



DE LA SALLE COLLEGE 2022 STUDENT HANDBOOK

**Learning Area / Subject:
ADVANCED SCIENCE**

SCI101

Year Level: 11

**Curriculum
Levels: 6-7**

**NCEA LEVEL
ONE**

FACULTY OF SCIENCE
De La Salle College, 81 Gray Avenue, Mangere East, Manukau City



De La Salle College
2022 YEAR PLANNER

COURSE: ADVANCED SCIENCE
SCI101

WEEK		1	2	3	4	5	6	7	8	9	10	11
DATE	24-Jan	31-Jan	7-Feb	14-Feb	21-Feb	28-Feb	7-Mar	14-Mar	21-Mar	28-Mar	4-Apr	11-Apr
TERM 1			AS 90940(SCI1.1) Demonstrate understanding of aspects of mechanics					AS90935(PHY 1.1) Carry out a practical physics investigation that leads to a linear mathematical relationship with direction.			Easter	
WEEK	1	2	3	4	5	6	7	8	9	10		
DATE	2-May	9-May	16-May	23-May	30-May	6-Jun	13-Jun	20-Jun	27-Jun	4-Jul		
TERM 2		AS90948(SCI1.9) Demonstrate understanding of biological ideas relating to genetic variation					AS 90950(SCI 1.11) Investigate biological ideas relating to interactions between humans					
WEEK	1	2	3	4	5	6	7	8	9	10		
DATE	25-Jul	1-Aug	8-Aug	15-Aug	22-Aug	29-Aug	5-Sep	12-Sep	19-Sep	26-Sep		
TERM 3		AS 90944(SCI1.5) Demonstrate understanding of aspects of acids and bases				AS 90930(CHE 1.1) Carry out a practical chemistry investigation, with direction			Senior Exam Week			
WEEK	1	2	3	4	5	6	7	8				
DATE	17-Oct	24-Oct	31-Oct	7-Nov	14-Nov	21-Nov	28-Nov	5-Dec		INTERNAL	EXTERNAL	
TERM 4	REVISION			NCEA Exams begin				NCEA Exams end				



Science

SCI101 Assessment Statement 2022

Course is endorsable

Year : 11

Course : Advanced Science

Mrs V Kumar

Total Credits : 24

Level 1 Science is compulsory in Year 11. This course is aimed at those students who have achieved extremely well in Year 10 Science and who know that they wish to pursue a career that requires specialised Science subject. This course offers three external and three internal standards worth a total of 24 credits. The course provides students a taste of chemistry, Biology, Physics and Earth and Space Science. Its an accelerated course where students need to demonstrate strong work ethic. Over the course of the year students will grow their scientific knowledge and skills which will set an excellent foundation for L2/L3 Science courses with career pathways which include engineering, medical Science, architecture, pilot, marine biologist and many more.

Pre Requisites

Minimum of M or E grades across all Formative and Summative Science assessments and Examinations.

Additional Requirements

Course cost: \$20.00 (SciPad Textbook).
A Scientific Calculator

No	Standard Number	Version	Level	Credits	Lit / Num	Full Title	Method of Assessment	Assessment Opportunities Offered	Approximate Date	Grade	Teacher Signature
1	90930	3	1	4	Num	Chemistry 1.1 - Carry out a practical chemistry investigation, with direction	Practical	1	Week 10 Term 3		
2	90935	3	1	4	Num	Physics 1.1 - Carry out a practical physics investigation that leads to a linear mathematical relationship, with direction	Practical	1	Week 2 Term 2		
3	90950	3	1	4		Science 1.11 - Investigate biological ideas relating to interactions between humans and micro-organisms	Assignment	1	Week 2 Term 3		
4	90940	3	1	4	Num	Science 1.1 - Demonstrate understanding of aspects of mechanics	Exam	External	NCEA External		
5	90944	4	1	4		Science 1.5 - Demonstrate understanding of aspects of acids and bases	Exam	External	NCEA External		
6	90948	3	1	4	L1 Lit	Science 1.9 - Demonstrate understanding of biological ideas relating to genetic variation	Exam	External	NCEA External		

School Assessment Procedures - You can view your rights and obligations in the school's assessment procedures in the **Student Assessment Handbook**

Record your internal grades and ask your teacher to sign it off as correct. You can then use this as evidence of your achievement.

2022 Course Outline – Y11 Advanced Science (SCI101)

Subject: Advanced Science

NCEA Level: One

Entry Requirements: A good pass from Y10 General Science

Number of credits gained: 24

Method of assessment:

- Both internal and external assessment
- Internal assessments are given after a series of mock practice runs
- Mock externals at the end of each unit of work
- Mid Year Examinations
- Preliminary Examinations

Looking Ahead:

- Level 2 and 3 Biology, Chemistry, Physics and Earth & Space Science
- Tertiary level study
- A diverse range of careers stem from Biology, Chemistry, Physics and the Earth Sciences:
e.g. biosecurity officer, pharmacist, chemical and mechanical engineering, GP, electrician, ecologist, climatologist (this is just a fraction of what is possible!).

