

Investigating Science – Stage 6, Year 11

Albion Park High School – Scope and Sequence 2018



Teacher: Ms Nelson

The Year 11 Investigating Science course consists of 4 Modules that would be covered in 120 indicative hours. Modules 1 and 2 are expected to cover 60 hours, while Modules 3 and 4 are expected to cover 60 hours. Within these hours, a minimum of 30 hours across the four Modules are devoted to Depth Studies. In addition, Practical Investigations are an essential part of the Year 11 course and must occupy a minimum of 35 hours, including time allocated to practical investigations done within Depth Studies. Practical investigations include undertaking laboratory experiments and fieldwork.

The Year 11 Investigating Science course includes the following four Modules:

- Cause & Effect: Observing
- Cause & Effect: Inferences & Generalisations
- Scientific Models
- Theories and Laws

Term 1 – 10 weeks 4 days

Week1	Week2	Week3	Week4	Week5	Week6	Week7	Week8	Week9	Week10	Week 11
Module 1: Cause & Effect: Observing						Module 2: Cause & Effect: Inferences & Generalisations				
25 hours, 8 lessons per fortnight						35 hours, 8 lessons per fortnight				
Role and importance of detailed observations; observations as evidence; observing, collecting and recording data; conclusions promote further observation. Students focus on developing hypotheses that arise from their observations.						Inferences and generalisations; using secondary-sourced data; observing patterns. Students focus on designing and evaluating investigations.				
OUTCOMES INS11/12-1, INS11/12-3, INS11/12-4, INS11-8						OUTCOMES INS11/12-1, INS11/12-2, INS11/12-4, INS11-9				
Mini Depth Study 1 – up to 5 hours Student Investigation - Observing Students plan investigation based on their observations gathered from an in-class experiment and write report. Informal assessment with feedback throughout study. Outcomes Covered INS11/12-1, INS11/12-2, INS11/12-3, INS11/12-7, INS11-8						Depth Study 2 – 10-15 hours Field Study and Report – Observing - TBC Includes 5 hours of Field Study conducted with IEEC or Taronga Zoo. Field report to be submitted for feedback. Outcomes Covered INS11/12-1, INS11/12-2, INS11/12-3, INS11/12-7, INS11-8				

Term 2 – 9 weeks 4 days

Week1	Week2	Week3	Week4	Week5	Week6	Week7	Week8	Week9	Week 10
Module 2: Cause & Effect: Inferences & Generalisations				Module 3: Scientific Models					
				30 hours, 8 lessons per fortnight					
Developing inquiry questions; generalisations in science; peer review. Students focus on designing and evaluating investigations.				Modules to inform understanding; Types of models; constructing models. Students develop, engage with, and apply scientific modelling.					
				OUTCOMES INS11/12-2, INS11/12-3, INS11/12-4, INS11-10					
Assessment Task 1 Term 2 week 2; 30% Practical Investigation Outcomes Assessed INS11/12-2, INS11/12-5, INS11/12-6, INS11-8, INS11-9				Depth Study 3 – 10 hours – linked to Assessment Task 2 Creating a Model Students research background information to plan and create a working model Outcomes Assessed INS11/12-1, INS11/12-3, INS11/12-4, INS11/12-7, INS11-10					

Term 3 – 9 weeks 4 days (8 teaching weeks)

Week1	Week2	Week3	Week4	Week5	Week6	Week7	Week8	Week9	Week 10
Depth Study 3		Module 4: Theories and Laws					Year 11 Yearly Examinations		
		30 hours, 8 lessons per fortnight							
Depth study linked to Assessment Task 2: Creating a Model		Introduction to Scientific theories and laws; development of theories; development of laws; application of theories and laws Students focus on analysing and evaluating data to communicate ideas about the development of theories and laws.							
		OUTCOMES INS11/12-5, INS11/12-6, INS11/12-7, INS11-11							
Assessment Task 2 Term 3 week 2; 30% Aspect of Depth Study		Mini Depth Study – up to 5 hours Timeline of a Theory or Law Students research secondary information to communicate ideas about the development of a scientific theory or law Outcomes Covered INS11/12-1, INS11/12-4, INSW11/12-5, INS11/12-7, INS11-11				Assessment Task 3 Term 3 week 8/9 40% Yearly Examination Outcomes Assessed INS11/12 1-7, INS11 8-11			

Working Scientifically Skills

Objective

Students:

- develop skills in applying the processes of **Working Scientifically**

Stage 6 course outcomes

A student:

Questioning and predicting

INS11/12-1 develops and evaluates questions and hypotheses for scientific investigation

Planning investigations

INS11/12-2 designs and evaluates investigations in order to obtain primary and secondary data and information

Conducting investigations

INS11/12-3 conducts investigations to collect valid and reliable primary and secondary data and information

Processing data and information

INS11/12-4 selects and processes appropriate qualitative and quantitative data and information using a range of appropriate media

Analysing data and information

INS11/12-5 analyses and evaluates primary and secondary data and information

Problem solving

INS11/12-6 solves scientific problems using primary and secondary data, critical thinking skills and scientific processes

Communicating

INS11/12-7 communicates scientific understanding using suitable language and terminology for a specific audience or purpose

Knowledge and Understanding

Objective

Students:

- develop knowledge and understanding of cause and effect

Year 11 course outcomes

A student:

INS11-8 identifies that the collection of primary and secondary data initiates scientific investigations

INS11-9 examines the use of inferences and generalisations in scientific investigations

Objective

Students:

- develop knowledge and understanding of models, theories and laws

Year 11 course outcomes

A student:

INS11-10 develops, and engages with, modelling as an aid in predicting and simplifying scientific objects and processes

INS11-11 describes and assesses how scientific explanations, laws and theories have developed