1. General Course Information

1.1 Course Details

Course Code:	**1011SCG**
Course Name:	**MATHEMATICS 1A**
Trimester:	**1, 2020**
Program:	Diploma of Engineering / Diploma of Science
	In Person
	Mt Gravatt / Gold Coast
Credit Points:	10 CP
Course Coordinator:	Maria Aneiros
Document modified:	21st November 2019

Course Description

The course introduces basic vector algebra in two and three dimensions, matrices, complex numbers, probability and revises basic functions. It provides a foundation in the mathematical sciences for later studies in science and engineering.

Assumed Knowledge

Quality mathematics skills are fundamental for success in your diploma and future studies. To assist you in assessing your readiness and level of mathematical skills Griffith College has developed a Maths Ready Quiz and your performance on this quiz will enable us to advise the best pathway for your mathematical studies at the College.

Hence all Diploma of Science or Diploma of Engineering students are required to undertake an online maths ready quiz before the trimester commences. Students who do not achieve a satisfactory level on this quiz will be

advised to undertake a free trimester long Maths Preparation course (BRM100) before commencing with the Diploma mathematics course.

1.2 Teaching Team

Your lecturer/tutor can be contacted via the email system on the portal.

Name	Email
Maria Aneiros	maria.aneiros@staff.griffithcollege.edu.au
Wayne Stevens	Wayne.stevens@staff.griffithcollege.edu.au

1.3 Staff Consultation

Your lecturer/tutor is available each week for consultation outside of normal class times. Times that your lecturer/tutor will be available for consultation will be given in the first week of lectures. A list of times and rooms will be published on the Griffith College Portal under the “Support and Services/Teacher Consultation Times” link.

1.4 Timetable

Your timetable is available on the Griffith College Portal at Class Timetable in Student and Services.

1.5 Technical Specifications

All students must have access to a computer or suitable mobile device.

2. Aims, Outcomes & Generic Skills

2.1 Course Aims

This course acts as a bridge between the students' previous experience in mathematics and further tertiary study in mathematics. It provides the basis for the acquisition of the basic computational and theoretical skills necessary for the practicing scientist and introduces students to the mathematical and logical way of thinking desirable in the training of these professionals. The course introduces basic vectors in three dimensions, matrices, complex numbers, probability and basic functions in a scientific context. It provides a foundation in the mathematical sciences for later studies in other sciences, as well as mathematics itself.

2.2 Learning Outcomes

After successfully completing this course you should be able to:

1 Use basic algebra and all standard linear and quadratic functions to analyse a variety of problems in real live examples.

2 Use basic matrix algebra and determine derived quantities from matrices in a scientific context.

3 Manipulate 2D and 3D vectors by using vector addition and subtraction, as well as the dot and cross product of vectors, and apply them to problems involving forces, velocity and other relevant vector quantities.

4 Carry out basic arithmetic operations using complex numbers for the purposes of application to problems in science and engineering.

5 Describe the basic ideas of probability and randomness,and apply these ideas to real life problems.

2.3 Generic skills

For further details on the Generic Skills please refer to the Graduate Generic Skills and Capabilities policy.

Griffith College aims to develop graduates who have an open and critical approach to learning and a capacity for lifelong learning. Through engagement in their studies, students are provided with opportunities to begin the development of these and other generic skills.

Studies in this course will give you opportunities to begin to develop the following skills:

Generic Skills and Capabilities	Taught	Practised	Assessed
Acquisition of discipline knowledge and skills with critical judgement	✓	✓	✓
Communication and collaboration	✓	✓	
Self-directed and active learning	✓	✓	✓
Creative and future thinking	✓	✓	
Social responsibility and ethical awareness		✓	
Cultural competence and awareness in a culturally diverse environment		✓	

3. Learning Resources

3.1 Required Resources

Notes in Griffith College's portal.

3.2 Recommended Resources

Washington, A. (2009). Basic Technical Mathematics with Calculus (8th or 9th edition) Pearson (Addison Wesley).

Edwards C. H., Penney D. E. (2002) Calculus, Early Transcendentals (matrix version), (6th edition), Prentice Hall.

Swokowski, E., Olinick, M., Pence, D. P. (1996). Calculus (6th ed.) PWS-Kent Publishing Co.

