COURSE OUTLINE

MTH103 Introduction to Applied Mathematics

School: School of Science, Technology and Engineering

2026 | Trimester 1

UniSC Sunshine Coast
UniSC Moreton Bay

BLENDED LEARNING

Most of your course is on campus but you may be able to do some components of this course online.

Please go to unisc.edu.au for up to date information on the teaching sessions and campuses where this course is usually offered.

1. What is this course about?

1.1. Description

This course is designed to ensure you have the working knowledge for problem-solving in non-calculus areas to support topics in science and engineering. You will explore measurement and calculation; vector and matrix methods; geometry and trigonometry; and the algebra and graphing of linear, quadratic, exponential and logarithmic functions to model problems in context. Your skills in the recall, use and communication of the mathematics presented in this course provides the foundation for further studies in mathematics.

1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
BLENDED LEARNING			
Learning materials – Self-paced video resources which cover the course content.	2hrs	Week 1	12 times
Tutorial/Workshop 1 – These tutorial workshops will be a session combining the demonstration of key examples and individual problem solving.	2hrs	Week 1	12 times
Seminar – On campus seminar	1hr	Week 1	Once Only

1.3. Course Topics

- Measurement and calculation
- Vector applications in science and engineering
- Matrix methods and applications
- Geometry and trigonometry
- Modelling with linear, quadratic, exponential and logarithmic functions.

2. What level is this course?

100 Level (Introductory)

Engaging with discipline knowledge and skills at foundational level, broad application of knowledge and skills in familiar contexts and with support. Limited or no prerequisites. Normally, associated with the first full-time study year of an undergraduate program.

3. What is the unit value of this course?

12 units

4. How does this course contribute to my learning?

COURSE LEARNING OUTCOMES On successful completion of this course, you should be able to...	GRADUATE QUALITIES MAPPING Completing these tasks successfully will contribute to you becoming...	PROFESSIONAL STANDARD MAPPING * Engineers Australia Stage 1 Professional Engineer Competency Standards
1 Use Problem solving strategies and mathematical reasoning to interpret, analyse and solve familiar and unfamiliar problems in mathematics, science and engineering.	Knowledgeable Creative and critical thinker	1.2
2 Develop a spreadsheet following detailed task specifications to explore several software features and provide an explanation of one of the outcomes.	Knowledgeable Ethical	2.2
3 Interpret and communicate using mathematical terminology, symbols and conventions.	Empowered	3.2

* Competencies by Professional Body

CODE	COMPETENCY
ENGINEERS AUSTRALIA STAGE 1 PROFESSIONAL ENGINEER COMPETENCY STANDARDS	
1.2	Knowledge and Skill Base: Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline.
2.2	Engineering Application Ability: Fluent application of engineering techniques, tools and resources.
3.2	Professional and Personal Attributes: Effective oral and written communication in professional and lay domains.

5. Am I eligible to enrol in this course?

Refer to the UniSC Glossary of terms for definitions of “pre-requisites, co-requisites and anti-requisites”.

5.1. Pre-requisites

Not applicable

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

MTH102

5.4. Specific assumed prior knowledge and skills (where applicable)

Senior Mathematics A, B or C or equivalent (for example MTH100 or TPP115) is recommended. It is assumed you can add, subtract, multiply and divide real numbers by hand and by calculator as appropriate; use general algebraic techniques (such as simplification and factorisation, rearranging equations, solving an equation to determine the value of one variable); and can solve problems in elementary geometry and trigonometry.

5.5. Microcredential Information

Not applicable

6. How am I going to be assessed?

6.1. Grading Scale

Standard Grading (GRD)

High Distinction (HD), Distinction (DN), Credit (CR), Pass (PS), Fail (FL).

6.2. Details of early feedback on progress

Students will have the opportunity to reflect on their progress as they prepare the Task 1 Assignment submission due in Week 4 before the Census date. Students who do not feel they are ready to proceed can withdraw from the course without academic penalty or financial cost at that time. Any student who would like to discuss their progress is welcome to make arrangements with the Course Coordinator or Tutor as needed.

