

MATHEMATICS, SCIENCE AND IT ACADEMY

SEMESTER 1 2019

Course Title	Specialist Methods <i>Integrating the Australian Curriculum</i>	Course Code	1407
Semester Unit	Unit 3: Specialist Methods	Unit Code/Value	14634 (1.0)
Term 1 Unit	Unit 3a: Specialist Methods	Unit Code/Value	14635 (0.5)
Term 2 Unit	Unit 3b: Specialist Methods	Unit Code/Value	14636 (0.5)

Specific Unit Goals

By the end of this unit, students:

- Will understand the concepts and techniques in calculus and logarithms
- Solve problems in calculus
- Apply reasoning skills in calculus and logarithms
- Interpret and evaluate mathematical information and ascertain the reasonableness of solutions to equations
- Communicate their answers and strategies when solving problems

Content

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

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

Topic 1: The logarithmic function	Topic 2: Further differentiation and applications	Topic 3: Integrals
Review of log properties	Differentiation rules: product, quotients, function of function	Anti-differentiation: exponentials, logs, trig, physical application
Interpret and use log scales	Exponential functions	Definite integrals
Recognise graphs of $y = \log_a x$	Log functions	Fundamental theorem
Solve log equations	Trigonometric functions	Applications of integration
Use log function to model and solve problems	The second derivative and applications of derivatives	

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

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

Specific Entry & Exit Requirements for Term Units

It is possible to enter this course at Term 2. Entry into this course for Term 2 is by negotiation with the Executive teacher.

To exit at Term 1 you must complete Exam 1 and The Fertile Question Part A

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

Technology, its selection and appropriate use, is an integral part of all the following descriptors.

	Knowledge	Application	Reasoning	Communication
A student who achieves the grade A	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	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 C	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 D	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 E	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 e.g. 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:
Date: 9 February, 2018

Class Teacher: Debbie OBrien