Course Description

Course aims:

This course is aimed at those students who have achieved well in Year 10 and who know that they wish to pursue a career that requires chemistry and/or physics / biology / earth science. Such careers include engineering, medicine, architecture, pilot and more.

The course consists of units from the separate Level One Chemistry and Science subjects and provides a sound preparation for Level 2 Physics, Chemistry, Biology and Earth and Space courses.

The Science component covers: mechanics, acids and bases, genetics. The Chemistry component covers: chemical reactions.

Course learning outcomes:

- To be able to carry out a practical investigation, with direction, by planning the investigation, collecting and processing the data, and interpreting and reporting the findings.
- To be able to describe chemical reactions, including the carrying out of calculations.
- To be able to describe the atomic structure and bonding found in a variety of substances (metallic, ionic and molecular)
- To be able to describe the characteristic properties and reactions of metals, acids and bases.
- To develop knowledge and understanding of mechanics in one dimension and the use of appropriate methods to solve related problems.
- To develop fundamental knowledge and understanding of genetics and the inheritance of traits.

2022 Course Assessment Statement – Y11 Advanced Science (SCI101)

HOW WILL I BE ASSESSED IN THIS SUBJECT?

Achievement Standard	Level and Credit Value	Internal or External Assessment	Brief Description	My grade for prelims	My final grade for internals
SCI1.11 AS 90950 Investigate biological ideas relating to interactions between humans and micro-organism.	Level 1 4 Credits	INTERNAL	Students will investigate how a bacteria, fungi or virus affects humans. They will investigate the personal and social implications. The investigation could be supported with a practical.		
CHEM AS1.1 (90930) Carry out a practical chemistry investigation, with direction	Level 1 4 Credits	INTERNAL	Using rates of reaction, students will conduct an investigation into how concentration can affect how fast or slow a chemical reaction takes to proceed.		
PHY 1.1 AS 90935 (INT) Carry out a practical physics investigation that leads to a linear mathematical relationship with direction.	Level 1 4 Credits	INTERNAL	Students will run a practical investigation to investigate a linear relationship between two physical quantities. They will follow a scientific method, collect data, plot graph to determine a mathematical relationship.		
SCI AS1.1 (90940) Demonstrate understanding of aspects of mechanics	Level 1 4 Credits	EXTERNAL	In this standard, students will learn about speed, acceleration, forces, energy and pressure. Mechanics is the scientific study of movement.		
SCI AS1.5 (90944) Demonstrate understanding of aspects of acids and bases	Level 1 4 Credits	EXTERNAL	Students will develop an understanding around atomic structure, formulae and ions. Also included is information on the chemistry behind acids and bases.		
SCI AS1.9 (90948) Demonstrate understanding of biological ideas relating to genetic variation	Level 1 4 Credits	EXTERNAL	Students will develop an understanding of genetic variation. This will include punnet squares, knowledge of cell division, inheritance etc.		

Note: Depending on class ability. Extra internal assessments might be added if required and if the challenge and time is warranted.



