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| Course Code: | FND105 |
| Course Name: | Advanced Mathematics |
| Trimester: | Trimester 3, 2018 |
| Program: | Foundation Program |
| Credit Points: | 10 |
| Course Coordinator: | Rebecca Fox |
| Document modified: | 25 th September 2018 |

Teaching Team

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

Rebecca Fox: rebecca.fox@staff.griffithcollege.edu.au

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 “myTimetable” link.

Prerequisites

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

- FND104 - Essential Mathematics
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Brief Course Description

This course consolidates 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.

Rationale

Scientists and engineers are required to have a clear understanding of concepts and functions in terms of life-related situations and be able to model these situations in mathematical terms. This course provides students with an introduction to these mathematical concepts and ideas as well as developing modelling and problem-solving skills. The content is designed to develop students understanding of number theory, function theory, trigonometry and calculus.

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.

Learning Outcomes

Upon successful completion of this course students will be able to:

- 1 Demonstrate knowledge of mathematics such as algebra, geometry and rational functions;
 - 2 Demonstrate knowledge of polynomial, exponential and logarithmic functions and construct graphical representations of these functions;
 - 3 Use appropriate terminology associated with trigonometry, differential and integral calculus;
 - 4 Demonstrate knowledge of a range of periodic and trigonometric functions and their applications;
 - 5 Demonstrate knowledge of the concept of limits and a range of differential and integral calculus concepts;
 - 6 Demonstrate understanding of applications of differential and integral calculus;
 - 7 Demonstrate the ability to formulate mathematical models
 - 8 Apply the mathematical models students develop in order to solve problems in a selection of life-related situations.
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Texts and Supporting Materials

Required Text:

FND105 Workbook (in two parts - Weeks 1-5 and Weeks 6-12) will be given to you in your class. Lecture notes are available on the course website in weekly format.

Other Requirements:

Non-programmable scientific calculator and a ruler

Organisation and Teaching Strategies

The contact time in this course takes place over four (4) hours and may be split across two different days or offered in one morning or afternoon session. During the 4 hour classes you will be presented with the theoretical and practical aspects of the concepts to be learned. You will also have the opportunity to work on the practical aspects of the course in review exercises and in an assignment in your own time and extend your understanding of the material, and to obtain guidance with assessment.

Contact hours

The expected contact hours per week for this course comprises of:

Formal classes 4 hours

Formal Homework 4 hours

Online Learning 1 hour

Supervised Consultation 1 hour

Total: 10 hours

*Class Contact Summary***Attendance:**

Your attendance in class will be marked twice during a four hour class. To receive full attendance, you must be present in the classroom on both occasions. Therefore, you are encouraged to attend and participate in all classes throughout the trimester.

Participation in Class:

During classes each week you are expected to actively participate in exercises covering the current topic.

Consultation Time:

Consultation time is offered on a weekly basis in order to support student learning. Please refer to the student portal or your teacher for details.

Course Materials:

Lecture notes will be made available to you on the MyStudy site on the student portal and you are advised to print these out before each class to help guide you in your study program.

Independent Learning:

Throughout this course you will be encouraged to take personal responsibility for managing your own learning and your own time. In addition to the 4 hours spent in class time for this course you are expected to undertake independent study outside of class time. This independent learning will involve reading and preparing for classes and completing assignments and other assessment tasks. There will be the opportunity to use online resources via the Griffith College portal in order to enhance your learning.

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].

Content Schedule

The material taught during this course will be divided into the sections that are shown in the following table.

Weekly Teaching Schedule

| Week | Topic | Activity | Readings |
|-------------|---|-----------------|--------------------|
| 1 | Fundamentals | Class | Workbook Exercises |
| 2 | Functions | Class | Workbook Exercises |
| 3 | Logarithms and Exponents | Class | Workbook Exercises |
| 4 | Trigonometry I | Class | Workbook Exercises |
| 5 | Trigonometry II | Class | Workbook Exercises |
| 6 | Periodic Functions | Class | Workbook Exercises |
| 7 | Limits and Instantaneous Rates of Change | Class | Workbook Exercises |
| 8 | Derivatives I | Class | Workbook Exercises |
| 9 | Derivatives II and Optimisation | Class | Workbook Exercises |
| 10 | Anti-derivatives and Indefinite Integrals | Class | Workbook Exercises |
| 11 | Definite Integrals and Area under a curve | Class | Workbook Exercises |
| 12 | Finalisation of Calculus and Revision | Class | Workbook Exercises |
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Assessment

This section sets out the assessment requirements for this course.

Summary of Assessment

| Item | Assessment Task | Weighting | Relevant Learning Outcomes | Due Date |
|------|-----------------------|-----------|----------------------------|------------|
| 1 | Assignment 1 | 10% | 1,2 and 8 | Week 6 |
| 2 | Workbook Weeks 1-5 | 5% | 1,2,3 and 4 | Week 8 |
| 3 | Mid Trimester Exam | 30% | 1,2,3 and 4 | Week 7 |
| 4 | Assignment 2 | 10% | 4, 6 and 8 | Week 10 |
| 4 | Workbook Weeks 7-12 | 5% | 5,6,7 and 8 | 12 |
| 5 | End of Trimester Exam | 40% | 5,6 and 7 | Exam Block |

Assessment Details

Assignments: The two assignments in this course will assess mathematical application to problem solving, using the skills taught during the trimester.

Workbooks: The two workbooks (one for each half of the trimester) are used to assess the progression made in the application of the material taught in the course, and to assist in the preparation for the corresponding exam.

Mid-Trimester Exam: The mid-trimester exam will be held in class time in week 7, and will test all the material taught in weeks 1 to 6. The duration of the exam is 2 hours.

End of Trimester Exam: The end of trimester exam will be held during the examination block, and will test all material taught from week 7 to 12. The duration of the exam is 2.5 hours.

Submission and Return of Assessment Items

Normally you will be able to collect your assignments in class within fourteen [14] days of the due date for submission of the assignment.

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.

Extensions

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 Medical Certificate]. Please refer to the Griffith College website - Policy Library - for guidelines regarding extensions and deferred assessment.

Assessment Feedback

Marks awarded for assessment items will also be available on the on-line grades system on the Student Website within fourteen [14] days of the due date.

Generic Skills

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 | Taught | Practised | Assessed |
|----------------|--------|-----------|----------|

| | | | |
|----------------------------------|-----|-----|-----|
| Written Communication | Yes | Yes | Yes |
| Oral Communication | Yes | Yes | |
| Information Literacy | Yes | Yes | |
| Secondary Research | Yes | Yes | Yes |
| Critical and Innovative Thinking | Yes | Yes | Yes |
| Academic Integrity | Yes | Yes | Yes |
| Self Directed Learning | Yes | Yes | Yes |
| Team Work | Yes | Yes | |
| Cultural Intelligence | Yes | | |
| English Language Proficiency | Yes | Yes | Yes |

Additional Course Generic Skills

Additional Course Information

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 any allegation of academic misconduct 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 Academic Integrity Policy on the Griffith College website – Policy Library.

Risk Assessment Statement

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