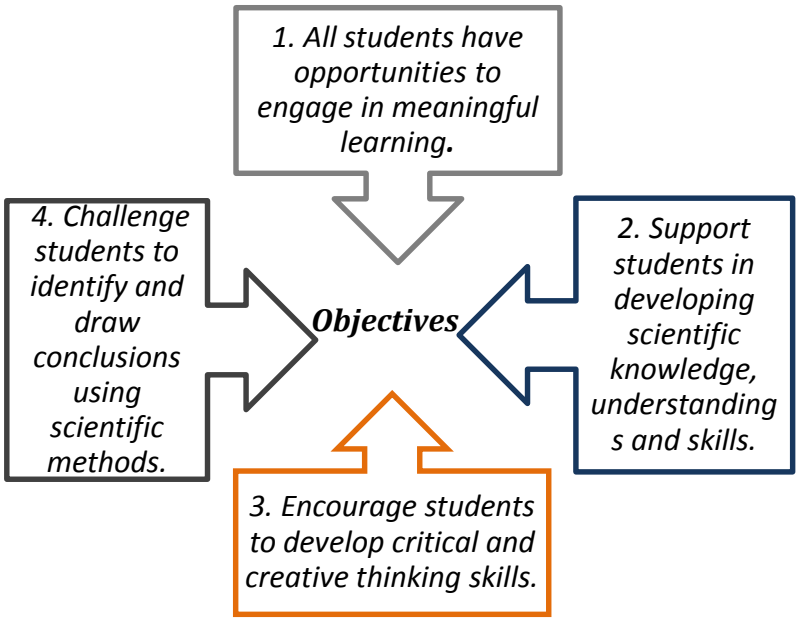
AUSTRALIAN ISLAMIC COLLEGE
2017

SCIENCE
CURRICULUM PLAN

Years 7 – 12

Rationale:

The Science Plan is aligned to the West Australian curriculum. It outlines the teaching and learning of science along with assessment and reporting across the years 7 – 12 at the Australian Islamic College.



Helping kids to be clever, skilled and creative

Australian Islamic College

Science Curriculum Plan Overview

- *Curriculum Offerings*
- *Teaching and Learning*
- *Assessment*
- *Reporting*

Curriculum Offering: Year 7-12

Year - Course	Hours a week	2016 Number of classes	2017 Number of classes
Lower school			
7 – Science	4	5	4
8 - Science	4	5	5
9 - Science	4	5	5
10 - Science	5	5	5
Secondary Year 11			
11 – Chemistry ATAR (Unit 1 & 2)	5	3	3
11 – Human Biology ATAR (Unit 1 & 2)	5	2	2
11 – Physics ATAR (Unit 1 & 2)	5	2	2
11 – Chemistry GENERAL(Unit 1 & 2)	5	1	0
11 – Human Biology GENERAL (Unit 1 & 2)	5	0	1
Secondary Year 12			
12 – Chemistry ATAR (Unit 3 & 4)	5	2	2
12 – Human Biology ATAR (Unit 3 & 4)	5	1	1
12 – Physics ATAR (Unit 3 & 4)	5	1	1
12 – Chemistry GENERAL(Unit 3 & 4)	5	1	0
Total classes		**33**	**31**

HOLA: Mrs Gulnaz Rizvi

Teaching and Learning: Year 7 - 12

Literacy expectations

- *Students will engage in science literacy activities.*
- *Scientific terms need to be spelt correctly and their spellings practiced.*
- *Students need to be encouraged to respond to written questions using full sentence answers.*
- *Students need to write using neat handwriting, teachers are expected to comment on and follow-up to ensure students communicate and write in a readable and neat manner.*
- *Literacy is taught and assessed in all the three strands of science – science understanding, scientific inquiry skills and human endeavour through extended response, scientific report, investigation writing etc.*
- *Science glossary from the West Australian curriculum is made available to students at the start of the academic year.*

Making Connections

- *Teacher regularly make connections by choosing a context for learning.*
- *Encourage students to make connection with their prior knowledge*

Science Investigation

- *All students are given a minimum of two opportunities per term to plan, conduct and report on a fair experiment to investigate a science question or phenomena.*

Assessment: Year 7 - 10

Assessment consistency

All year 7-10 students across the three AIC campuses will conduct the same main assessments per term. These assessments will be changed/modified each year according to any changes/needs of the students/program and other school circumstances.