Stewart, A. (2010). Calculus Concepts & Context (4th ed.) Cengage.
Available at: http://www.stewartcalculus.com/media/9_home.php

Fitzgerald, G.F. and Peckham, E.A.(2005) Mathematical Methods for Engineers and Scientists (4th edition) Prentice-Hall.

3.3 College Support Services and Learning Resources

The College provides many facilities and support services to assist students in their studies. Links to information about College support resources that are available to students are included below for easy reference.

Digital Library – Databases to which Griffith College students have access to through the Griffith Library Databases.

MyStudy – there is a dedicated website for this course via MyStudy on the Griffith College Portal.

Academic Integrity Tutorial - this tutorial helps students to understand what academic integrity is and why it matters. You will be able to identify types of breaches of academic integrity, understand what skills you will need in order to maintain academic integrity, and learn about the processes of referencing styles.

Services and Support provides a range of services to support students throughout their studies including personal support such as Counselling; Academic support; and Welfare support.

Jobs and Employment in the Student Hub can assist students with career direction, resume and interview preparation, job search tips, and more.

IT Support provides details of accessing support, information on s numbers and internet access and computer lab rules.

3.4 Other Learning Information

Attendance

You are expected to attend all lectures and tutorials and to actively engage in learning during these sessions. You are expected to bring all necessary learning resources to class such as the required textbook and /or Workbook. In addition, you may BYOD (bring your own device) to class such as a laptop or tablet. This is not a requirement as computer lab facilities are available on campus, however, the use of such devices in the classroom is encouraged with appropriate and considerate use principles being a priority.

Preparation and Participation in Class

In order to enhance learning, prepare before lectures and tutorials. Read the relevant section of your text book before a lecture, and for a tutorial read both the textbook and the relevant lecture notes. If you have been given tutorial exercises, make sure you complete them. Active participation in lectures and tutorials will improve your learning. Ask questions when something is unclear or when you want to bring some issue to your lecturer or tutor's attention; respond to questions to test your knowledge and engage in discussion to help yourself and others learn.

Consultation Sessions

Teachers offer extra time each week to assist students outside the classroom. This is known as 'consultation time.' You may seek assistance from your teacher on email or in person according to how the teacher has explained this to the class. Attendance during consultation time is optional but you are encouraged to use this extra help to improve your learning outcomes.

Course Materials

Lecture notes will be made available to you in MyStudy on the Griffith College Portal and you are advised to either print these out and bring them to each class so that extra notes can be added or BYOD (bring your own device) and add extra notes digitally.

Self-Directed Learning

You will be expected to learn independently. This means you must organise and learn the course content even when you are not specifically asked to do so by your lecturer or tutor. This involves revising the weekly course material. It also means you will need to find additional information for some assessment items beyond that given to you in textbooks and lecture notes, and to construct your own response to a question or topic. All of this requires careful planning of your time. Expect to spend, on average, at least 10 hours per week including class time for each of your courses.

Program Progression

You are reminded that satisfactory Program Progression requires that attendance in classes is maintained at equal to or greater than 80%, and that GPA is maintained at equal to or greater than 3.5 [please see Griffith College Policy Library - Program Progression Policy - for more information].

Teacher and course Evaluation

Your feedback is respected and valued by your lecturers and tutors. You are encouraged to provide your thoughts on the course and teaching, both positive and critical, directly to your lecturer and tutor or by completing course and lecturer evaluations via Griffith College's evaluation tool whenever these are available.

4. Learning and Teaching Activities

4.1 Weekly Learning Activities

Week	Topic	Activity	Readings	Learning Outcomes
1	Algebra and Linear Functions	Lecture Tutorial Workshop	Notes	1
2	Algebra and Quadratic Functions	Lecture Tutorial Workshop	Notes	1
3	Matrices	Lecture Tutorial Workshop	Notes	2
4	Test 1 – Algebra, Linear and Quadratic Functions and Matrices	Exam		1, 2
4	Matrices	Lecture Tutorial Workshop	Notes	2
5	Vectors	Lecture Tutorial Workshop	Notes	3
6	Mid-trimester Exam	Exam		1, 2
7	Vectors	Lecture Tutorial Workshop	Notes	3
8	Complex Numbers	Lecture Tutorial Workshop	Notes	4
9	Complex Numbers	Lecture Tutorial Workshop	Notes	4
10	Test 2 – Vectors and Complex Numbers	Exam		3, 4
10	Probability and Applications	Lecture Tutorial Workshop	Notes	5
11	Probability and Applications	Lecture Tutorial Workshop	Notes	5
12	Revision			

