to a major area of study.
E5. A knowledge of other cultures and times and an appreciation of cultural diversity.

1.1, 2.1, 2.2, 3.1, 3.2, 3.3, 4.4, 5.2, 5.3

3. Learning Resources

3.1 Required Resources

There is a webpage for this course, from which you can access a range of information and materials for this course. You should get into the habit of checking the webpage at least once a week.

www.maths.uq.edu.au/courses/MATH1040

Each lecture, we will work through a number of pages of notes in the form of slides, and will write various hints, solutions and comments on the notes. We urge you as strongly as we can to obtain a copy of these slides. They are on sale at the University Copy Shop, in a nice, bound format, at a cost of around $13. Alternately, a full set of slides is available on the web. You can print these yourself if you like, but they are nearly 300 pages long! It is important that you obtain a copy of the current notes as they have changed a lot since previous semesters. Assignments, solutions and sample exams will all be distributed in lectures.

3.2 Recommended Resources

In addition, MATH1040 has a study guide, which provides a form of "overview" for the lecture notes. It directs you to the important sections in the lecture notes, highlights key concepts and indicates where many students have difficulties. The study guide also includes extra practice questions and solutions for each section of the lecture notes. Finally, the study guide gives previous exams (mid-semester and final) with worked solutions, which you can use as sample exams to help with your study. The study guide is available on the course website and we strongly suggest you to look at it, and print the sections that are useful to you. We will distribute sample exams which will refer to the study guide for all questions and solutions.

3.3 University Learning Resources

Access to required and recommended resources, plus past central exam papers, is available at the UQ Library website (http://library.uq.edu.au/search/r?SEARCH=MATH1040).

The University offers a range of resources and services to support student learning. Details are available on the myServices website (https://student.my.uq.edu.au/).

3.5 Other Learning Resources & Information

The MATH1040 website has additional materials including online quizzes. See also:

- Practical algebra lessons: This excellent site has many of the topics covered in MATH1040. It has illustrations, worked examples and questions that can be completed and checked online. Those who are having difficulty with parts of the course should find this site a big help. Students who are coping well can find extra questions for revision.
- Maths for QLD 1, Maths for QLD 2, Maths for QLD 3, Maths for QLD companion website: These sites are the companion sites for the new Maths textbooks by Pearson Education. Select your chapter, click 'Go' and a range of options appear on the left-hand side of the screen. You can do a quick quiz or have a go at some of the groovy technology or drag and drop activities.
- Mathematics in Context: This site is for the Year 11 & 12 Maths B textbooks used by some Queensland schools. There are review quizzes, some great graphing programmes (easy to use!). Click on 'Year 11/12 contents' underneath the books and find the topic you are after. Then go to that chapter and try some of the online quizzes.
- Algebra Homework Help: Can't find your lecturer or tutor to help you with a question? Send your
question in and get it done for you. Note: sometimes the answers are incorrect. Again, many topics from MATH1040 are covered. There are plenty of revision questions, too.

4. Teaching & Learning Activities

4.1 Learning Activities

<table>
<thead>
<tr>
<th>Date</th>
<th>Activity</th>
<th>Learning Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 Jul 08 - 24 Oct 08</td>
<td>Weekly lectures (Lecture Series): There are three hours of lectures per week (10am-12pm Tuesday and 10-11am Thursday). You need to attend each lecture - there are no repeats. Readings/Ref: ; ; ;</td>
<td>1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 4.4, 5.1, 5.2, 5.3</td>
</tr>
<tr>
<td>28 Jul 08 - 24 Oct 08</td>
<td>PASS: Peer Assistend Study Sessions (PASS): These sessions provide an opportunity for additional help with any aspect of the course. These sessions are optional. Readings/Ref: ; ; ;</td>
<td>1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 4.4, 5.1, 5.2, 5.3</td>
</tr>
<tr>
<td>28 Jul 08 - 24 Oct 08</td>
<td>Tutorial (Tutorial): Each week there are five tutorial slots. During the first week of semester you should sign up to one tutorial time. You need to attend that tutorial each week, and if you like, you may attend additional tutorials. You will work through practice problems and the assignments in the tutorials and have a chance to ask questions or receive personalised help. Readings/Ref: ;</td>
<td>1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 4.4, 5.1, 5.2, 5.3</td>
</tr>
</tbody>
</table>

4.2 Other Teaching and Learning Activities Information

- We will work through lots of material in lectures and you should obtain a copy of the course notes and bring it with you to every lecture.
- Tutorials and PASS classes begin in Week 2.
- There is a Mathematics First Year Learning Centre located on Level 4 of the Priestley Building (building 67). There will be tutors there from 2pm until 4pm on Monday to Friday, from the second week of semester until the final exam sessions. You are welcome to attend if you like.