Monitoring of the intended learning targets

The following assessment types will be used throughout years 7-10 to give students multiple opportunities to demonstrate knowledge and understanding, skills and processes.

	Assessment type	Per term	Per year	Time
Knowledge and Understanding:	Topic Tests	2	8	Mid-term & End of term
	Semester exam (only for year 10)	1 per semester	2	End of term 2 and 4
	Assignment/Research	1	4	Term break

	Assessment/Activity	Per term	Per year
Skills and Processes	Scientific inquiry	1	4
	Practical	Ongoing learning classroom experiences	

Format and assessment guidelines

Tests

Tests will be written by allocated teachers and submitted to HOLA for review by week 4 and 8 of each term. Teachers preparing tests must use the same format provided by the HOLA. The test must comprise of 3 sections:

- *Section A: 10 multiple choice questions*
- *Section two:10 short answer questions*
- *BG and GATE students will be given a separate tests to match modifications made to the program [this section will be prepared by individual BG/GATE teachers].*

Assignment/ research

Students are given the opportunity to conduct a research on a learning outcome matched to the following terms work. Students will complete this assignment during the term break and is due on their return to school. A possible validation test may also be given to confirm student learning and understanding. If a validation test is given then both the research and test component need to accumulate for the final judgment of mark.

Where possible the assignment should be linked to the Human endeavour content of the curriculum for each year group and integration with Islamic teachings is encouraged.

Students failing to submit holiday research need to be given an opportunity to complete this before the first reporting cycle. Teachers must not accept students not submitting work. An assessment needs to be made and any necessary action will need to be followed up by the teacher.

Investigations

Students need to be given two opportunities per term to plan, conduct and report on an investigation in science.

A full report taking into account the Science Inquiry component of the West Australian curriculum needs to be conducted and reported on the students.

Reporting: Year 7 - 10

Student Portfolios

Teachers need to keep marked assessments filed in individual student portfolios. These will regularly be checked by HOLA and need to be organised and ready for parent meetings.

School reports

Teachers must enter student test mark and accumulated mark on to the schools data base (iwise) twice per term, mid -term and end of term. These results along with teacher's comments on performance will be communicated with parents.
The assessments to report on for each reporting cycle and year are indicated in the teaching programs for years 7 – 10.

Parent meetings

Parents of each year group are given the opportunity once a term to talk to the teacher and view their child's assessment portfolio during parent teacher afternoons.
Parents are also encouraged to book appointments with teachers if extra time is needed to discuss their child's progress or difficulties.

Student result analysis
All teachers must provide an analysis of students results after each reporting cycle to the HOLA. This will give teachers the opportunity to evaluate student results and provide suggestions and plans of action for any improvements.

HOLA will use this analysis to track student progress in each class and this will become a reflection on teachers teaching strategies.

Teacher feedback
HOLA will visit teacher's class (some or all) each term and provide feedback and evaluation with the teacher about the lesson.

Mentor program
HOLA will mentor new teachers and meet with them on a weekly basis to help during the transition and provide necessary assistance. Lesson plans and any adjusted programs need to be regularly viewed.

