



## 1. General Course Information

### 1.1 Course Details

<b>Course Code:</b>	<b>FND105</b>
<b>Course Name:</b>	<b>Advanced Mathematics</b>
<b>Trimester:</b>	Trimester 3, 2020
<b>Program:</b>	Foundation
<b>Credit Points:</b>	10
<b>Course Coordinator:</b>	Jesse Rostagno
<b>Document modified:</b>	08/09/2020

### Course Description

This course consolidates a background in real numbers and algebra, broadens knowledge of geometry, trigonometry and function theory, and explores the rules of differential and integral calculus. Students will use critical thinking and cognitive skills to identify, analyse and assess mathematical concepts in order to develop modelling and problem-solving techniques and apply them to technical, scientific and engineering problems.

### Assumed Knowledge

To successfully enrol in this Course, you must provide evidence that you have completed the following course:

- FND104 - Essential Mathematics

## 1.2 Teaching Team

Your teacher can be contacted via the email system on the portal.

Name	Email
Jesse Rostagno	jero@portal.griffithcollege.edu.au

## 1.3 Staff Consultation

Your teacher is available each week for consultation outside of normal class times. Times that your teacher will be available for consultation will be found on the Course Site.

## 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 aims to equip students with sound knowledge of the mathematical principles required for science and engineering. It aims to develop students critical thinking and mathematical modelling skills and to instruct them in finding solutions to problems in a clear and logical fashion



### 2.2 Learning Outcomes

After successfully completing this course you should be able to:

- 1 Demonstrate knowledge of an appropriate range of mathematical fundamentals
- 2 Confidently use the Quadratic equation and construct graphical representations of Quadratic equations
- 3 Demonstrate understanding of the applications of trigonometric, periodic and logarithm functions
- 4 Demonstrate understanding of the applications of basic calculus and derivative rules
- 5 Demonstrate the ability to gather 'real life' data, appropriate analysis and interpretation statistical results



## 2.3 Generic Skills and Capabilities

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 Learning Resources

There will be an interactive workbook for each module, downloadable from the portal directly at no cost. This workbook contains background information, examples, video hyperlinks, and hands on learning activities each week.

Non-programmable scientific calculator.

There is no prescribed text for this course, all notes and exercises are available on the portal

### 3.2 Recommended Learning Resources

N/A

### 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 academic advice and assignment help from Student Learning Advisors, and personal and welfare support from Student Counsellors.

[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 Information about your Learning

#### **Attendance**

You are expected to actively engage in all learning experiences and learning activities which underpin the learning content in this course. You are expected to engage with the learning content and learning activities outside of timetabled class times. This requires you to be an active agent of your learning. You are expected to bring all necessary learning resources to class such as the required textbook and /or Workbook. In addition, you are encouraged to 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 Learning**

In order to enhance your learning, you need to prepare before participating in the learning experiences. Absorb the learning content and complete the learning activities that are provided online before you attend the scheduled learning experiences. Make sure you complete the learning activities set each week, they are designed to support your learning. Active participation in your learning will enhance your success. 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 Learning Materials**

Learning materials are made available to you in MyStudy on the Griffith College Portal. The learning materials are arranged in Modules. In each Module you will find the learning content, learning activities and learning experiences. Actively working your way through these course learning materials together with your lecturer or tutor will prepare you to succeed when completing the evidence of learning (assessment).

**Self-Directed Learning**

You will be expected to learn independently. This means you must organise and engage with the course learning content even when you are not specifically asked to do so by your lecturer or tutor. The weekly guide will be helpful to organise your learning. This involves revising the weekly course learning material and completing the learning activities. It also means you will need to find additional information to evidence your learning (assessment) beyond that given to you, 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 Content, Learning Activities and Learning Experiences

