PRE-APPROVED LEARNING AND ASSESSMENT PLAN

**Stage 2 General Mathematics**

*This pre-approved learning and assessment plan is aligned with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

Pre-approved learning and assessment plans are for *school use only*.

* Teachers may make changes to the plan, retaining alignment with the subject outline.
* The principal or delegate endorses the use of the plan, and any changes made to it, including use of an addendum.
* The plan does not need to be submitted to the SACE Board for approval.

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| School | Heritage College | Teacher(s) | Trevor Dodson |

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| SACE  School Code | | |  | Year |  | Enrolment Code | | | | |  | Program Variant Code (A–W) |
| Stage | Subject Code | | | No. of Credits (20) |
| **2** | **9** | **7** | **2023** | **2** | **M** | **G** | **M** | **20** |  |

**Addendum – changes made to the pre-approved learning and assessment plan**

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| Describe any changes made to the pre-approved learning and assessment plan to support students to be successful in meeting the requirements of the subject. In your description, please explain:   * what changes have been made to the plan * the rationale for making the changes * whether these changes have been made for all students, or for individuals within the student group. |

**Endorsement**

The use of the learning and assessment plan is approved for use in the school. Any changes made to the plan support student achievement of the performance standards and retain alignment with the subject outline.

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| Signature of principal or delegate |  | Date |  |

Stage 2 General Mathematics

Assessment Overview

Complete the table below to show details of the planned tasks. Use numbers to show where students will have the opportunity to provide evidence for each of the specific features for all assessment design criteria.

| **Assessment Type and Weighting** | **Name and details of assessment** | **Assessment Design Criteria** | | **Assessment conditions** (e.g. task type, page limit, time allocated, supervision) |
| --- | --- | --- | --- | --- |
| **CT** | **RC** |
| **Skills and Applications Tasks**  **Weighting 40%** | **Topic One: Modelling with Linear Relationships**  The content covers key questions and key concepts within all subtopics. Students apply their knowledge and skills to a range of routine and complex questions. The complex questions require students to apply the key concepts to solve problems in a variety of contexts and some require interpretation of the results.  **Part A:** Non-calculator section (30 minutes) – Subtopic 1.1 and 1.2  **Part B:** Calculator section (20 minutes) – Subtopic 1.1  Clear and logical communication of solutions and correct use of terminology are required. | 1, 2 | 1, 3 | Supervised written assessment.  One A5 page of handwritten notes permitted for calculator section only.  Total time: 50 minutes |
| **Topic Two: Modelling with Matrices**  Mathematical knowledge and skills based upon the key questions and key concepts from all subtopics are assessed. The assessment includes both routine and complex problems. Students require access to technology to solve a range of modelling with matrices problems. Clear and logical communication of solutions and correct use of notation and terminology are required. | 1, 2, 4 | 1, 2, 3, 4 | Supervised written assessment.  One A4 page of handwritten notes permitted.  Total time: 50 minutes |
| **Topic Four: Financial Models**  Mathematical knowledge and skills based upon the key questions and key concepts from all subtopics are assessed. Problems will be set in context and opportunities for interpretation of the mathematical results will be provided throughout the test. Students require access to technology to solve a range of financial calculations. Correct use of notation and terminology are required. | 1, 2, 4 | 1, 2, 3, 4 | Supervised written assessment.  One A4 page of handwritten notes permitted.  Total time: 50 minutes |
| **Topic Five: Discrete Models**  Mathematical knowledge and skills based upon the key questions and key concepts from all subtopics are assessed. Students are required to complete both routine and complex questions without access to technology or notes. Problems will be set in context and opportunities for interpretation of the mathematical results will be provided throughout the test. Correct use of notation and terminology are required. | 1, 2 | 1, 2, 3 | Supervised written assessment.  No notes or calculator permitted.  Total time: 50 minutes |
| **Topic Three: Statistical Models**  Students demonstrate mathematical knowledge and skills of key questions and key concepts from Statistical Models subtopics 3.1 and 3.2. Students apply their knowledge and skills to a range of routine and complex questions in a variety of contexts. The complex questions require students to apply the key concepts to solve problems in a variety of contexts and some require interpretation of the results. Most questions require the aid of electronic technology. Correct use of notation and terminology are required. | 1, 2, 4 | 1, 2, 3, 4 | Supervised written assessment.  One A4 page of handwritten notes permitted.  Total time: 50 minutes |

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| **Mathematical Investigation**  **Weighting 30%** | **Topic Four: Financial Models**  In this task students are required to investigate how a regular income can be provided for in retirement through superannuation. Scope for complexity is provided through the student’s choice of scenarios to investigate mathematically. These investigations could include methods to increase the final superannuation payout, consideration of periods of time of unemployment and changing the retirement age. Investigations also include how much money the individual would need to live off at retirement and the impact of inflation on the regular income. Students are required to consider the reasonableness of their results by examining the underlying assumptions and limitations of their mathematical model. | 1, 2, 3 | 1, 2, 3, 4 | 3 weeks to complete. Some class time is allowed to support verification.  **Maximum of 12 single-sided A4 pages.**  Appropriate investigation report format as described in the General Mathematics subject outline. |
| **Topic Five: Discrete Models**  In this task students utilise skills that they have developed in Subtopic 5.2. They use the data for 4 members of the team to predict who should complete which stroke in a swimming relay. The times each participant takes for each stroke is randomly generated in a spreadsheet to fit specified criteria. They then use the Hungarian algorithm to see how accurate their predictions were. Further explorations of the team composition are undertaken, including a second team of four being selected, and an injury requiring re-composition of the team. Students are required to consider the reasonableness of their results by examining the underlying assumptions and limitations of their mathematical model. | 1, 2, 3 | 1, 2, 3, 4, 5 | 3 weeks to complete. Some class time is allowed to support verification.  **Maximum of 12 single-sided A4 pages.**  Appropriate investigation report format as described in the General Mathematics subject outline. |
| ***Examination***  ***Weighting 30%*** | *Students undertake a 2-hour external examination in which they answer questions on the following three topics:*  *Topic 3: Statistical Models Topic 4: Financial Models Topic 5: Discrete Models.*  *The examination consists of a range of problems, some focusing on knowledge, routine skills, and applications, and others focusing on analysis and interpretation. Students provide explanations and arguments, and use correct mathematical notation, terminology, and representation throughout the examination.* | *All the specific features of the assessment design criteria may be assessed in the external examination.* | | *2-hour external examination*  *Access to electronic technology required.*  *Students may refer to one unfolded A4 sheet (two sides) of hand-written notes.* |

***Eight assessments.*** *Please refer to the Stage 2 General Mathematics subject outline.*