

**MATHEMATICS, SCIENCE AND IT ACADEMY**

**SEMESTER 1 2019**

<b>Course Title</b>	<b>Mathematical Methods Integrating Australian Curriculum</b>	<b>Course Code</b>	<b>1408</b>
<b>Unit Title</b>	Unit 3: Mathematical Methods	<b>Unit Code</b>	14646
<b>Semester Unit</b>	Unit 3: Mathematical Methods	<b>Unit Value</b>	1.0
<b>Term 1 Unit</b>	Unit 3a: Mathematical Methods	<b>Unit Value</b>	0.5
<b>Term 2 Unit</b>	Unit 3b: Mathematical Methods	<b>Unit Value</b>	0.5

**GOALS**

The specific goals of this unit are for students to:

- understand the concepts and techniques in calculus, probability and statistics
- solve problems in calculus, probability and statistics
- apply reasoning skills in calculus, probability and statistics
- interpret and evaluate mathematical and statistical information and ascertain the reasonableness of solutions to problems
- communicate their arguments and strategies when solving problems

**CONTENT SUMMARY**

Further elaboration on the content of this unit is available at:

<http://www.australiancurriculum.edu.au/SeniorSecondary/Mathematics/Mathematical-Methods/Curriculum/SeniorSecondary>

<b>Topic 1: Further differentiation and applications</b>	<b>Topic 2: Integrals</b>	<b>Topic 3: Discrete random variables</b>
Differentiation rules	Anti-differentiation	General discrete random variables
Exponential functions	Definite integrals	Bernoulli distributions
Trigonometric functions	Fundamental theorem	Binomial distributions
The second derivative and applications of derivatives	Applications of integration	

**COST OF MATERIALS**

Hire of a Graphics Calculator is highly recommended. The fee is \$100 which includes \$50 hire fee and \$50 deposit. The deposit is refunded at the end of the year when the calculator is returned in an acceptable state.

**ASSESSMENT**

<b>TASK</b>	<b>DUE DATE</b>	<b>WEIGHTING</b>
Exam 1	Exam Week Term 1	30%
Exam 2	Exam Week Term 2	30%
Fertile Question <ul style="list-style-type: none"> <li>• Part A } 30%</li> <li>• Part B }</li> <li>• Presentation 10%</li> </ul>	Week 7 Week 12 Week 15	40%

### Specific Entry & Exit Requirements for Term Units

To exit at Term 1 you must complete the Exam 1 and Part A of the Fertile Question.

Entry into this course for Term 2 is by negotiation with the Executive teacher.

### ASSESSMENT CRITERIA FOR ASSESSMENT AND REPORTING OF STUDENT ACHIEVEMENT

Students will be assessed on the degree to which they demonstrate:

- Knowledge – knowledge of mathematical facts, techniques and formulae presented in the unit
- Application – appropriate selection and application of mathematical skills in mathematical modelling and problem solving
- Reasoning – ability to use reasoning to support solutions and conclusions (in T courses only)
- Communication – interpretation and communication of mathematical ideas in a form appropriate for a given use or audience.

### Unit Grades for T Courses

	<b>Knowledge</b>	<b>Application</b>	<b>Reasoning</b>	<b>Communication</b>
A student who achieves the grade <b>A</b>	Demonstrates very high level of proficiency in the use of facts, techniques and formulae.	Selects, extends and applies appropriate modelling and problem solving techniques.	Uses mathematical reasoning to develop logical arguments in support of conclusions, results and/or decisions; justifies procedures.	Is consistently accurate and appropriate in presentation of mathematical ideas in different contexts.
A student who achieves the grade <b>B</b>	Demonstrates high level of proficiency in the use of facts, techniques and formulae.	Selects and applies appropriate modelling and problem solving techniques.	Uses mathematical reasoning to develop logical arguments in support of conclusions, results and/or decisions.	Is generally accurate and appropriate in presentation of mathematical ideas in different contexts.
A student who achieves the grade <b>C</b>	Demonstrates some proficiency in the use of facts, techniques and formulae studied.	With direction, applies a model. Solves most problems.	Uses some mathematical reasoning to develop logical arguments.	Presents mathematical ideas in different contexts.
A student who achieves the grade <b>D</b>	Demonstrates limited use of the facts, techniques and formulae studied.	Solves some problems independently.	Uses some mathematical reasoning to develop simple logical arguments.	Presents some mathematical ideas.
A student who achieves the grade <b>E</b>	Demonstrates very limited use of the facts, techniques and formulae studied.	Solves some problems with guidance.	Uses limited reasoning to justify conclusions.	Presents some mathematical ideas with guidance.