5. Assessment Plan

5.1 Assessment Summary

Item	Assessment Task	Weighting	Learning Outcomes	Due Date
1	Test 1 – Algebra, Linear and Quadratic Functions and Matrices	10%	1, 2	Week 4
2	Mid-trimester exam Content from Week 1 - 4	30%	1, 2	Week 6

3	Test 2 – Vectors and Complex Numbers	10%	3, 4	Week 10
4	Online homework and in-class workbook	10%	1, 2, 3, 4, 5	Week 1 - 12
5	Final exam Content from Week 5 - 12	40%	1, 2, 3, 4, 5	Final Exam week

5.2 Assessment Detail

Assessment Details

Title: Test 1 on Algebra, Linear and Quadratic functions and Matrices
Type: Test or quiz
Learning Outcomes Assessed: 1, 2
Weight: 10%
Task Description: This quiz is designed to test understanding of the concepts taught in weeks 1 to 4. Students will be expected to know algebra, linear and quadratic function and what matrices are, their operations and how to use them. Duration of the test will be 50 minutes and it will be held during the first hour of week 4.
Criteria & Marking: This quiz will consist of straightforward calculations on questions relating to algebra, linear and quadratic functions and matrices. Final marks will be posted on Griffith College portal.

Title: Mid-trimester exam
Type: Exam – selected and constructed responses
Learning Outcomes Assessed: 1, 2
Weight: 30%
Task Description: This exam will be made up of problem-solving questions on algebra, functions and matrices. This exam is designed to test understanding of the concepts taught in weeks 1 to4. Students will be expected to know what a linear and quadratic function is and how to use it. Students will be expected to know what are matrices and their operations.. Duration of the exam will be 2 hours and it will be held during week 6.
Criteria & Marking: This exam will test the understanding of the course material and the relevant problem-solving skills. Final marks will be posted on Griffith College portal.

Title: Test 2 on Vectors and Complex Numbers
Type: Test or quiz
Learning Outcomes Assessed: 3, 4
Weight: 10%
Task Description: This quiz is designed to test understanding of the concepts taught in weeks 5 to 9. Students will be expected to know what a vector is, what operations can be done with vectors and solve worded problems. Furthermore, students will be expected to know what are complex numbers, their operations and how to use them. Duration of the test will be 50 minutes and it will be held during the first hour of week 10.
Criteria & Marking: This quiz will consist of straightforward calculations on questions relating to matrices and vectors. Final marks will be posted on Griffith College portal.

Title: Online homework & in-class workbook
Type: Log of learning activities
Learning Outcomes Assessed: 1, 2, 3, 4
Weight: 10%
Task Description: Students will be directed to complete exercises during class-time and from online learning resources as the trimester progresses. This environment assesses the ability to solve problems as well as builds self-confidence. Students will be awarded with 10%, or part thereof, for completed work.
Criteria & Marking: To gain the full 10% students will be expected to engage with the online and in-class problems over the course of the trimester.

Title: Final exam
Type: Exam – selected and constructed responses
Learning Outcomes Assessed: 1, 2, 3, 4
Weight: 40%
Task Description: This exam will be made up of problem-solving questions on functions, complex numbers and probability. This exam is designed to test understanding of the concepts taught in weeks 5 to 12. Students will be

expected to know what a vector is, what operations can be done with vectors and solve worded problems. Students will be expected to know what are complex numbers and their operations. Students will be expected to know what probability is and solve worded problems. Duration of the test will be 2 hours and it will be held during exam week.
Criteria & Marking: This exam will test the understanding of the course material and the relevant problem-solving skills. Final marks will be posted on Griffith College portal.

5.3 Late Submission

An assessment item submitted after the due date, without an approved extension from the Course Coordinator, will be penalised. The standard penalty is the reduction of the mark allocated to the assessment item by 5% of the maximum mark applicable for the assessment item, for each working day or part working day that the item is late. Assessment items submitted more than five working days after the due date are awarded zero marks.