Curriculum Offering: Year 7

Year 7 Content descriptors

Refer to Year 7 Teaching program

Science Understanding	Science as a Human Endeavour	Science Inquiry Skills
Biological sciences 1. *There are differences within and between groups of organisms; classification helps organise this diversity (ACSSU111)* 2. *Interactions between organisms can be described in terms of food chains and food webs; human activity can affect these interactions (ACSSU112)*	***Nature and development of science*** 1. *Scientific knowledge changes as new evidence becomes available, and some scientific discoveries have significantly changed people's understanding of the world (ACSHE119)* 2. *Science knowledge can develop through collaboration and connecting ideas across the disciplines of science (ACSHE223)*	***Questioning and predicting*** 1. *Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge (ACSIS124)*
Chemical Sciences 1. *Mixtures, including solutions, contain a combination of pure substances that can be separated using a range of techniques (ACSSU113)*	***Use and influence of science*** 1. *Science and technology contribute to finding solutions to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations (ACSHE120)* 2. *Science understanding influences the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management (ACSHE121)*	***Planning and conducting*** 1. *Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (ACSIS125)* 2. *In fair tests, measure and control variables, and select equipment to collect data with accuracy appropriate to the task (ACSIS126)*
Earth and Space Sciences 1. *Predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the sun, Earth and the moon (ACSSU115)* 2. *Some of Earth's resources are renewable, but others are non-renewable (ACSSU116)* 3. *Water is an important resource that cycles through the environment (ACSSU222)*		***Processing and analysing data and information*** 1. *Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships, including using digital technologies as appropriate (ACSIS129)* 2. *Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions (ACSIS130)*
Physical sciences 1. *Change to an object's motion is caused by unbalanced forces acting on the object (ACSSU117)* 2. *Earth's gravity pulls objects towards the centre of the Earth (ACSSU118)*		***Evaluating*** 1. *Reflect on the method used to investigate a question or solve a problem, including evaluating the quality of the data collected, and identify improvements to the method (ACSIS131)* 2. *Use scientific knowledge and findings from investigations to evaluate claims (ACSIS132)*
		Communicating 1. *Communicate ideas, findings and solutions to problems using scientific language and representations using digital technologies as appropriate (ACSIS133)*

Teaching and Learning: Year 7

Year 7 Achievement Standard

Refer to Year 7 Teaching program

By the end of Year 7, students describe techniques to separate pure substances from mixtures. They represent and predict the effects of unbalanced forces, including Earth's gravity, on motion. They explain how the relative positions of the Earth, sun and moon affect phenomena on Earth. They analyse how the sustainable use of resources depends on the way they are formed and cycle through Earth systems. They predict the effect of environmental changes on feeding relationships and classify and organise diverse organisms based on observable differences. Students describe situations where scientific knowledge from different science disciplines has been used to solve a real-world problem. They explain how the solution was viewed by, and impacted on, different groups in society.

Students identify questions that can be investigated scientifically. They plan fair experimental methods, identifying variables to be changed and measured. They select equipment that improves fairness and accuracy and describe how they considered safety. Students draw on evidence to support their conclusions. They summarise data from different sources, describe trends and refer to the quality of their data when suggesting improvements to their methods. They communicate their ideas, methods and findings using scientific language and appropriate representations.

Sequence of intended learning		
	Teaching program has been developed to consolidate the mandated curriculum content.	
	'Science as a human endeavour' is incorporated into all research assignments (Holiday homework)	
	Students are exposed to 'Science inquiry skills' through regular class room activities and investigations. Minimum teaching requirement is two investigations per term.	
		Possible excursions
Term 1	*Biological sciences*	*Zoo [Investigate animal interaction]*
Term 2	*Chemical sciences*	
Term 3	*Physical sciences*	*SciTech [Investigate Forces]*
Term 4	*Earth and Space sciences*	*Scitech - Planetarium and PBL [project based learning] – making rockets*

Resources
Pearson Science 7, 2nd Ed.

Assessment & Reporting: Year 7

Per term	***Content:***	*Reporting cycle # 1 Mid-term*	*Reporting cycle #2 End of term*
1. Holiday Research	*Assignment*	*10 %*	*10 %*
2. Topic Test 1	*Relevant Chapters*	*30 %*	*30 %*
3. Scientific Inquiry (best of a possible 2)	*Written science report on investigation*	*-*	*15 %*
4. Topic Test 2	*Relevant Chapters*	*-*	*35 %*
5. Class/homework/quiz	*Accumulated by teacher*	*5%*	*10 %*
	TOTAL	***100 %***	***100 %***

