Articulates with Program 1

PRE-APPROVED LEARNING AND ASSESSMENT PLAN

**Stage 2 Chemistry**

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** | **C** | **E** | **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 Chemistry

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% | **Investigation 1: Volumetric analysis**  Students use a range of materials and glassware to perform a volumetric analysis to determine which of three beverages is most acidic. Students demonstrate their ability to:   * select glassware appropriate to the task * use volumetric glassware correctly * accurately dilute a solution * perform a titration * calculate [H+] for each beverage and use these to form a conclusion * discuss accuracy and precision of their results * evaluate the procedure and the impact of sources of systematic and random error. | 3,4 | 2,4 | This titration is conducted over two lessons.  Students work individually and must submit their report in the next lesson following the titration.  The report is a maximum of 1000 words, excluding the results section. |
| **Investigation 2: Investigation Design**  A. Students design a procedure to investigate the effect of changing one variable on the mass of copper formed during the electrolysis of a copper sulfate solution. They deconstruct the problem to select a variable and an appropriate method for investigation. They may do preliminary work/trials in this lesson, or in their own time leading up to the day of the practical.  B. Students construct their own individual design based on their preliminary investigations and carry out this investigation.  C. Students write a practical report that demonstrates their ability to:   * formulate a hypothesis * identify variables and identify and explain factors that must be held constant * identify factors that they are unable to hold constant * design and conduct an investigation to test the hypothesis * identify safety considerations * record and represent data using appropriate formats * analyse data to formulate a conclusion * evaluate their procedure and the impact, if any, of sources of error on their results * suggest reasonable improvements * communicate material using appropriate language, terminology and conventions. | 1,2,3,4 | 4 | Part A (1 lesson) and Part B (2 lessons) are carried out in class time.  Students may work in pairs for Part A but work individually in Parts B and C.  Individual reports are submitted two school days after completion of the investigation.  The report must be a maximum of 1500 words, excluding the materials/apparatus, method/procedure outlining trials, identification and management of safety risks, and results. |
|  | **Investigation 3 (SHE): Industrial Wastewater**  Students choose a context in which water is used and discarded during an industrial process (e.g. agriculture, the wine industry, mining, the desalination process).  They investigate the reasons for use of the water, effect on the composition of the water as a result of the use, methods for analysing the concentrations of any contaminants, the possible environmental effects of discarded water, methods of remediation (if any) of the water.  In this investigation, students demonstrate their ability to:   * locate, select and acknowledge relevant material * apply chemical concepts in new contexts * connect chemical concepts to social, ethical, and environmental impacts * communicate information using appropriate terms, conventions, and representations.   Students may choose the format in which to communicate their findings. | 3 | 2,3,4 | Students work individually.  1-2 lessons of class time will be available for preliminary research and discussion.  They will prepare the report and submit it within four weeks.    The communication should be a maximum of 1500 words if written or a maximum of 10 minutes for an oral presentation, or the equivalent in multimodal form. |
| **Assessment Type 2: Skills and Applications Tasks**  Weighting  40% | **SAT 1: Infographic**  This task assesses subtopics 1.1 and 4.1.  Students create an infographic that demonstrates knowledge of the chemistry and associated issues involved with increasing carbon emissions. |  | 1, 3, 4 | Time: 50 minutes  Direct supervision of the teacher.  Students are provided with the periodic table and formula sheet. |
| **SAT 2: Test**  This test covers parts of Topics 1, 3 and 4.  Short answer questions will include:   * use of systematic nomenclature of organic compounds * interpretation and use of structural formulae * analysis and interpretation of quantitative data * application of knowledge in familiar and unfamiliar contexts * use of mathematical formulae to solve quantitative problems over a range of complexity. | 3 | 1,2,4 | Time: 50 minutes  Direct supervision of the teacher.  Students are provided with the periodic table and formula sheet. |
|  | **SAT 3: Test**  This test covers parts of Topics 2, 3 and 4.  Short answer questions will include:   * relevant calculations * use of systematic nomenclature of organic compounds * interpretation and use of structural formulae * application of knowledge in familiar and unfamiliar contexts * application of chemical concepts in contemporary, social and/or environmental contexts. |  | 1,2,3 | Time: 50 minutes  Direct supervision of the teacher.  Students are provided with the periodic table and formula sheet. |
|  | **SAT 4: Test**  Short answer questions cover Topic 4 and related revision topics (see program) and will include application of chemical concepts in familiar and new contexts and in contemporary, social and/or environmental contexts.  It will include one extended response question based upon a short article. | 3 | 1, 2, 4 | Time: 90 minutes + 10 minutes reading time.  Direct supervision of the teacher.  Students are provided with the periodic table, an activity series of metals, and formula sheet. |
| **Assessment Type 3: Examination**  Weighting  30% | 2 hour examination | Questions of different types cover all Stage 2 topics and the 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, including the external examination.*** *Please refer to the draft Stage 2 Chemistry subject outline.*