5. Assessment

5.1 Assessment Summary

This is a summary of the assessment in the course. For detailed information on each assessment, see 5.5 Assessment Detail below.

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Due Date Description</th>
<th>Weighting</th>
<th>Learning Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutorial Participation</td>
<td>Starts in Week 2</td>
<td>10%</td>
<td>1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 4.4, 5.1, 5.2, 5.3</td>
</tr>
<tr>
<td>Problem Set/s Assignments</td>
<td>For assignment due dates see below.</td>
<td>15%</td>
<td>1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 4.4, 5.1, 5.2, 5.3</td>
</tr>
<tr>
<td>Exam - Mid Semester Outside Scheduled Class</td>
<td>5 Sep 08 14:00</td>
<td>25%</td>
<td>1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 3.2</td>
</tr>
<tr>
<td>Mid-Semester Exam</td>
<td>Two choices of time: 14:00 or 16:00.</td>
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</tr>
</tbody>
</table>
5.2 Course Grading

**Grade 1, Fail:** Fails to demonstrate most or all of the basic requirements of the course:
Students who obtain a final mark of 20% or less will obtain a 1.

**Grade 2, Fail:** Demonstrates clear deficiencies in understanding and applying fundamental concepts; communicates information or ideas in ways that are frequently incomplete or confusing and give little attention to the conventions of the discipline:
Students who obtain a final mark of between 20% and 44% will obtain a 2.

**Grade 3, Fail:** Demonstrates superficial or partial or faulty understanding of the fundamental concepts of the field of study and limited ability to apply these concepts; presents undeveloped or inappropriate or unsupported arguments; communicates information or ideas with lack of clarity and inconsistent adherence to the conventions of the discipline: Students who obtain a final mark of between 45% and 49% will obtain a 3.

**Grade 4, Pass:** Demonstrates adequate understanding and application of the fundamental concepts of the field of study; develops routine arguments or decisions and provides acceptable justification; communicates information and ideas adequately in terms of the conventions of the discipline:
Students who obtain a final mark of between 50% and 64% will obtain a 4.

**Grade 5, Credit:** Demonstrates substantial understanding of fundamental concepts of the field of study and ability to apply these concepts in a variety of contexts; develops or adapts convincing arguments and provides coherent justification; communicates information and ideas clearly and fluently in terms of the conventions of the discipline:
Students who obtain a final mark of between 65% and 74% will obtain a 5.

**Grade 6, Distinction:** As for 5, with frequent evidence of originality in defining and analysing issues or problems and in creating solutions; uses a level, style and means of communication appropriate to the discipline and the audience:
Students who obtain a final mark of between 75% and 84% will obtain a 6.

**Grade 7, High Distinction:** As for 6, with consistent evidence of substantial originality and insight in identifying, generating and communicating competing arguments, perspectives or problem solving approaches; critically evaluates problems, their solutions and implications:
Students who obtain a final mark of 85% or more will obtain a 7.

5.3 Late Submission

In case of illness or bereavement you may be exempted from an assignment if a medical certificate (or other documentation) is received by the course co-ordinator within one week of the due date of the assignment. If you are exempted, then your assignment marks are weighted on a pro-rata basis. Note that ad hoc excuses (car trouble and the like!) will not be accepted; only documentation in connection with illness or bereavement.

5.4 Other Assessment Information

Only EPSA approved calculators may be used in examinations. For details on how to get an approval sticker for your calculator, see [http://www.itee.uq.edu.au/~peters/calculators/](http://www.itee.uq.edu.au/~peters/calculators/).
5.5 Assessment Detail

Tutorial attendance and completion of problems
Type: Tutorial Participation
Learning Objectives Assessed: 1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 4.4, 5.1, 5.2, 5.3
Due Date: Starts in Week 2
Weight: 10%
Task Description: Each week, at the beginning of your tutorial, you will be given a set of tutorial problems. You are expected to work on these questions during the tutorial. You are encouraged to discuss the questions with your peers and ask for assistance from your tutor. (After you have completed the tutorial problems, you are welcome to work on your assignment questions during the remaining tutorial time.)
Criteria & Marking: UQ students: Please sign in to mySI-net to view your list of enrolled courses and click the relevant Profile link to access marking criteria held in this profile

Assignments
Type: Problem Set/s
Learning Objectives Assessed: 1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 4.4, 5.1, 5.2, 5.3
Due Date: For assignment due dates see below.
Weight: 15%
Task Description: Marks will be awarded for assignment work. There will be 5 assignments and each will contribute 3% towards your final grade. A cover sheet is not needed, but you must write your name, student number, tutorial time and tutor’s name clearly at the top of the first page of your assignment.
Assignment 1 due 2pm, Friday 8 August,
Assignment 2 due 2pm, Friday 22 August,
Assignment 3 due 2pm, Friday 12 September,
Assignment 4 due 2pm, Friday 26 September,
Assignment 5 due 2pm, Friday 17 October.