Year 8 Content descriptors

Refer to Year 8 Teaching program

Science Understanding	Science as a Human Endeavour	Science Inquiry Skills
Biological sciences 1. Cells are the basic units of living things and have specialised structures and functions (ACSSU149) 2. Multi-cellular organisms contain systems of organs that carry out specialised functions that enable them to survive and reproduce (ACSSU150)	**Nature and development of science** 1. Scientific knowledge changes as new evidence becomes available, and some scientific discoveries have significantly changed people's understanding of the world (ACSHE134) 2. Science knowledge can develop through collaboration and connecting ideas across the disciplines of science (ACSHE226)	**Questioning and predicting** 1. Identify questions and problems that can be investigated scientifically and make predictions based on scientific knowledge (ACSIS139)
Chemical Sciences 1. The properties of the different states of matter can be explained in terms of the motion and arrangement of particles (ACSSU151) 2. Differences between elements, compounds and mixtures can be described at a particle level (ACSSU152) 3. Chemical change involves substances reacting to form new substances (ACSSU225)	**Use and influence of science** 1. Science and technology contribute to finding solutions to a range of contemporary issues; these solutions may impact on other areas of society and involve ethical considerations (ACSHE135) 2. Science understanding influences the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management (ACSHE136) 3. People use understanding and skills from across the disciplines of science in their occupations (ACSHE227)	**Planning and conducting** 1. Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed (ACSIS140) 2. In fair tests, measure and control variables, and select equipment to collect data with accuracy appropriate to the task (ACSIS141)
Earth and Space Sciences 1. Sedimentary, igneous and metamorphic rocks contain minerals and are formed by processes that occur within Earth over a variety of timescales (ACSSU153)		**Processing and analysing data and information** 1. Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships, including using digital technologies as appropriate (ACSIS144) 2. Summarise data, from students' own investigations and secondary sources, and use scientific understanding to identify relationships and draw conclusions (ACSIS145)
Physical sciences 1. Energy appears in different forms including movement (kinetic energy), heat and potential energy, and causes change within systems (ACSSU155)		**Evaluating** 1. Reflect on the method used to investigate a question or solve a problem, including evaluating the quality of the data collected, and identify improvements to the method (ACSIS146) 2. Use scientific knowledge and findings from investigations to evaluate claims (ACSIS234)
		Communicating 1. Communicate ideas, findings and solutions to problems using scientific language and representations using digital technologies as appropriate (ACSIS148)

Teaching and Learning: Year 8

Year 8 Achievement Standard

Refer to Year 8 Teaching program

By the end of Year 8, students compare physical and chemical changes and use the particle model to explain and predict the properties and behaviours of substances. They identify different forms of energy and describe how energy transfers and transformations cause change in simple systems. They compare processes of rock formation, including the time scales involved. They analyse the relationship between structure and function at cell, organ and body system levels. Students examine the different science knowledge used in occupations. They explain how evidence has led to an improved understanding of a scientific idea and describe situations in which scientists collaborated to generate solutions to contemporary problems.

Students identify and construct questions and problems that they can investigate scientifically. They consider safety and ethics when planning investigations, including designing field or experimental methods. They identify variables to be changed, measured and controlled. Students construct representations of their data to reveal and analyse patterns and trends, and use these when justifying their conclusions. They explain how modifications to methods could improve the quality of their data and apply their own scientific knowledge and investigation findings to evaluate claims made by others. They use appropriate language and representations to communicate science ideas, methods and findings in a range of text types.

Sequence of intended learning		
	Teaching program has been developed to consolidate the mandated curriculum content.	
	'Science as a human endeavour' is incorporated into all research assignments (Holiday homework)	
	Students are exposed to 'Science inquiry skills' through regular class room activities and investigations. Minimum teaching requirement is two investigations per term.	
		Possible excursions
Term 1	*Biological sciences*	
Term 2	*Chemical sciences*	*Scitech – chemists at work*
Term 3	*Physical sciences*	
Term 4	*Earth and Space sciences*	*Cottesloe Beach viewing rock formation and PBL – [solar cookers]*

Resources
Pearson Science 8, 2nd Ed.

Assessment & Reporting: Year 8

Per term	***Content:***	*Reporting cycle # 1 Mid-term*	*Reporting cycle #2 End of term*
1. Holiday Reasearch	*Project /assignment*	*10 %*	*10 %*
2. Topic Test 1	*Relevant Chapters*	*30 %*	*30 %*
3. Scientific Inquiry (best of a possible 2)	*Written science report on investigation*	*-*	*15 %*
4. Topic Test 2	*Relevant Chapters*	*-*	*35 %*
5. Class/homework/quiz	*Accumulated by teacher*	*5 %*	*10 %*
	TOTAL	***100 %***	***100 %***