6.3. Assessment tasks

DELIVERY MODE	TASK NO.	ASSESSMENT PRODUCT	INDIVIDUAL OR GROUP	WEIGHTING %	WHAT IS THE DURATION / LENGTH?	WHEN SHOULD I SUBMIT?	WHERE SHOULD I SUBMIT IT?
All	1	Artefact - Technical and Scientific	Individual	20%	2 weeks	Week 4	Online Submission
All	2	Artefact - Technical and Scientific	Individual	30%	Completed over 8 weeks	Week 8	Online Submission
All	3	Examination - Centrally Scheduled	Individual	50%	135 minutes	Exam Period	Online Assignment Submission with plagiarism check

All - Assessment Task 1: Task 1 Assignment

GOAL:	To use problem solving strategies and mathematical reasoning to interpret, analyse and solve familiar and unfamiliar problems in applied mathematics, science and engineering, and to interpret and communicate using mathematical terminology, symbols and conventions.
PRODUCT:	Artefact - Technical and Scientific
AUTHORSHIP STATEMENT:	
FORMAT:	This is an assignment prepared individually by each student. It will be released at the beginning of Week 3 and is due at the end of Week 4. You will submit a .PDF document through the course website.
CRITERIA:	**No.** — **Learning Outcome assessed** 1 — A detailed marking scheme awards marks based on the choice of appropriate problem-solving strategy, the correctness of its implementation and the interpretation of the outcomes. — 1 3
GENERIC SKILLS:	Communication, Problem solving, Organisation, Information literacy

All - Assessment Task 2: Task 2 Assignment

GOAL:	To use problem solving strategies and mathematical reasoning to interpret, analyse and solve familiar and unfamiliar problems in applied mathematics, science and engineering, and to interpret and communicate using mathematical terminology, symbols and conventions.Develop a spreadsheet following detailed task specifications to explore several software features and an explanation of one of the outcomes.
PRODUCT:	Artefact - Technical and Scientific
AUTHORSHIP STATEMENT:	
FORMAT:	The Assignment comprises two parts and will be available from the course website in Week 1. Part A is a series of worded problems based on material covered in the first seven weeks of the course. Part B is a list of tasks specifying the way a spreadsheet is to be constructed and discussed. You will submit a .PDF document through the course website.
CRITERIA:	

No.		Learning Outcome assessed
1	For the problem-solving component, a detailed marking scheme awards marks based on the choice of appropriate problem-solving strategy, the correctness of its implementation and the interpretation of the outcomes.	1 3
2	For the spreadsheeting component, marks are awarded for the submission of the documents mentioned in the Task Specifications and the correctness of the completed set tasks.	2

GENERIC SKILLS:	Communication, Problem solving, Organisation, Applying technologies, Information literacy

All - Assessment Task 3: Task 3 Examination

GOAL:	To assess your exit skills in the theory and application of the course material using problem solving strategies and mathematical reasoning to interpret, analyse and solve familiar and unfamiliar problems in mathematics, science and engineering, and to interpret and communicate using mathematical terminology, symbols and conventions.
PRODUCT:	Examination - Centrally Scheduled
AUTHORSHIP STATEMENT:	
FORMAT:	The examination comprises of questions relating to content from Week 1 to Week 12 to be completed within the given time frame and submitted to Canvas.
CRITERIA:	

No.		Learning Outcome assessed
1	A detailed marking scheme awards marks based on the choice of appropriate problem-solving strategy, the correctness of its implementation and the interpretation of the outcomes	1 3

GENERIC SKILLS:	Communication, Problem solving, Organisation, Information literacy

7. Directed study hours

A 12-unit course will have total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. Student workload is calculated at 12.5 learning hours per one unit.

