2024 Year 9 & 10 Unit Outline

Extension Maths

Teacher(s): *Brandon Steele*

Faculty: *Mathematics* **Unit Duration:** Semester 1, 2024

The **Australian Curriculum Achievement Standards in Mathematics** is organised around the interaction of three content strands and four proficiency strands. The content strands are *number and algebra, measurement and geometry,* and *statistics and probability*. They describe what is to be taught and learnt.

Australian Curriculum Achievement Standard:
Students recognise the connection between simple and compound interest. They solve problems involving linear equations and inequalities. They make the connections between algebraic and graphical representations of relations. Students solve surface area and volume problems relating to composite solids. They recognise the relationships between parallel and perpendicular lines. Students apply deductive reasoning to proofs and numerical exercises involving plane shapes. They compare data sets by referring to the shapes of the various data displays. They describe bivariate data where the independent variable is time. Students describe statistical relationships between two continuous variables. They evaluate statistical reports.

Unit Description: This elective aims to consolidate and strengthen the skills taught in Science and Mathematics classes and enhance problem solving skills. The Science component will focus on improving scientific investigation capabilities through a range of experiments that use specialised equipment. The Maths component will look at improving and developing the student's ability in Algebra and Data Analysis. Students will also be introduced to concepts that will be covered in Science and Maths courses at college.

Essential Learning Outcomes developed from the Achievement Standards of the Australian Curriculum:

1. **V9.M.10.02** - Uses mathematical modelling to solve problems involving growth and decay in financial and other applied situations, applying linear, quadratic, and exponential functions as appropriate, and solves related equations, numerically and graphically.
2. **V9.M.10.03** - Makes and tests conjectures involving functions and relations using digital tools.
3. **V9.M.10.07** – Applies Pythagoras' theorem and trigonometry to solve practical problems involving right-angled triangles.
4. **V9.MO.10.08** - Describes the effect of limiting values in relation to average rate of change of a function.

Materials and Equipment Required: Students are expected to arrive at every class with a class book/folder to write notes for that subject, a writing instrument and a Chromebook or similar, appropriate electronic device. Students may also be required to provide the following additional materials and equipment: *Scientific Calculator*

Absences from Class: Students who miss classes due to absence or excursions must negotiate with the class teacher to catch up missed work.

Use of IT in Class: A Google Classroom has been set up for this class. Students will be required to log into this Google Classroom regularly to access course material. Students must bring their Chromebook to all lessons, however, the use of these devices in class will be at the discretion of the teacher.

Homework: Any homework will be directly related to instruction and course requirements, will be assessed appropriately, and may impact upon student grades. Examples of homework may include catch up on missed classwork, revision of classwork, study for tests, assignment work, or preparation for a class presentation.

Late Work: Extensions may be negotiated with individual teachers before the due date.

Plagiarism: Plagiarism is copying or using another's work and claiming it as your own. This includes copying, cutting, and pasting text or using ideas directly from a text, the internet, or some other source without appropriate referencing. If this happens, work may not be graded, and students will be asked to discuss the assessment with the classroom teacher and Executive Teacher for that subject. Parents may be contacted as part of this process.

Assessment Portfolio: This contains evidence of work from the opportunities the students have been provided to demonstrate elements of the achievement standard.

Portfolio Assessment Tasks for this subject will include:	**Week / Date Due**	**Essential Learning**
1. Trigonometry	**Week 5**	**3**
2. Functions	**Week 8**	**2**
3. Derivatives	**Week 14**	**4**
4. Properties of Derivatives	**Week 18**	**1**

A-E Reporting Grade Descriptors These are the grades and grade descriptors for reporting at the end of each Semester.

A	Demonstrating **excellent** achievement of what is expected (Consistently achieving a proficiency level of 4 or above in each of the Essential Learnings)
B	Demonstrating a **high** achievement of what is expected (Consistently achieving a proficiency level of between 3 and 4 in each of the Essential Learnings)
C	Demonstrating **satisfactory** achievement of what is expected (Achieving a proficiency level of 3 across the Essential Learnings)
D	Demonstrating **partial** achievement of what is expected (Achieving a proficiency of between 1 and 3 across the Essential Learnings)
E	Demonstrating **limited** achievement of what is expected (Achieving a proficiency of 1 or less in each of the Essential Learnings)
S	**Status** is awarded where unavoidable circumstances have prevented assessment. Must be negotiated with the principal.

Grade Descriptors and the "C" grade

In ACT public schools the Australian Curriculum Achievement Standard is aligned with a 'C' grade. The 'C' grade indicates that your child has demonstrated a satisfactory level of knowledge, understanding and skill in relation to the Achievement Standard.

Appeals

A student must initiate an appeal for any grade with their subject teacher. If a student is dissatisfied with that initial process, they must pursue further appeal through the Faculty Executive Teacher for that subject.

Executive Teacher

Colin Montgomery 24/01/2024

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