Criteria & Marking: UQ students: Please sign in to mySI-net to view your list of enrolled courses and click the relevant Profile link to access marking criteria held in this profile
Submission: You must submit your assignment into the appropriate assignment box located on the 3rd floor of the Priestley (Mathematics) Building (#67), next to the elevator. The boxes are clearly labelled as MATH1040. Please take care to ensure your assignment is placed in the correct box by placing your assignment in the slot ABOVE the label for your tutorial group.

Mid-Semester Exam
Type: Exam - Mid Semester Outside Scheduled Class
Learning Objectives Assessed: 1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 3.2
Due Date: 5 Sep 08 14:00 Two choices of time: 14:00 or 16:00.
Weight: 25%
Perusal: 10 minutes
Duration: 90 minutes
Format: Short answer
Task Description: A mid-semester exam will be held in a room somewhere on campus on Friday, 5 September, 2008,
commencing at 2pm (another session will start at 4pm). EPSA approved calculators may be used.

**Criteria & Marking:** UQ students: Please sign in to mySI-net to view your list of enrolled courses and click the relevant **Profile** link to access marking criteria held in this profile

**Final examination**

**Type:** Exam - during Exam Period (Central)

**Learning Objectives Assessed:** 1.1, 1.2, 1.3, 2.1, 2.2, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 4.4, 5.1, 5.2, 5.3

**Due Date:** Examinations Period

**Weight:** 50%

**Perusal:** 10 minutes

**Duration:** 120 minutes

**Format:** Short answer

**Task Description:**
EPSA approved calculators may be used.

**Criteria & Marking:** UQ students: Please sign in to mySI-net to view your list of enrolled courses and click the relevant **Profile** link to access marking criteria held in this profile

### 6. Policies & Guidelines

This section contains the details of and links to the most relevant policies and course guidelines. For further details on University Policies please visit myAdvisor and the University Handbook of Policies and Procedures.

#### 6.1 Assessment Related Policies and Guidelines

**University Policies & Guidelines**

An overview of the University’s assessment-related policies can be found on myAdvisor (http://www.uq.edu.au/myadvisor/index.html?page=2910).

**Academic Integrity**

It is the University's task to encourage ethical scholarship and to inform students and staff about the institutional standards of academic behaviour expected of them in learning, teaching and research. Students have a responsibility to maintain the highest standards of academic integrity in their work. Students must not cheat in examinations or other forms of assessment and must ensure they do not plagiarise.

**Plagiarism**

The University has adopted the following definition of plagiarism:

- Plagiarism is the act of misrepresenting as one’s own original work the ideas, interpretations, words or creative works of another. These include published and unpublished documents, designs, music, sounds, images, photographs, computer codes and ideas gained through working in a group. These ideas, interpretations, words or works may be found in print and/or electronic media.

Students are encouraged to read the UQ Academic Integrity and Plagiarism policy (http://www.uq.edu.au/hupp/index.html?page=25128) which makes a comprehensive statement about the University’s approach to plagiarism, including the approved use of plagiarism detection software, the consequences of plagiarism and the principles associated with preventing plagiarism.

**Feedback on Assessment**

Feedback is essential to effective learning and students can expect to receive appropriate and timely feedback on all assessment. For a detailed explanation of the feedback you are entitled to, you should consult the policy on Student Access to Feedback on Assessment. (http://www.uq.edu.au/hupp/index.html?page=25109)

As a student you have a responsibility to incorporate feedback into your learning; make use of the assessment criteria that you are given; be aware of the rules, policies and other documents related to assessment; and provide teachers with feedback on their assessment practices.

There are certain steps you can take if you feel your result does not reflect your performance. Please
6.2 Other Policies and Guidelines

University Policies and Guidelines

Placement Courses
Students on a placement course – also known as a work placement, internship, industry study, industry experience, clinical practice, clinical placement, practical work, practicum, fieldwork, teaching practice – should refer to the University policy, Placement Courses (http://www.uq.edu.au/hupp/index.html?page=25120) for detailed information.