7.1. Schedule

PERIOD AND TOPIC	ACTIVITIES
Module 1 (2 weeks) Measurement and calculation Module 2 (3 weeks) Vector applications in science and engineering Module 3 (3 weeks) Matrix methods and applications Module 4 (2 weeks) Geometry and Trigonometry Module 5 (3 weeks) Function algebra/graphing	Learning Resources Tutorial/Workshop Reading nominated sections of the textbook. Practice problem-solving using selected problems from the text.

8. What resources do I need to undertake this course?

Please note: Course information, including specific information of recommended readings, learning activities, resources, weekly readings, etc. are available on the course Canvas site– Please log in as soon as possible.

8.1. Prescribed text(s) or course reader

You need regular access to the resource(s) below. Many texts are available as ebooks through the Library at no additional cost.

REQUIRED?	AUTHOR	YEAR	TITLE	EDITION	PUBLISHER
Required	Allyn J. Washington,Michelle Boué,Richard Evans,Elizabeth Fabbroni Martin	0	Basic Technical Mathematics with Calculus	11	n/a

8.2. Specific requirements

It is recommended that you possess a good quality scientific hand-calculator. You will not require a graphics, programmable or CAS calculator for this course.

9. How are risks managed in this course?

Health and safety risks for this course have been assessed as low. It is your responsibility to review course material, search online, discuss with lecturers and peers and understand the health and safety risks associated with your specific course of study and to familiarise yourself with the University's general health and safety principles by reviewing the online induction training for students, and following the instructions of the University staff.

10. What administrative information is relevant to this course?

10.1. Assessment: Academic Integrity

Academic integrity is the ethical standard of university participation. It ensures that students graduate as a result of proving they are competent in their discipline. This is integral in maintaining the value of academic qualifications. Each industry has expectations and standards of the skills and knowledge within that discipline and these are reflected in assessment.

Academic integrity means that you do not engage in any activity that is considered to be academic fraud; including plagiarism, collusion or outsourcing any part of any assessment item to any other person. You are expected to be honest and ethical by completing all work yourself and indicating in your work which ideas and information were developed by you and which were taken from others. You cannot provide your assessment work to others. You are also expected to provide evidence of wide and critical reading, usually by using appropriate academic references.

In order to minimise incidents of academic fraud, this course may require that some of its assessment tasks, when submitted to Canvas, are electronically checked through Turnitin. This software allows for text comparisons to be made between your submitted assessment item and all other work to which Turnitin has access.

10.2. Assessment: Additional Requirements

Eligibility for Supplementary Assessment

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:
(a) The final mark is in the percentage range 47% to 49.4%; and
(b) The course is graded using the Standard Grading scale

10.3. Assessment: Submission penalties

Late submissions may be penalised up to and including the following maximum percentage of the assessment task's identified value, with weekdays and weekends included in the calculation of days late:
(a) One day: deduct 5%;
(b) Two days: deduct 10%;
(c) Three days: deduct 20%;
(d) Four days: deduct 40%;
(e) Five days: deduct 60%;
(f) Six days: deduct 80%;
(g) Seven days: A result of zero is awarded for the assessment task.

The following penalties will apply for a late submission for an online examination:
Less than 15 minutes: No penalty
From 15 minutes to 30 minutes: 20% penalty
More than 30 minutes: 100% penalty

10.4. Links to relevant University policy and procedures

For more information on Academic Learning & Teaching categories including:

- Assessment: Courses and Coursework Programs
- Review of Assessment and Final Grades
- Supplementary Assessment
- Central Examinations
- Deferred Examinations
- Student Conduct
- Students with a Disability

For more information, visit https://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching

10.5. Student Charter

UniSC is committed to excellence in teaching, research and engagement in an environment that is inclusive, inspiring, safe and respectful. The Student Charter sets out what students can expect from the University, and what in turn is expected of students, to achieve these outcomes.

10.6. General Enquiries

For course-specific questions, contact your teaching staff or Course Coordinator.

For other enquiries or to access support, please contact Student Central:

- UniSC Student Central
- UniSC Adelaide Student Central