Year 9 Content descriptors

Refer to Year 9 Teaching program

Science Understanding	Science as a Human Endeavour	Science Inquiry Skills
Biological sciences 3. *Multi-cellular organisms rely on coordinated and interdependent internal systems to respond to changes to their environment (ACSSU175)* 4. *Ecosystems consist of communities of interdependent organisms and abiotic components of the environment; matter and energy flow through these systems (ACSSU176)*	***Nature and development of science*** 1. *Scientific understanding, including models and theories, are contestable and are refined over time through a process of review by the scientific community (ACSHE157)* **2.** *Advances in scientific understanding often rely on developments in technology and technological advances are often linked to scientific discoveries (ACSHE158)*	***Questioning and predicting*** 1. *Formulate questions or hypotheses that can be investigated scientifically (ACSIS164)*
Chemical Sciences 1. *All matter is made of atoms which are composed of protons, neutrons and electrons; natural radioactivity arises from the decay of nuclei in atoms (ACSSU177)* 2. *Chemical reactions involve rearranging atoms to form new substances; during a chemical reaction mass is not created or destroyed (ACSSU178)* 3. *Chemical reactions, including combustion and the reactions of acids, are important in both non-living and living systems and involve energy transfer (ACSSU179)*	***Use and influence of science*** 1. *People can use scientific knowledge to evaluate whether they should accept claims, explanations or predictions (ACSHE160)* 2. *Advances in science and emerging sciences and technologies can significantly affect people's lives, including generating new career opportunities (ACSHE161)* 3. *The values and needs of contemporary society can influence the focus of scientific research (ACSHE228)*	***Planning and conducting*** 1. *Plan, select and use appropriate investigation methods, including field work and laboratory experimentation, to collect reliable data; assess risk and address ethical issues associated with these methods (ACSIS165)* 2. *Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data (ACSIS166)*
Earth and Space Sciences 1. *The theory of plate tectonics explains global patterns of geological activity and continental movement (ACSSU180)*		***Processing and analysing data and information*** 1. *Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies (ACSIS169)* 2. *Use knowledge of scientific concepts to draw conclusions that are consistent with evidence (ACSIS170)*
Physical sciences 1. *Energy transfer through different mediums can be explained using wave and particle models (ACSSU182)*		***Evaluating*** 1. *Evaluate conclusions, including identifying sources of uncertainty and possible alternative explanations, and describe specific ways to improve the quality of the data (ACSIS171)* 2. *Critically analyse the validity of information in secondary sources and evaluate the approaches used to solve problems (ACSIS172)*
		Communicating 1. *Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations (ACSIS174)*

Teaching and Learning: Year 9

Year 9 Achievement Standard

Refer to Year 9 Teaching program

By the end of Year 9, students explain chemical processes and natural radioactivity in terms of atoms and energy transfers and describe examples of important chemical reactions. They describe models of energy transfer and apply these to explain phenomena. They explain global features and events in terms of geological processes and timescales. They analyse how biological systems function and respond to external changes with reference to interdependencies, energy transfers and flows of matter. They describe social and technological factors that have influenced scientific developments and predict how future applications of science and technology may affect people's lives.

Students design questions that can be investigated using a range of inquiry skills. They design methods that include the control and accurate measurement of variables and systematic collection of data and describe how they considered ethics and safety. They analyse trends in data, identify relationships between variables and reveal inconsistencies in results. They analyse their methods and the quality of their data, and explain specific actions to improve the quality of their evidence. They evaluate others' methods and explanations from a scientific perspective and use appropriate language and representations when communicating their findings and ideas to specific audiences.

Sequence of intended learning		
	Teaching program has been developed to consolidate the mandated curriculum content.	
	'Science as a human endeavour' is incorporated into all research assignments (Holiday homework)	
	Students are exposed to 'Science inquiry skills' through regular class room activities and investigations. Minimum teaching requirement is two investigations per term.	
		Possible excursions
Term 1	*Biological sciences*	
Term 2	*Chemical sciences*	
Term 3	*Physical sciences*	
Term 4	*Earth and Space sciences*	*PBL [project based learning] – building seismographs*

Resources
Pearson Science 9, 2nd Ed.

