# Pre-approved Learning and Assessment Plan

Stage 2 Specialist Mathematics

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 |  | Teacher(s) |  |

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| SACE school code | | |  | Year |  | Enrolment code | | | | |  | Program variant code (A–W) |
| Stage | Subject code | | | No. of credits (10 or 20) |
|  |  |  |  | **2** | **M** | **S** | **C** | **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 |  |

# Assessment overview

Stage 2 Specialist Mathematics – 20 credits

The table below provides details of the planned tasks and shows where students have the opportunity to provide evidence for each of the specific features of all of the assessment design criteria.

Assessment Type 1: Skills and Applications Tasks – weighting 50%

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| --- | --- | --- | --- |
| Assessment details | Assessment design criteria | | Assessment conditions  (e.g. task type, word length, time allocated, supervision) |
| CT | RC |
| SAT 1: Functions and Sketching Graphs –Key questions and key concepts from all subtopics within Topic 3 will be assessed.  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. Construction of graphical representations will be required to support problem-solving strategies.  Appropriate and effective use of electronic technology is expected. 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  Calculator permitted  1 A4 page of handwritten notes  Total time: 50 minutes |
| SAT 2: Mathematical Induction – Students demonstrate mathematical knowledge and skills from subtopic 1.1.  Students apply their knowledge and skills to a range of routine and complex questions. Conjecture development and testing will be addressed.  The complex questions require students to apply the key concepts to solve problems. Clear and logical communication of solutions and correct use of notation and terminology are required. | 1,2 | 1,3,4,5 | Supervised written assessment  No calculator permitted  No handwritten notes  Total time: 50 minutes |
| SAT 3: Complex Numbers – Key questions and key concepts from subtopics 2.1 to 2.4 of Topic 2 will be covered in this assessment.  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. Construction of graphical representations may be required to support their problem-solving strategies. Appropriate and effective use of electronic technology is expected. 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  Calculator permitted  1 A4 page of handwritten notes  Total time: 60 minutes |
| SAT 4: Vectors in Three Dimensions – Students demonstrate mathematical knowledge and skills from subtopics 4.1 to 4.3.  SAT 4 is divided into two parts. Part 1 will be completed without a calculator or notes and for Part 2 students have access to appropriate technology and notes. Students commence the SAT with both parts of the task (non-calculator and calculator) but will not have access to a calculator or notes until Part 1 is collected.  The SAT will have questions that are routine and complex in nature, including some contextual problems requiring interpretation of the results.  Appropriate and effective use of electronic technology is expected. 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  Total Time: 70 minutes  Part 1 : 20 minutes  No calculator or notes permitted  Part 2 : 50 minutes  Access to graphics calculator and 1 A4 page of handwritten notes permitted. |
| SAT 5: Integration Techniques and Applications – Key questions and key concepts from all subtopics within Topic 5 will be covered in this assessment.  Students apply their knowledge and skills to a range of routine and complex questions. The complex questions require students to apply known identities to solve problems in a variety of contexts and applications. Appropriate and effective use of electronic technology is expected. Clear and logical communication of solutions and correct use of notation and terminology are required. | 1,2,4 | 1,3,4 | Supervised written assessment  Calculator permitted  1 A4 page of handwritten notes  Total time: 60 minutes |
| SAT 6: Rates of Change and Differential Equations – Students demonstrate mathematical knowledge and skills from Topic 6. The content covers key questions and key concepts within subtopics 6.1 to 6.5.  Students apply their knowledge and skills to a range of routine and complex questions. The complex questions require students to apply key concepts to solve problems in a variety of contexts and applications. Construction of graphical representations may be required to support their problem-solving strategies. Appropriate and effective use of electronic technology is expected. 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  Calculator permitted  1 A4 page of handwritten notes  Total time: 75 minutes |

Assessment Type 2: Mathematical Investigation – weighting 20%

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| Assessment details | Assessment design criteria | | Assessment conditions  (e.g. task type, word length, time allocated, supervision) |
| CT | RC |
| The Problem with Mosquitoes – This investigation is predominately based on Topic 4. Students use parameterised lines in 3D to describe the motion of two mosquitoes in space.  Along with set requirements there is scope for investigating unique situations of their own planning. The consideration of the reasonableness and limitations of their solutions is expected, and possible extension opportunities are encouraged. | 1,2,3 | 1,2,3,4 | Appropriate investigation report format as described in the Specialist Mathematics subject outline.  Maximum of 15 single-sided A4 pages.  3 weeks to complete. Some class time is allowed to support verification. |

External Assessment: Examination – weighting 30%

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| Assessment details | Assessment conditions  (e.g. task type, word length, time allocated, supervision) |
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| External Assessment | 2-hour external examination (from November 2020).  Access to approved electronic technology required.  Students may refer to two unfolded A4 sheets (four sides) of hand-written notes.  A formula sheet is included in the examination booklet.  The examination is based on the key questions and key concepts in the six topics.  The examination consists of a range of problems, some focusing on knowledge and routine skills and applications, and others focusing on analysis and interpretation. Some problems may require students to interrelate their knowledge, skills, and understanding from more than one topic. Students provide explanations and arguments, and use correct mathematical notation, terminology, and representations throughout the examination. |

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