

LEARNING AND ASSESSMENT PLAN Stage 1 Physics 2010

School _____

Contact Teacher _____

Other schools using this plan _____

SACE School Code			Year		Enrolment Code			Program Variant Code (A–W)	
			2010		Stage	Subject Code		No. of Credits (10 or 20)	
					1	P	Y	S	10
								A	

COHORT/CONTEXT DESCRIPTION

This should describe:

- the cohort of students (e.g. student background and learning needs)

Most of the students in this class intend to complete a second semester of Physics before continuing on to Stage 2 Physics. There are some, however, who are unsure about continuing further with the subject. All of the students have undertaken some Physics topics in their Year 8, 9 and 10 Science courses and have shown a sound level of understanding.

LEARNING PROGRAM DESIGN

This should describe:

- how the learning program has been designed to engage the range of students in the cohort described above
- the intended delivery of the learning program (e.g. students will undertake elements of the program off- campus, program delivered over ten weeks)

This is a first semester introductory senior school Physics program that focuses on the application of Physics in everyday life, and specifically in the context of UAVs (Unihabited Aerial Vehicles). It enables students to develop their knowledge of some of the principles and concepts that underpin these applications and hence prepare the students to either continue with a second semester of study in preparation for Stage 2, pursue their study in other science subjects or translate their understanding into the more practical studies in, for example, an electrical apprenticeship. Learning in this program will be based on the following three topics: Motion, Electricity & Magnetism, Waves. Where possible, the student learning is based on practical investigations that will allow students to critically evaluate their procedures and results before drawing conclusions. This practical work will facilitate the development of communication skills and teamwork. Students also develop their skills in investigating and explaining a Physics phenomenon related to UAVs.

CAPABILITIES, LITERACY AND NUMERACY OPPORTUNITIES

This should explain:

- how the learning program provides opportunities for students to develop their capabilities and their literacy and numeracy skills (e.g. strategies and resources).

Capabilities

The capabilities that are the focus of this program are *communication* and *learning*. Students develop strategies for communication while working on practical activities as part of a group and through the use of information and communication technologies to present the results of investigations. Their capability for learning develops as they gain an understanding of how knowledge of physics has changed over time and as they critically apply the knowledge and skills of physics. The students have opportunities to develop skills in accessing, organising and using data, and in determining the interrelationships of data, concepts and phenomena of physics.

Literacy and Numeracy skills

As students communicate their knowledge and understanding of physics, they use the terminology and conventions of physics. They access and critically read physics texts as they investigate physics issues. They develop and display skills in the use of written, visual and oral skills.

Skills in numeracy are developed through the use and manipulation of algebraic representations of physics relationships. They use measurement tools and units appropriate to the task and analyse data in order to provide evidence to support or refute a given hypothesis.

Recommended by Principal or nominee (signature) _____ Date _____

Signature of Moderation Services Officer _____ Date _____

Moderator Number _____ Approved / Not Approved

Accession Number _____ Expiry date of Learning and Assessment Plan _____

Subject **Physics** _____ Variant **A** School _____ Contact Teacher _____

ASSESSMENT OVERVIEW - PHYSICS (10 CREDITS)

Complete the table below to demonstrate how the set of assessments addresses all of the learning requirements and assessment design criteria.

Weighting of Assessment Types		Name of Assessment (as described in the Assessment Details following)	Learning Requirements (Indicate the Learning Requirements addressed)					Assessment Design Criteria (Indicate the Assessment Design Criteria addressed)				
			Identify and formulate questions, hypotheses, concepts, and purposes that guide investigations in physics	Design and conduct collaborative and individual investigations in physics using appropriate apparatus and safe working practices and by observing, recording, and interpreting the phenomena of physics	Represent, analyse, interpret, and evaluate investigations in physics through the use of technology and numeracy skills	Select, analyse, and critically evaluate the evidence of physics from different sources, and present informed conclusions and decisions on contemporary physics applications	Communicate knowledge and understanding of the concepts and information of physics using appropriate physics terms and conventions	Demonstrate and apply knowledge and understanding of physics to a range of applications and problems	Investigation	Analysis and Evaluation	Application	Knowledge and Understanding
Assessment Type	Weighting (%)											
Investigations folio	60	Practical: Flight Characteristics	✓		✓		✓		3, 4	3	2, 3	
		Practical: Power Characteristics	✓	✓	✓		✓		1, 3	2, 3	2, 3	1
		UAV Applications				✓	✓	✓	2	1, 3	1	1, 2
Skills and applications tasks	40	Test Mechanics			✓		✓	✓		1, 3	1, 2	1, 2, 3
		Presentation					✓	✓	2, 4		1, 2, 3	1, 3