De La Salle College - Advanced Science - Year Planner 2021

Subject: 11 Advanced Science

Teacher in charge: Mrs V Kumar

Year Level: 11

Curriculum Levels: 6

<p>Unit Title: AS90940 (AS1.1 Science External) - Demonstrate understanding of aspects of mechanics.</p> <p>Achievement objectives:</p> <ul style="list-style-type: none"> <i>Demonstrate understanding of aspects of mechanics</i> providing evidence that shows awareness of how simple facets of phenomena, concepts or principles relate to given situations. This may include using methods for solving problems involving aspects of mechanics. <i>Demonstrate in-depth understanding of aspects of mechanics</i> providing evidence that shows how or why phenomena, concepts or principles relate to given situations. <i>Demonstrate comprehensive understanding of aspects of mechanics</i> providing evidence that shows how or why phenomena, concepts and principles are connected in the context of given situations. Statements must demonstrate understanding of connections between concepts. <p>Learning outcomes/skills:</p> <ul style="list-style-type: none"> To develop knowledge and understanding of mechanics and the use of appropriate methods to solve related problems. <p>Assessment tasks/method:</p> <ul style="list-style-type: none"> Mid-Year Mock Examinations (Term 2). Preliminary Mock Examinations (Term 3). External NCEA examination at year's end. <p>Key competencies: Thinking, Managing self, Using language, symbols, and texts, Participating and contributing.</p> <p>Values: Inquiry and curiosity, Excellence.</p> <p>Approximate time required: 6 weeks</p>	<p>Unit Title: AS90950 (AS1.11 Biology Internal) Investigate biological ideas relating to interactions between humans and micro-organism</p> <p>Achievement objectives:</p> <ul style="list-style-type: none"> Understand that scientists' investigations are informed by current scientific theories and aim to collect evidence that will be interpreted through processes of logical argument. Use a wider range of science vocabulary, symbols, and conventions. Apply their understandings of science to evaluate both popular and scientific texts (including visual and numerical literacy). Relate key structural features and functions to the life processes of plants, animals, and micro-organisms and investigate environmental factors that affect these processes. <p>Learning outcomes/skills:</p> <p>To develop a report that arises from a investigation which involves collecting information about interactions between humans and micro-organisms. The information could come from a variety of sources such as direct observations, collection of experimental data, resource sheets, photos, videos, websites, and reference texts.</p> <p>Assessment tasks/method:</p> <p>Students will carry out an investigation whereby biological ideas relating to how humans use and are affected by micro-organisms. Micro-organisms will be selected from: bacteria, fungi and viruses. Students will observations or findings to describe/explain how humans use or are affected by micro-organisms. significant links about the interactions between humans and micro-organisms, including the impacts of this knowledge on human's personal actions or everyday life. It may involve explaining, elaborating, applying, justifying, relating, evaluating, comparing and contrasting, and analysing.</p> <p>Key competencies: Thinking, Managing self, Using language, symbols, and texts, Participating and contributing.</p> <p>Values: Inquiry and curiosity, Excellence.</p> <p>Approximate time required: 5 weeks</p>	<p>Unit Title: AS90935 (AS1.1 Physics Internal) – Carry out a practical physics investigation that leads to a linear mathematical relationship, with direction</p> <p>Achievement objectives:</p> <ul style="list-style-type: none"> Investigate trends and relationships in physical phenomena (in the areas of mechanics, electricity, electromagnetism, heat, light and waves, and atomic and nuclear physics). Understand that scientists' investigations are informed by current scientific theories and aim to collect evidence that will be interpreted through processes of logical argument. <p>Learning outcomes/skills:</p> <p>A practical investigation is an activity that includes collecting, processing and interpreting data. The investigation must lead to a linear mathematical relationship</p> <p>Assessment tasks/method:</p> <p>Students will learn the steps of a scientific investigation and carry out a directed practical investigation to collect data, process data , analyze and draw a conclusion. Carry out a practical physics investigation involves:</p> <ul style="list-style-type: none"> developing a method for collecting the data collecting primary data, with units, relevant to the purpose, based on the manipulation of the independent variable over a reasonable range and number of values controlling the variable(s) that could have a significant effect on the results using technique(s) that increase the accuracy of the measured values of the dependent (and independent, if appropriate) variable drawing a graph, based on the data writing a conclusion that links the processed data to the identified trend on the graph. <p>Key competencies: Thinking, Managing self, Using language, symbols, and texts, Participating and contributing.</p> <p>Values: Inquiry and curiosity, Excellence.</p> <p>Approximate time required: 5 weeks</p>
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<p>Unit Title: AS90930 (AS1.1 Chemistry Internal) - Carry out a practical chemistry investigation, with direction.</p> <p>Achievement objectives:</p> <ul style="list-style-type: none"> Students will carry out a practical chemistry investigation which will include collecting, processing, and interpreting primary data to reach a conclusion in a chemistry context using chemistry vocabulary, symbols, conventions and equations as appropriate. The investigation can take different contexts and could include: acid-metal reactions, acids and bases, rates of reaction, energy output of fuels, fermentation. <p>Learning outcomes/skills:</p> <ul style="list-style-type: none"> To be able to carry out a practical investigation, with direction, by planning the investigation, collecting and processing the data, and interpreting and reporting the findings. <p>Assessment tasks/method:</p> <ul style="list-style-type: none"> developing a procedure for collecting primary data, with units, relevant to the purpose, based on the manipulation of the independent variable over a valid range of values with repetition to show reliability controlling the variable(s) that could have a significant effect on the results using techniques to increase the accuracy of the measured values of the dependent (and independent) variable processing and representing the data to enable a conclusion to be reached writing a conclusion based on the processed data that links to the purpose of the investigation. <p>Key competencies: Thinking, Managing self, Using language, symbols, and texts, Participating and contributing.</p> <p>Values: Inquiry and curiosity, Excellence.</p> <p>Approximate time required: 7 weeks</p>	<p>Unit Title: AS90948 (AS1.9 Science External) – Demonstrate understanding of biological ideas relating to genetic variation.</p> <p>Achievement objectives:</p> <p>Evolution (LW)</p> <ul style="list-style-type: none"> Explore patterns in the inheritance of genetically controlled characteristics. Explain the importance of variation within a changing environment. <p>Learning outcomes/skills:</p> <p>Students will learn the following LO and skills:</p> <ul style="list-style-type: none"> the continuity of life based on the inheritable nature of DNA links between DNA and variation in phenotypes Variation in phenotypes as adaptive features. the roles of DNA in both carrying instructions to the next generation and determining phenotype the relationship between DNA, alleles, genes, and chromosomes the way in which genotype determines phenotype the way chromosomes exist as pairs so that individuals inherit two copies of each gene. the significance of an allele as an alternative version of a gene the role of mutations in forming new alleles the role of meiosis in generating gametes (students are not required to provide the names of the stages of meiosis) the significance of sexual reproduction (in producing a new mix of alleles) the patterns of inheritance involving simple monohybrid inheritance showing complete dominance, sex determination, possible genotypes, and phenotype ratios. inheritable and non-inheritable variations that exist within a group of living organisms differing rates of survival by various members of a group may depend on their phenotype the importance of variation within populations (population and species survival) in a changing environment such as pest infestation, disease, drought, or flood the advantages and disadvantages of sexual reproduction. <p>Assessment tasks/method:</p> <ul style="list-style-type: none"> Mid Year Mock Examinations (Term 2). Preliminary Mock Examinations (Term 3). External NCEA examination at year's end. <p>Key competencies: Thinking, Managing self, Using language, symbols, and texts, Participating and contributing.</p> <p>Values: Inquiry and curiosity, Excellence.</p> <p>Approximate time required: 8 weeks</p>	<p>Unit Title: AS90944 (AS1.5 Science External) – Demonstrate an understanding of aspects of acids and bases.</p> <p>Achievement objectives:</p> <ul style="list-style-type: none"> Students will describe, identify, name, draw, or giving an account of aspects of acids and bases. Students will be required to use a chemistry vocabulary, symbols and conventions (including names and formulae), and completing word equations and symbol equations. <p>Learning outcomes/skills:</p> <ul style="list-style-type: none"> Students must be able to show a fundamental understanding of the following aspects of acids and bases: Atomic structure electron arrangement of atoms and monatomic ions of the first 20 elements(a periodic table will be provided) isotopes ionic bonding names and formulae of ionic compounds using a given table of ions. Properties acids release hydrogen ions in water reactions (of acids with bases) to form salts. pH and effects on indicators. Rates of reaction and particle theory. Uses Neutralisation carbon dioxide formation salt formation. <i>Acids and bases</i> are restricted to HCl, H₂SO₄, HNO₃, metal oxides, hydroxides, carbonates and hydrogen carbonates. <p>Assessment tasks/method:</p> <ul style="list-style-type: none"> Mid Year Mock Examinations (Term 2). Preliminary Mock Examinations (Term 3). External NCEA examination at year's end. <p>Key competencies: Thinking, Managing self, Using language, symbols, and texts, Participating and contributing.</p> <p>Values: Inquiry and curiosity, Excellence.</p> <p>Approximate time required: 6 weeks</p>
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Achievement Standard

