PRE-APPROVED LEARNING AND ASSESSMENT PLAN FORM

**Stage 2 Physics**

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| --- | --- | --- | --- | --- |
| School |  | | Teacher(s) |  |
| Other schools using this plan | |  | | |

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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** | **P** | **Y** | **I** | **20** |  |

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| --- | --- | --- | --- |
| Endorsed by principal or delegate (signature) |  | Date |  |

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

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| Describe any changes made to the 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 individuals within the student group. |

**Endorsement of changes**

The changes made to the learning and assessment 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 Physics

Assessment Overview

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 and Weighting** | **Details of assessment** | **Assessment Design Criteria** | | **Assessment conditions**  (e.g. task type, word length, time allocated, supervision) |
| --- | --- | --- | --- | --- |
| **IAE** | **KA** |
| **Assessment Type 1: Investigations Folio**  **Weighting**  **30%** | **Practical Design Investigation (Sorting and Transporting Recyclables):** Students are given a scenario that allows them to individually deconstruct one of two ‘problems’ and design a suitable experiment. The ‘problems’ involve the strength of an electromagnet and the factors that may affect the rate at which a vessel sinks.  Students state a hypothesis and identify variables and safety aspects, then develop their own procedure. Individually they manipulate apparatus using safe and ethical work practices to obtain, record, and represent data, then interpret and analyse it using appropriate technology. Students use graphical analysis of the data to assist in their interpretation. They evaluate the procedure and the results, and formulate and justify a conclusion, taking into account the limitations of the investigation. | 1,2,3,4 | 2,4 | Students deconstruct the problem, state a hypothesis and identify variables outside of class time. These are checked before students develop and justify their procedure before the practical lesson.  They have one 90-minute double lesson to carry out their investigation, and collect their data. Additional time may be allocated if equipment requirements prevent the collection of data being completed, or to allow for additional data to be collected after initial analysis has occurred.  Students have one week to individually complete and electronically submit a written report based on the requirements specified in the subject outline and to a maximum word count of 1500 words, excluding the apparatus, method, safety, and results. |
| **Practical Investigation (Interference and Diffraction):** Part A requires students to determine the wavelength of blue, green and violet lasers using a cd or dvd as a diffraction grating. Students work in small groups to manipulate apparatus using safe and ethical work practices to obtain and record data. The students individually interpret and analyse the data to formulate a conclusion. Evaluations of the accuracy of the calculated results and of the experimental procedure are done individually.  Part B requires students to explore the interference pattern produced when laser light (of known wavelength) passes through single slits of different widths. Students work in small groups to manipulate apparatus using safe and ethical work practices to obtain, record data. The students individually interpret and analyse the data to formulate a conclusion. Evaluation of the experimental procedure is done individually. | 2,3,4 | 2,4 | Experimental work is done in small groups during a pair of double lessons. Calculations for Part A are done individually under teacher supervision. Analysis of data to formulate a conclusion for Part B is done individually under teacher supervision.  Students have one week to individually convert their in-class work into a report, adding evaluations of procedures. This electronically submitted report is based on the requirements specified in the subject outline and to a maximum word count of 1500 words, excluding the apparatus, method, safety, and results. The work done in class is included as appendices to the report. |
| **Science as a Human Endeavour Investigation:** Each student selects a topical article (probably from an online source) that shows physics interacting with society. They research relevant physics concepts or background. Students use the literacy skills of physics to explain links between concepts and issues. They then electronically communicate the relevant physics and the interactions between science and society in a scientific report, which also includes an explanation of the impact or significance of the focus of their exploration. |  | 1,3,4 | Students have 3 weeks of their own time to complete the report. A number of interim deadlines will be used, such as: suitable article chosen, research undertaken, and first draft of report completed.  They will electronically submit a final report, the format of which is based on the requirements specified in the subject outline and to a maximum word count of 1500 words |
| **Assessment Type 2: Skills and Applications Tasks**  **Weighting**  **40%** | **Topic Test 1**: Students demonstrate knowledge and understanding of the concepts in Projectile Motion, Forces and Momentum, Circular Motion, and Gravitation. They apply this knowledge to solve problems whilst using correct terminology, formulae, and representations. Students analyse problems related to these subtopics and present solutions using appropriate physics terms and conventions. Questions vary from routine to complex and include new and familiar contexts. Questions related to science as a human endeavour are included. Questions related to analysis and interpretation of data may be included. | 3 | 1,2,3 | Written test, taken during supervised class time during an 80-minute double lesson. Students will probably be allocated 60 minutes for the test.  Students are provided with a formula sheet. |
| **Topic Test 2**: Students demonstrate knowledge and understanding of the concepts in Relativity, Electric Fields and Motion in Electric Fields. They apply this knowledge to solve problems whilst using correct terminology, formulae, and representations. Students analyse problems related to these subtopics and present solutions using appropriate physics terms and conventions. Questions vary from routine to complex and include new and familiar contexts. Questions related to analysis and interpretation of data may be included. | 3 | 1,2,4 | Written test, taken during supervised class time during an 80-minute double lesson. Students will probably be allocated 70 minutes for the test.  Students are provided with a formula sheet. |
| **Topic Test 3**: Students demonstrate knowledge and understanding of the concepts in Magnetic Fields, Motion in Magnetic Fields, and EM Induction. They apply this knowledge to solve problems whilst using correct terminology, formulae, and representations. Students analyse problems related to these subtopics and present solutions using appropriate physics terms and conventions. Questions vary from routine to complex and include new and familiar contexts. Questions related to science as a human endeavour will be included. Questions related to designing experimental procedures will be included. | 1 | 1,2,3,4 | Written test, taken during supervised class time during an 80-minute double lesson. Students will probably be allocated 80 minutes for the test.  Students are provided with a formula sheet. |
| **Topic Test 4**: Students demonstrate knowledge and understanding of the concepts in Light Is A Wave, Wave Particle Duality and The Atom. They apply this knowledge to solve problems whilst using correct terminology, formulae, and representations. Students analyse problems related to these subtopics and present solutions using appropriate physics terms and conventions. Questions vary from routine to complex and include new and familiar contexts. Questions related to analysis and interpretation of data will be included. | 3 | 1,2,4 | Written test, taken during supervised class time during an 80-minute double lesson. Students will probably be allocated 80 minutes for the test.  Students are provided with a formula sheet. |
| **Assessment Type 3: Examination**  **Weighting**  **30%** | 130 minute examination | All specific features of the assessment design criteria for this subject may be assessed in the external examination.  Questions of different types cover all Stage 2 topics and science inquiry skills. Some questions may require students to integrate their knowledge from more than one topic and show an understanding of science as a human endeavour. | | |

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