### 4.1 Modules for Learning and Weekly Learning Content, Learning Activities and Learning Experience





	Learning Content 	Learning activities 	Learning experiences 	Evidence of learning 	Learning outcome 
<b>Module 1 – Fundamentals and Revision</b>					
1	Fundamentals and Revision	Module 1 Workbook Activities	Online Zoom Class <ul style="list-style-type: none"> <li>• Introduction to Course Outline</li> <li>• Order of Operations</li> <li>• Factoring</li> <li>• Surds</li> <li>• Rearranging Equations</li> </ul>		1
2	Fundamentals and Revision	Module 1 Workbook Activities	Online Zoom Class <ul style="list-style-type: none"> <li>• Solving for X</li> <li>• Functions</li> <li>• Gradients and Linear Equations</li> <li>• Exponents and Logarithm</li> </ul>	<b>Fundamentals Quiz – 20%</b>	1
<b>Module 2 - Quadratic Equations and Functions</b>					
3	Introduction to Quadratic Equation and Functions	Module 2 Workbook Activities	Online Zoom Class <ul style="list-style-type: none"> <li>• Factoring – Expanding and Simplifying</li> <li>• Solving equations by Factoring</li> </ul> Kahoot Quiz – Factoring Quadratics		2
4	Quadratic Equations and Functions	Module 2 Workbook Activities	Online Zoom Class <ul style="list-style-type: none"> <li>• Quadratic Equation</li> <li>• Solving equations using the Quadratic Equation</li> <li>• Discriminate</li> </ul>		2
5	Graphing Quadratic Equations	Module 2 Workbook Activities	Online Zoom Class <ul style="list-style-type: none"> <li>• Graphing Quadratic Equations</li> <li>• Vertex and Intercepts</li> </ul>	<b>Quadratics Quiz &amp; Graph Submission - 20%</b>	2
<b>Module 3 – Other Functions</b>					
6	Introduction to Trigonometry and Periodic Functions	Module 3 Workbook Activities	Online Zoom Class <ul style="list-style-type: none"> <li>• Trigonometry Revision – Sin Cos Tan</li> <li>• Trigonometry and Periodic Functions and Graphs</li> </ul>		3
7	Functions – Exponential (Log Growth and Decay)	Module 3 Workbook Activities  Find a population of interest and calculate growth/decay rate, show results in a graph	Online Zoom Class <ul style="list-style-type: none"> <li>• Exponential or Logarithmic Functions</li> <li>• Growth and Decay Model and Graph</li> </ul>	<b>Quiz and Problem Solving Activity - 20%</b>	3

<b>Module 4 – Introduction to Calculus</b>				
<b>8</b>	Calculus	Module 4 Workbook Activities	Online Zoom Class <ul style="list-style-type: none"> <li>• Introduction to Calculus</li> <li>• Limits</li> </ul>	4
<b>9</b>	Calculus	Module 4 Workbook Activities	Online Zoom Class <ul style="list-style-type: none"> <li>• First Principles</li> <li>• Derivatives</li> <li>• Derivatives Rules</li> </ul>	<b>Calculus Quiz – 20%</b> 4
<b>Module 5 – Introduction to Statistics/Data Analysis</b>				
<b>10</b>	Introduction to Statistics/Data Analysis	Module 5 Workbook Activities  Select Topic (Get teacher approval) Collect Data Set via Survey	Online Zoom Class <ul style="list-style-type: none"> <li>• Introduction to Statistics – Why and How</li> <li>• Statistics Terms and Applications</li> <li>• Creating Research Questions and Designing a Survey</li> </ul>	5
<b>11</b>	Introduction to Statistics/Data Analysis	Module 5 Workbook Activities  Organise Collected Data in Excel	Online Zoom Class <ul style="list-style-type: none"> <li>• Using Excel to Organise Data</li> <li>• Create Statistical representations in Excel</li> </ul>	5
<b>12</b>	Statistics Report Submission		Online Zoom Class <ul style="list-style-type: none"> <li>• Guidance workshop for report and data analysis</li> </ul>	<b>Statistics Report Submission – 20%</b> 5



## 5. Evidence of Learning (Assessment Plan)

### 5.1 Evidence of Learning Summary

	 Evidence of learning	 Weighting	 Learning outcome	 Due Date
<b>1</b>	Module 1 - Fundamentals Quiz	20%	1	Week 2
<b>2</b>	Module 2 - Quadratics Quiz and Graph Submission	20%	2	Week 5
<b>3</b>	Module 3 – Quiz and Problem Solving Activity	20%	3	Week 7
<b>4</b>	Module 4 - Calculus Quiz	20%	4	Week 9
<b>5</b>	Module 5 – Statistics Report	20%	5	Week 12

### 5.2 Evidence of Learning Task Detail

**Online Quizzes** – Modules 1, 2, 3 and 4 – Combination of multiple choice and short answer questions to show knowledge of content learned in modules. Module 2 and 3 will combine a shorter style quiz with a submission of a graph or problem-solving activity.

**Problem Solving Activity** – Module 3 will require students to apply knowledge of Logarithm growth and decay equations to create a growth/decay model, organise population data in a table and create an exponential graph for submission. Students may choose a species population of their choice and reflect on their findings in a short paragraph with what factors may be contributing to the growth/decay of the species.

**Statistics Report** – Module 5 will encourage the students to form a 'quantitative research question', collect a small data set, organise the data and create a box plot or other statistically relevant graph, with statistical interpretation and reflection of the data points on the graph.

### 5.3 Late Submission

An evidence of learning (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. Evidence of learning 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 Information about Evidence of Learning

### 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 evidence of learning item, 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 Evidence of Learning Items

1. Marks awarded for in-trimester evidence of learning 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 evidence of learning 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 final exam papers after student grades have been published. Review of final exam papers will not be permitted after the final date to enrol.
3. Marks for **all** evidence of learning 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 of evidence of learning 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 Sitings](#), [Medical Certificates](#), [Academic Integrity](#), [Finalisation of Results](#), [Review of Marks](#), [Moderation of Assessment](#), [Turn-it-in Software Use](#). These policies can be accessed 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 within 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.

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