Four or five assessments. Please refer to the *Physics Subject Outline*.

(Note: to record any changes to the assessment outline, please use the Addendum to Learning and Assessment Plan attached).

Subject **Physics** _____ Variant A _____ School _____ Contact Teacher _____

ASSESSMENT DETAILS

Use the table below to provide details of the assessments designed to provide opportunities for the range of students in the cohort to show evidence of their learning against the performance standards.

Name of Assessment (Assessment Type)	Description of Assessment (a description of the flexible, and where appropriate, negotiable, ways in which students will show evidence that demonstrates their learning against the performance standards, including to the highest standard)	Assessment conditions as appropriate (e.g. task type, word length, time allocated, supervision)
Practical: Flight Characteristics (Investigations folio)	Students investigate flight characteristics of a UAV to calculate thrust. In groups, students manipulate apparatus using safe and ethical work practices. They collect, display, interpret and analyse the data using appropriate technology, and present a conclusion appropriate to the original hypothesis. Students use graphical analysis of data and consider correction in calculations. They submit a practical report of the investigation describing its purpose, procedure, results, analysis and discussion, and conclusions.	Written practical report – individual.
Practical: Power Characteristics (Investigations folio)	Students develop a measurable hypothesis to investigate a factor that may affect the power available to a UAV. They collect, display, interpret and analyse the data using appropriate technology and present a conclusion appropriate to the original hypothesis. Students critically evaluate the procedures used and suggest improvements. They evaluate the reliability of the outcomes of the investigation. They explain how the results of the investigation can be applied to a UAV. They submit an individual written practical report.	Written practical report – individual.
UAV Applications (Investigations folio)	Students investigate flight characteristics of UAVs. They choose one feature to investigate in detail. They collect, analyse and evaluate information and scientific evidence to explain the feature and support the claim. Based on the evidence collected, students present a personal view about the feature. They acknowledge sources of information and scientific evidence appropriately. OR Students investigate power characteristics of UAVs. They collect, analyse and evaluate information and scientific evidence to explain the physics principles behind the power feature and any health or safety related impacts. Based on the evidence collected, students present a personal view about the use of UAVs. They acknowledge sources of information and scientific evidence appropriately.	Format to be negotiated. Maximum 750 words for a written report, maximum of 5 minutes for oral, or equivalent for multimedia. Date to be negotiated.
Test Mechanics (Skills and applications task)	Students demonstrate broad knowledge and understanding of the key physics concepts and learning covered in this topic. They apply this knowledge to solve problems in a test using correct terminology, formulas and equations. Students analyse problems related to mechanics and pose solutions using appropriate physics terms and conventions.	Written – supervised. Double lesson.
Presentation (Skills and applications task)	Students identify the Physics concepts evident in the construction and operation of a UAV. In small groups, students discuss findings and each student gives a snap shot report on one different example, explaining the physics concept using the appropriate terminology.	Small group discussion, individual report to a maximum of 4 minutes.

Addendum to:

LEARNING AND ASSESSMENT PLAN

Stage 1 Physics 2010

School _____

Contact Teacher _____

Other schools using this plan _____

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CHANGES MADE TO THE LEARNING AND ASSESSMENT PLAN

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.

PRINCIPAL ENDORSEMENT

The changes made to the Learning and Assessment Plan support student achievement of the performance standards and retain alignment with the subject outline.

Signature of Principal or nominee _____

Date _____