Please refer to the Griffith College website - Policy Library > Assessment Policy for guidelines and penalties for late submission.

5.4 Other Assessment Information

Retention of Originals

You must be able to produce a copy of all work submitted if so requested. Copies should be retained until after the release of final results for the course.

Requests for extension

To apply for an extension of time for an assignment, you must submit an Application for Extension of Assignment form to your teacher at least 24 hours before the date the assignment is due. Grounds for extensions are usually: serious illness, accident, disability, bereavement or other compassionate circumstances and must be able to be substantiated with relevant documentation [e.g. Griffith College Student Medical Certificate]. Please refer to the Griffith College website - Policy Library - for guidelines regarding extensions and deferred assessment.

Return of Assessment Items

1. Marks awarded for in-trimester assessment items, except those being moderated externally with Griffith University, will be available on the Student Portal within fourteen [14] days of the due date. This does not apply to the final assessment item in this course (marks for this item will be provided with the final course result).

2. Students will be advised of their final grade through the Student Portal. Students can review their exam papers after student grades have been published (see relevant Griffith College Fact Sheet for allocated times at Support> Factsheets). Review of exam papers will not be permitted after the final date to enrol.

3. Marks for **all** assessment items including the final exam (if applicable) will be recorded in the Moodle Course Site and made available to students through the Moodle Course Site.

The sum of your marks overall assessment items in this course does not necessarily imply your final grade for the course. Standard grade cut off scores can be varied for particular courses, so you need to wait for the official release of grades to be sure of your grade for this course.

6. Policies & Guidelines

Griffith College assessment-related policies can be found in the Griffith College Policy Library which include the following policies:

Assessment Policy, Special Consideration, Deferred Assessment, Alternate Exam Sitting, Medical Certificates, Academic Integrity, Finalisation of Results, Review of Marks, Moderation of Assessment, Turn-it-in Software Use. These policies can be accessed using the 'Document Search' feature within the Policy Library

Academic Integrity Griffith College is committed to maintaining high academic standards to protect the value of its qualifications. Academic integrity means acting with the values of honesty, trust, fairness, respect and responsibility in learning, teaching and research. It is important for students, teachers, researchers and all staff to act in an honest way, be responsible for their actions, and show fairness in every part of their work. Academic integrity is important for an individual's and the College's reputation.

All staff and students of the College are responsible for academic integrity. As a student, you are expected to conduct your studies honestly, ethically and in accordance with accepted standards of academic conduct. Any form of academic conduct that is contrary to these standards is considered a breach of academic integrity and is unacceptable.

Some students deliberately breach academic integrity standards with intent to deceive. This conscious, pre-meditated form of cheating is considered to be one of the most serious forms of fraudulent academic behaviour, for which the College has zero tolerance and for which penalties, including exclusion from the College, will be applied.

However, Griffith College also recognises many students breach academic integrity standards without intent to deceive. In these cases, students may be required to undertake additional educational activities to remediate their behaviour and may also be provided appropriate advice by academic staff.

As you undertake your studies at Griffith College, your lecturers, tutors and academic advisors will provide you with guidance to understand and maintain academic integrity; however, it is also your responsibility to seek out guidance if and when you are unsure about appropriate academic conduct.

In the case of an allegation of a breach of academic integrity being made against a student he or she may request the guidance and support of a Griffith College Student Learning Advisor or Student Counsellor.

Please ensure that you are familiar with the Griffith College Academic Integrity Policy; this policy provides an overview of some of the behaviours that are considered breaches of academic integrity, as well as the penalties and processes involved when a breach is identified.

For further information please refer to the Griffith College website - Policy Library > Academic Integrity Policy

Reasonable Adjustments for Assessment – The Disability Services policy

The Disability Services policy (accessed using the Document Search' feature with the Policy Library) outlines the principles and processes that guide the College in making reasonable adjustments to assessment for students with disabilities while maintaining academic robustness of its programs.

Risk Assessment Statement

There are no out of the ordinary risks associated with this course.

Note: For all Diploma level programs, Griffith College acknowledges content derived from Griffith University.