Assessment & Reporting: Year 9

Per term	***Content:***	*Reporting cycle # 1 Mid-term*	*Reporting cycle #2 End of term*
1. Holiday Research	*Project /assignment*	*20 %*	*10 %*
2. Topic Test 1	*Relevant Chapters*	*30 %*	*30 %*
3. Scientific Inquiry (best of a possible 2)	*Written science report on investigation*	*-*	*15 %*
4. Topic Test 2	*Relevant Chapters*	*-*	*35 %*
5. Class/homework/quiz	*Accumulated by teacher*	*5 %*	*10 %*
	TOTAL	***100 %***	***100 %***

Year 10 Content descriptors

Refer to Year 10 Teaching program

Science Understanding	Science as a Human Endeavour	Science Inquiry Skills
Biological sciences 1. *The transmission of heritable characteristics from one generation to the next involves DNA and genes (ACSSU184)* 2. *The theory of evolution by natural selection explains the diversity of living things and is supported by a range of scientific evidence (ACSSU185)*	***Nature and development of science*** 1. *Scientific understanding, including models and theories, are contestable and are refined over time through a process of review by the scientific community (ACSHE191)* 2. *Advances in scientific understanding often rely on developments in technology and technological advances are often linked to scientific discoveries (ACSHE192)*	***Questioning and predicting*** 1. *Formulate questions or hypotheses that can be investigated scientifically (ACSIS198)*
Chemical Sciences 1. *The atomic structure and properties of elements are used to organise them in the Periodic Table (ACSSU186)* 2. *Different types of chemical reactions are used to produce a range of products and can occur at different rates (ACSSU187)*	***Use and influence of science*** 1. *People can use scientific knowledge to evaluate whether they should accept claims, explanations or predictions (ACSHE194)* 2. *Advances in science and emerging sciences and technologies can significantly affect people's lives, including generating new career opportunities (ACSHE195)* 3. *The values and needs of contemporary society can influence the focus of scientific research (ACSHE230)*	***Planning and conducting*** 1. *Plan, select and use appropriate investigation methods, including field work and laboratory experimentation, to collect* 2. *Select and use appropriate equipment, including digital technologies, to systematically and accurately collect and record data (ACSIS200)*
Earth and SpaceSciences 1. *The universe contains features including galaxies, stars and solar systems and the Big Bang theory can be used to explain the origin of the universe (ACSSU188)* 2. *Global systems, including the carbon cycle, rely on interactions involving the biosphere, lithosphere, hydrosphere and atmosphere (ACSSU189)*		***Processing and analysing data and information*** 1. *Analyse patterns and trends in data, including describing relationships between variables and identifying inconsistencies (ACSIS203)* 2. *Use knowledge of scientific concepts to draw conclusions that are consistent with evidence (ACSIS204)*
Physical sciences 1. *Energy conservation in a system can be explained by describing energy transfers and transformations (ACSSU190)* 2. *The motion of objects can be described and predicted using the laws of physics (ACSSU229)*		***Evaluating*** 1. *Evaluate conclusions, including identifying sources of uncertainty and possible alternative explanations, and describe specific ways to improve the quality of the data (ACSIS205)* 2. *Critically analyse the validity of information in secondary sources and evaluate the approaches used to solve problems (ACSIS206)*
		Communicating 1. *Communicate scientific ideas and information for a particular purpose, including constructing evidence-based arguments and using appropriate scientific language, conventions and representations*

Year 10 Achievement Standard

Refer to Year 10 Teaching program

By the end of Year 10, students analyse how the periodic table organises elements and use it to make predictions about the properties of elements. They explain how chemical reactions are used to produce particular products and how different factors influence the rate of reactions. They explain the concept of energy conservation and represent energy transfer and transformation within systems. They apply relationships between force, mass and acceleration to predict changes in the motion of objects. Students describe and analyse interactions and cycles within and between Earth's spheres. They evaluate the evidence for scientific theories that explain the origin of the universe and the diversity of life on Earth. They explain the processes that underpin heredity and evolution. Students analyse how the models and theories they use have developed over time and discuss the factors that prompted their review.

Students develop questions and hypotheses and independently design and improve appropriate methods of investigation, including field work and laboratory experimentation. They explain how they have considered reliability, safety, fairness and ethical actions in their methods and identify where digital technologies can be used to enhance the quality of data. When analysing data, selecting evidence and developing and justifying conclusions, they identify alternative explanations for findings and explain any sources of uncertainty. Students evaluate the validity and reliability of claims made in secondary sources with reference to currently held scientific views, the quality of the methodology and the evidence cited. They construct evidence-based arguments and select appropriate representations and text types to communicate science ideas for specific purposes

Sequence of intended learning	
	Teaching program has been developed to consolidate the mandated curriculum content.
	'Science as a human endeavour' is incorporated into all research assignments (Holiday homework)
	Students are exposed to 'Science inquiry skills' through regular class room activities and investigations. Minimum teaching requirement is two investigations per term.
Term 1	*Biological sciences*
Term 2	*Physical sciences*
Term 3	*Chemical sciences*
Term 4	*Chemical Sciences & Earth and Space sciences*

Resources

Pearson Science 10, 2nd Ed.

