UniSC

COURSE OUTLINE

TPP104 **Mathematics**

School: School of Education and Tertiary Access

2024 | Session 8

| UniSC Sunshine Coast | BLENDED LEARNING | Most of your course is on campus but you may be able to do some components of this course online. |
| Online | ONLINE | You can do this course without coming onto campus. |

Please go to usc.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 improve your mathematical skills for entry into academic programs at the University of the Sunshine Coast. It aims to be inclusive of those who may not have undertaken senior high school mathematics, or for those who may wish to refresh knowledge and understanding of the discipline. This course sets out to nurture a growth mindset for students around basic mathematical concepts. The flexible teaching environment allows for student's concerns around the course concepts to be voiced, questions to be asked and confidence to be built.

1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
BLENDED LEARNING			
Learning materials – Short lesson videos covering the content. The videos should be watched prior to the tutorials, and followed up with the self-paced quizzes. Two lessons will be covered per teaching week.	2hrs	Week 1	6 times
Tutorial/Workshop 1 – You are required to actively participate in individual and group work that will be guided by a tutor. There will be two tutorials each teaching week.	4hrs	Week 1	6 times
ONLINE			
Learning materials – Short lesson videos covering the content. The videos should be watched prior to the tutorials, and followed up with the self-paced quizzes. Two lessons will be covered per teaching week.	2hrs	Week 1	6 times
Tutorial/Workshop 1 – You are required to actively participate in individual and group work that will be guided by a tutor. Tutorials will be delivered online via conferencing software such as Zoom. There will be two tutorials each teaching week.	4hrs	Week 1	6 times

1.3.   Course Topics

Numbers and Operations

Exploring the meaning of common mathematical symbols, the operations they represent, and the order in which these mathematical operations should be performed.

Algebra and Formulas

Exploring the concept of like terms, manipulation of equations using transposing, and changing the subject of a formula.

Fractions, Percentages, Decimals

Exploring the mathematical manipulation of fractions and how they relate to decimal numbers and percentages.

Proportions and Ratios

Exploring the differences between proportions and ratios, and how they relate to fractions, decimal numbers, and percentages

Rounding and Significant Figures

Exploring the concept of a significant figure and how to round values correctly.

Logarithms and Scientific Notation

Exploring the logarithms and how they relate to powers and roots. Exploring the concept of scientific notation in order to express very large and very small values.

Measurement and Dimensional Analysis

Exploring the use of units, how to change from one to another, and how units give numerical values meaning.

Introduction to Geometry

Exploring the fundamental angle relationships that exist between straight lines, quadrilaterals and triangles.

Right Angle Triangle (Trigonometry)

Exploring trigonometric functions sine, cosine and tangent, and how they can be used to define the side lengths and the angle magnitudes of a right angle triangle.

Coordinates and Graphs

Exploring the Cartesian Plane and plotting of points and lines on a graph grid.

Linear Equations

Exploring the equation and plotting of a straight line by calculating the gradient and the intercepts, and how linear equations relate to rates.

Measures of Central Tendency (Introduction to Statistics)

Exploring the calculations of the measures of central tendency such mean, median, and mode.

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	GRADUATE QUALITIES
On successful completion of this course, you should be able to...	Completing these tasks successfully will contribute to you becoming...
1 Demonstrate basic techniques and strategies used in the field of mathematics as developed in the course.	Empowered
2 Identify and employ relevant mathematical approaches to demonstrate proficiency of the key threshold concepts of the course, such as correctly manipulating and solving simple algebraic equations.	Knowledgeable
3 Employ authentic skillsets such as proficiency with a scientific calculator and graphing to solve mathematical problems.	Empowered
4 Communicate effectively using mathematical conventions and symbols to justify mathematical reasoning.	Engaged

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

Student must be enrolled in TP000

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

Not applicable

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

Nil

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

Weekly quizzes that constitute the formative assessment as well as Task 1 will provide feedback on early course progress. Weekly problem sets will allow you to track your own progression of the concepts covered in the course.