Working with Children
Students whose studies include a professional/work placement, internship, clinical practice, teaching practice or other similar activity which involves them in regular contact with children should refer to the University policy, Working with Children Check - "blue card" (http://www.uq.edu.au/hupp/index.html?page=25004) to find out how to apply for a ‘blue card’.

Students with a Disability
Any student with a disability who may require alternative academic arrangements, including assessment, in the course/program is encouraged to seek advice at the commencement of the semester from a Disability Adviser at Student Support Services. Refer to the University policy, Students with a Disability (Disability Action Plan) (http://www.uq.edu.au/hupp/index.html?page=25122) and to the policy on Special Arrangements for Examinations for Students with a Disability (http://www.uq.edu.au/hupp/index.html?page=25111)

Where an adjustment is made to an accredited program, it is the responsibility of the relevant Faculty to liaise with professional and registration bodies regarding the acceptability of the change/s.

Occupational Health and Safety
Undergraduate Students (http://www.uq.edu.au/hupp/index.html?page=25055) and Postgraduate Students (http://www.uq.edu.au/hupp/index.html?page=25057) should be familiar with the University policies on occupational health and safety in the laboratory.

Learning Summary

Below is a table showing the relationship between the learning objectives for this course and the broader graduate attributes developed, the learning activities used to develop each objective and the assessment task used to assess each objective.

Learning Objectives

After successfully completing this course you should be able to:

1. NUMBERS, ARITHMETIC AND ALGEBRA
   1.1 Recognise standard mathematical notation and understand its meaning
   1.2 Express mathematical ideas using mathematical notation
   1.3 Manipulate basic mathematical expressions

2. SETS AND PROBABILITY
   2.1 Understand the basic principles of the theory of sets
   2.2 Solve problems in probability using the theory of sets

3. LINEAR EQUATIONS
   3.1 Express a linear relationship in terms of an equation
   3.2 Express a linear relationship graphically
   3.3 Solve a system of two linear equations

4. FUNCTIONS
   4.1 Identify simple functions and determine their domain and range
   4.2 Graphically represent functions
   4.3 Find the solution(s) of a quadratic equation
   4.4 Understand basic trigonometric functions

5. CALCULUS
   5.1 Understand the concept of rate of change and its connection to differentiation
   5.2 Apply the techniques of calculus to solve physical problems
   5.3 Understand the concept of integration as the reverse of differentiation, be able to integrate simple functions, and apply integration to solve practical problems in other fields.
Assessment & Learning Activities

| Learning Objectives | 1.1 | 1.2 | 1.3 | 2.1 | 2.2 | 3.1 | 3.2 | 3.3 | 4.1 | 4.2 | 4.3 | 4.4 | 5.1 | 5.2 | 5.3 |
|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| **Learning Activities** |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| Weekly lectures (Lecture Series) | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ○ ○ | ○ ○ | ○ ○ |
| PASS: Peer Assisted Study Sessions (Other) | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● |
| Tutorial (Tutorial) | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● |

**Assessment Tasks**

| Tutorial attendance and completion of problems | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● |
| Assignments | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● |
| Mid-Semester Exam | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● |
| Final examination | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● | ● ● |

Graduate Attributes

Successfully completing this course will contribute to the recognition of your attainment of the following **UQ (Undergrad Pass)** graduate attributes:

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<th>Learning Objectives</th>
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<td><strong>Graduate Attributes</strong></td>
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<td><strong>A IN-DEPTH KNOWLEDGE OF THE FIELD OF STUDY</strong></td>
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<td>A1. A comprehensive and well-founded knowledge in the field of study.</td>
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<td>A4. An understanding of how other disciplines relate to the field of study.</td>
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<td>A5. An international perspective on the field of study.</td>
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<td><strong>B EFFECTIVE COMMUNICATION</strong></td>
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<td>B1. The ability to collect, analyse and organise information and ideas and to convey those ideas clearly and fluently, in both written and spoken forms.</td>
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<td>B2. The ability to interact effectively with others in order to work towards a common outcome.</td>
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<td>B3. The ability to select and use the appropriate level, style and means of communication.</td>
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<td>B4. The ability to engage effectively and appropriately with information and</td>
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<td>C1. The ability to work and learn independently</td>
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<td>C3. The ability to generate ideas and adapt innovatively to changing environments</td>
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<td>C4. The ability to identify problems, create solutions, innovate and improve current practices</td>
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<td>D1. The ability to define and analyse problems</td>
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<td>D2. The ability to apply critical reasoning to issues through independent thought and informed judgement</td>
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<td>D3. The ability to evaluate opinions, make decisions and to reflect critically on the justifications for decisions</td>
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<td>E1. An understanding of social and civic responsibility</td>
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