Term 1	Content:	Reporting cycle # 1 Mid-term	Reporting cycle #2 End of term
1. Biological sciences Holiday Homework #1	Extended response	10 %	10 %
2. Topic Test 1		30 %	30 %
3. Scientific Inquiry (best of a possible 2)	Written science report on investigation	-	15 %
4. Topic Test 2		-	35 %
5. Class/homework/quiz	Accumulated by teacher	5 %	10 %
	TOTAL	**100 %**	**100 %**
Term 2	**Content:**	Reporting cycle # 1 Mid-term	Reporting cycle #2 End of term
6. Physics Holiday Homework #2	Project /assignment	10 %	10 %
7. Topic Test 1	-	30 %	30 %
8. Scientific Inquiry (best of a possible 2)	Written science report on investigation	-	15 %
9. Physics Sem. 1 exam	-	-	35 %
10. Class/homework/ quiz	Accumulated by teacher	5 %	10 %
	TOTAL	**100 %**	**100 %**

Term 3	Content:	Reporting cycle # 1 Mid-term	Reporting cycle #2 End of term
11. Chemistry Holiday Homework #3	Project /assignment	10 %	10 %
12. Chemistry Topic Test 2	Chapter 5	30 %	30 %
13. Scientific Inquiry (best of a possible 2)	Written science report on investigation	-	15 %
14. Chemistry Exam	Chapter 4 & 5	-	35 %
15. Class/homework/ quiz	Accumulated by teacher	5 %	10 %
	TOTAL	**100 %**	**100%**
Term 4	**Content:**	Reporting cycle # 1 Mid-term	Reporting cycle #2 End of term
16. Chemistry Holiday Homework #4	Project /assignment	10 %	10 %
17. Human Biology Topic test 1	Chapter 1	30 %	30 %
18. Scientific Inquiry (best of a possible 2)	Written science report on investigation	-	15 %
19. Human Biology Topic test 2	Chapter 3	-	35 %
20. Class/homework/ quiz	Accumulated by teacher	5 %	10 %
	TOTAL	**100 %**	**100 %**

Unit 1 ATAR Chemistry

Unit 1 – Chemical fundamentals: structure, properties and reactions

In this unit, students use models of atomic structure and bonding to explain the macroscopic properties of materials. Students develop their understanding of the energy changes associated with chemical reactions and the use of chemical equations to calculate the masses of substances involved in chemical reactions.

Unit 2 ATAR Chemistry

Unit 2 – Molecular interactions and reactions

In this unit, students continue to develop their understanding of bonding models and the relationship between structure, properties and reactions, including consideration of the factors that affect the rate of chemical reactions. Students investigate the unique properties of water and the properties of acids and bases, and use chemical equations to calculate the concentrations and volumes of solutions involved in chemical reactions.

Pre-requisites
Year 10 achievement of 65 % or above in term 3 Chemistry exam.

Follow-on
Students achieving 65 % overall for chemistry unit 1 & 2 ATAR in year 11 may continue on to chemistry unit 3 & 4 ATAR in year 12 the following year.

Unit 1 General Chemistry

In this unit, students build on informal understandings of chemistry that they have already acquired through using different materials, tools and products in their lives, and through everyday chemical reactions, such as cooking, decomposition and rusting.

Students develop their understandings through scientific inquiry. They plan and conduct investigations to collect first-hand data safely and methodically. They investigate factors that affect solubility and change of state as well as gathering data to investigate factors that affect the rates of chemical reactions.

Unit 2 General Chemistry

In this unit, students investigate how chemistry plays an important part in their daily lives. Students appreciate the role of chemistry in contributing to a sustainable future by investigating recycling and disposal of community chemical wastes. They investigate ways that chemists assist in protecting the natural environment, such as conservation and management of our resources. They recognise and acknowledge that the use of scientific knowledge may have beneficial and/or harmful and/or unintended consequences.