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	Examination - not Centrally Scheduled	Individual	10%	40 mins	Week 2	Online Test (Quiz)
All	2	Examination - not Centrally Scheduled	Individual	20%	60 mins	Week 4	Online Test (Quiz)
All	3	Artefact - Technical and Scientific	Individual	20%	This is a mathematical take-home assignment that will require full working to be shown.	Week 6	Online Submission
All	4	Examination - not Centrally Scheduled	Individual	50%	90 mins	Week 7	Online Test (Quiz)

All - Assessment Task 1: Calculator Problem Solving and Basic Algebra

GOAL:	The goal is for you to demonstrate reliable calculator and problem-solving skills for mathematics and their application as they are needed for whole number arithmetic and formulae including algebra, and to communicate clearly using reasoning and appropriate mathematical conventions and symbols.
PRODUCT:	Examination - not Centrally Scheduled
FORMAT:	Task 1 is a summative test that will contain a selection of multiple-choice, fill-in-the-blank, and short answer questions.
CRITERIA:	*(see below)*

No.		Learning Outcome assessed
1	Demonstration of basic techniques and strategies to find the answer to questions	1
2	Identification of relevant mathematical approach to working with formulae	2
3	Solution of mathematical problems through use of a scientific calculator	3
4	Communication using mathematical conventions (including sentences) and symbols to justify reasoning	4

All - Assessment Task 2: Ratios, Proportons, and Dimensional Analysis

GOAL:	The goal is for you to demonstrate reliable calculator and problem-solving skills to work with fractions and decimal arithmetic, percentages, algebra, ratios, proportions, exponents and logarithms, and to communicate clearly using reasoning and appropriate mathematical conventions and symbols including correct significant figures and rounding.
PRODUCT:	Examination - not Centrally Scheduled
FORMAT:	Task 2 is a summative test that will contain a selection of multiple-choice, fill-in-the blank, and short answer questions.

CRITERIA:	No.		Learning Outcome assessed
	1	Demonstration of basic techniques and strategies to find the answer to questions	①
	2	Identification of relevant mathematical approach to working with formulae	②
	3	Solution of mathematical problems through use of a scientific calculator	③
	4	Communication using mathematical conventions (including sentences) and symbols to justify reasoning	④

All - Assessment Task 3: Geometry, Trigonometry and Graphs

GOAL:	The goal for you is to demonstrate conceptual understanding and skills development in solving routine problems in geometry and co-ordinate geometry. The assignment is designed for you to communicate your understanding through written and/or worked responses to questions.
PRODUCT:	Artefact - Technical and Scientific
FORMAT:	Task 3 is a summative written assignment that will require students to demonstrate mathematical problem solving and communication skills. The assignment will be submitted online.

CRITERIA:	No.		Learning Outcome assessed
	1	Demonstration of basic techniques and strategies to find the answer to questions	①
	2	Identification of relevant mathematical approach to solve trigonometric and geometric problems with knowledge of dimensional analysis	② ③
	3	Communication using mathematical conventions (including sentences) and symbols to justify reasoning	④

All - Assessment Task 4: Final Examination Covering All Content

GOAL:	The goal for you is to review and provide evidence of understanding of the entire course and to communicate your responses clearly using justifiable reasoning and appropriate mathematical conventions and symbols
PRODUCT:	Examination - not Centrally Scheduled
FORMAT:	Task 4 is a summative test covering all the topics. The test will contain a selection of multiple-choice, fill-in-the-blank, and short answer questions.

CRITERIA:	No.		Learning Outcome assessed
	1	Demonstration of basic techniques and strategies to find the answer to questions	①
	2	Identification of relevant mathematical approach to working with formulae	②
	3	Solution of mathematical problems through use of a scientific calculator and graphing	③
	4	Communication using mathematical conventions (including sentences) and symbols to justify reasoning	④

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.

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

> There are no required/recommended resources for this course.