Teachers will consider, when allocating grades, the degree to which students demonstrate their ability to complete and submit tasks within a specified time frame.

### ATTENDANCE AND PARTICIPATION

Students are expected to submit all assessment items and attend all classes, participate in a positive manner and seek support whenever it is required. Excursions, simulations and presentations by visitors (including lunchtime) may form part of classwork. It is your responsibility to catch up on missed work when absent from class.

Any student whose attendance falls below the 90% of the scheduled classes/contact time and has not provided substantial documentary evidence to cover the absence will be awarded a V grade. This means that 4 unexplained absences in a term or 8 unexplained absences in a semester could mean that a V grade may be awarded. However, the Principal has the right to exercise discretion in special circumstances if satisfactory documentation is supplied.

## **LATE SUBMISSION OF WORK**

Students are encouraged to submit work on time, as it is a valuable organisational skill. Students are also encouraged to complete work even if it is late, as there are educational benefits in doing so.

Late work will receive a penalty of 5% (of possible marks) per calendar day late, unless an extension is granted by the class teacher prior to the deadline. This means that 5% is taken off the possible marks that could have been achieved eg. If a student achieved a score of 75/100, and the item is one day late, then five marks (5% of 100) would be taken from 75, which leaves the score as 70/100. 'Per calendar day late' means each day late whether it be a weekend or public holiday. Items due on any date must be submitted to the class teacher, faculty staff room, or front office at the college by 3.30pm on that day. After 3.30pm, the item will attract the late penalty. Submission of work on a weekend or public holiday is not acceptable. If you do not submit your work to your class teacher, make sure that it is signed and dated by either another member of staff in the faculty staffroom, or a member of the front office staff.

No work will be accepted after marked work has been returned, or accepted after the unit has completed. Computer and/or printer failure will not be accepted as a valid reason for late work. Make sure you backup, keep hard copies and rough notes.

Unless prior approval is granted, any student who fails to submit assessment tasks worth in total 70% or more of the assessment for the unit, will be considered to be unassessable and will receive a V grade. The Principal has the right to exercise discretion in the application of the late penalty in special circumstances where satisfactory documentation is supplied.

## **CHEATING AND DISHONEST PRACTICE**

The integrity of the College's assessment system relies upon all involved acting in accordance with the highest standards of honesty and fairness. Any departure from such standards will be viewed very seriously."

Accordingly:

- Plagiarism - claiming authorship of someone else's work (intentionally or otherwise) - is a serious misdemeanour, and attracts severe penalties.
- Students are required to acknowledge the source of all material that is incorporated into their own work.
- Students may not submit the same item for assessment in more than one unit, unless specific agreement has been reached with the class teacher.

## **MODERATION**

Throughout the semester, moderation in the form of common marking schemes, cross marking and joint marking occurs across all units in the Moderation Group to ensure comparability of standards. Moderation is a process whereby student's work is compared so that student performance can be graded fairly and consistently. Moderation takes some time, and so students may not receive their work back until ACT wide moderation of grades across all colleges has occurred. Small Group Moderation is carried out in courses with small class sizes.

## **RIGHT TO APPEAL**

You can appeal against your assessment if you feel that the result you obtained is not fair. You should first talk to your class teacher, and if you are not satisfied with the explanation you must discuss the situation with the Executive Teacher of the faculty concerned. If you still do not feel that your result is fair you should talk to the Deputy Principal Programs for further advice on the 'appeal process'.

**Executive Teacher:** Ruth Edge

**Class Teacher:** Jodie Beaumont

**Date:** 12/2/19