Students understand and apply chemical language by interpreting symbols and formulae of some common elements and compounds.

In the laboratory, students investigate chemical changes involved in processes, such as food preservation and acid rain. They perform experiments to investigate reactions with acids and bases and use chemical aids, such as pH colour charts. They plan and conduct investigations to collect first-hand data safely and methodically.

Pre-requisites

Year 10 achievement of 50 % or above in term 3 Chemistry exam.

Follow-on

Students achieving 50 % overall for chemistry unit 1 & 2 General in year 11 may continue on to chemistry unit 3 & 4 General in year 12 the following year.

Unit 1 ATAR Human Biology

Unit 1 – The functioning human body

In this unit, students analyse how the structure and function of body systems, and the interrelationships between systems, support metabolism and body functioning.

Unit 2 ATAR Human Biology

Unit 2 – Reproduction and inheritance

In this unit, students study the reproductive systems of males and females, the mechanisms of transmission of genetic material from generation to generation, and the effects of the environment on gene expression.

Pre-requisites
Year 10 achievement of 65 % or above in biological sciences

Follow-on
Students achieving 65 % overall for human biology unit 1 & 2 ATAR in year 11 may continue on to human biology 3 & 4 ATAR in year 12 the following year.

Unit 1 General Human Biology

Unit 1 – Healthy body

This unit explores how the human body systems are interrelated to sustain life.

Unit 2 General Human Biology

Unit 2 – Reproduction

This unit explores the role of males and females in the process of reproduction.

Pre-requisites
Year 10 achievement of 50 % or above in biological sciences

Follow-on
Students achieving 50 % overall for human biology unit 1 & 2 General in year 11 may continue on to human biology 3 & 4 General in year 12 the following year.

Unit 1 ATAR Physics

Unit 1 – Thermal, nuclear and electrical physics

Students investigate energy production by considering heating processes, radioactivity and nuclear reactions, and investigate energy transfer and transformation in electrical circuits.

Unit 2 ATAR Physics

Unit 2 – Linear motion and waves

Students describe, explain and predict linear motion, and investigate the application of wave models to sound phenomena.

Pre-requisites
Year 10 achievement of 65 % or above in term 2 physics exam.

Follow-on
Students achieving 65 % overall in unit 1 & 2 ATAR in year 11 of the course may continue on to physics 3 & 4 ATAR in year 12 the following year.

Unit 3 ATAR Chemistry

Unit 3 – Equilibrium, acids and bases, and redox reactions

In this unit, students investigate the concept of reversibility of reactions and the dynamic nature of equilibrium in chemical systems; contemporary models of acid-base behaviour that explain their properties and uses; and the principles of oxidation and reduction reactions, including the generation of electricity from electrochemical cells.

Unit 4 ATAR Chemistry

Unit 4 – Organic chemistry and chemical synthesis

In this unit, students develop their understanding of the relationship between the structure, properties and chemical reactions of different organic functional groups. Students also investigate the process of chemical synthesis to form useful substances and products and the need to consider a range of factors in the design of these processes.

Pre-requisites
Year 11 achievement of 65 % or above in unit 1 and 2 ATAR Chemistry

Unit 3 ATAR Human Biology

Unit 3 – Homeostasis and disease

This unit explores the nervous and endocrine systems and the mechanisms that help maintain the systems of the body to function within normal range, and the body's immune responses to invading pathogens.

Unit 4 ATAR Human Biology

Unit 4 – Human variation and evolution

This unit explores the variations in humans, their changing environment and evolutionary trends in homonids.

Pre-requisites
Year 11 achievement of 65 % or above in unit 1 & 2 ATAR Human Biology

Unit 3 ATAR Physics

Unit 3 – Gravity and electromagnetism

Students investigate models of motion in gravitational, electric and magnetic fields to explain how forces act at a distance.

Unit 4 ATAR Physics

Unit 4 – Revolutions in modern physics

Students use the theory of electromagnetism to explain the production and propagation of electromagnetic waves and investigate how shortcomings in existing theories led to the development of the quantum theory of light and matter, the Special Theory of Relativity, and the Standard Model of particle physics.

Pre-requisites
Year 11 achievement of 65 % in unit 1 & 2 ATAR physics.