8.2. Specific requirements

A good quality calculator is needed for this course. The Casio fx-82AU+II or the Casio fx-82AU+II 2nd Edition are recommended. You will not require a graphics, programmable or CAS calculator for this. It is your responsibility to learn to use your calculator properly.
A portable smart device such as a laptop or tablet will be required for assessment.
For the online offering, the expectation is to have a working camera and that the camera is on so that the student can be seen when attending the tutorial.

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

It is the responsibility of the student to familiarise themselves with the University assessment procedures.
Eligibility for Supplementary Assessment
Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:
The final mark is in the percentage range 47% to 49.4%
The course is graded using the Standard Grading scale
You have not failed an assessment task in the course due to academic misconduct.

10.3. Assessment: Submission penalties

Late submission of assessment tasks will be penalised at the following maximum rate (the rates are cumulative):

- 5% (of the assessment task's identified value) per day for the first two days from the date identified as the due date for the assessment task
- 10% (of the assessment task's identified value) for the third day
- 20% (of the assessment task's identified value) for the fourth day and subsequent days up to and including seven days from the date identified as the due date for the assessment task

A result of zero is awarded for an assessment task submitted seven days from the date identified as the due date for the assessment task.

Weekdays and weekends are included in the calculation of days late.

To request an extension, you must contact your Course Coordinator and supply the required documentation to negotiate an outcome.

Refer to the Assessment: Courses and Coursework Programs – Procedures

10.4. SafeUniSC

UniSC is committed to a culture of respect and providing a safe and supportive environment for all members of our community. For immediate assistance on campus contact SafeUniSC by phone: 07 5430 1168 or using the SafeZone app. For general enquires contact the SafeUniSC team by phone 07 5456 3864 or email safe@usc.edu.au.

The SafeUniSC Specialist Service is a Student Wellbeing service that provides free and confidential support to students who may have experienced or observed behaviour that could cause fear, offence or trauma. To contact the service call 07 5430 1226 or email studentwellbeing@usc.edu.au.

10.5. Study help

For help with course-specific advice, for example what information to include in your assessment, you should first contact your tutor, then your course coordinator, if needed.

If you require additional assistance, the Learning Advisers are trained professionals who are ready to help you develop a wide range of academic skills. Visit the Learning Advisers web page for more information, or contact Student Central for further assistance: +61 7 5430 2890 or studentcentral@usc.edu.au.

10.6. Wellbeing Services

Student Wellbeing provide free and confidential counselling on a wide range of personal, academic, social and psychological matters, to foster positive mental health and wellbeing for your academic success.

To book a confidential appointment go to Student Hub, email studentwellbeing@usc.edu.au or call 07 5430 1226.

10.7. AccessAbility Services

Ability Advisers ensure equal access to all aspects of university life. If your studies are affected by a disability, learning disorder mental health issue, injury or illness, or you are a primary carer for someone with a disability or who is considered frail and aged, AccessAbility Services can provide access to appropriate reasonable adjustments and practical advice about the support and facilities available to you throughout the University.

To book a confidential appointment go to Student Hub, email AccessAbility@usc.edu.au or call 07 5430 2890.

10.8. 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

10.9. 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.

10.10. General Enquiries

In person:

- **UniSC Sunshine Coast** - Student Central, Ground Floor, Building C, 90 Sippy Downs Drive, Sippy Downs
- **UniSC Moreton Bay** - Service Centre, Ground Floor, Foundation Building, Gympie Road, Petrie
- **UniSC SouthBank** - Student Central, Building A4 (SW1), 52 Merivale Street, South Brisbane
- **UniSC Gympie** - Student Central, 71 Cartwright Road, Gympie
- **UniSC Fraser Coast** - Student Central, Student Central, Building A, 161 Old Maryborough Rd, Hervey Bay
- **UniSC Caboolture** - Student Central, Level 1 Building J, Cnr Manley and Tallon Street, Caboolture

Tel: +61 7 5430 2890

Email: studentcentral@usc.edu.au