Subject Reference Science 1.1

Title Demonstrate understanding of aspects of mechanics

Level 1 Credits 4 Assessment External

Subfield Science

Domain Science - Core

Status Registered Status date 30 November 2010

Planned review date 31 December 2020 Date version published 20 November 2014

This achievement standard involves demonstrating understanding of aspects of mechanics and may include using methods when solving related problems.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Demonstrate understanding of aspects of mechanics. 	<ul style="list-style-type: none"> Demonstrate in-depth understanding of aspects of mechanics. 	<ul style="list-style-type: none"> Demonstrate comprehensive understanding of aspects of mechanics.

Explanatory Notes

- 1 This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, Level 6. It is aligned with the Physical Inquiry and Physics Concepts achievement objectives in the Physical World strand and the Communicating in Science achievement objective in the Nature of Science strand, and is related to the material in the *Teaching and Learning Guide for Science*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.

This standard is also derived from Te Marautanga o Aotearoa. For details of Te Marautanga o Aotearoa achievement objectives to which this standard relates, see the [Papa Whakaako](#).

- 2 *Demonstrate understanding of aspects of mechanics* typically involves providing evidence that shows awareness of how simple facets of phenomena, concepts or principles relate to given situations. This may include using methods for solving problems involving aspects of mechanics.

- 3 *Demonstrate in-depth understanding of aspects of mechanics* typically involves providing evidence that shows how or why phenomena, concepts or principles relate to given situations.
- 4 *Demonstrate comprehensive understanding of aspects of mechanics* typically involves providing evidence that shows how or why phenomena, concepts and principles are connected in the context of given situations. Statements must demonstrate understanding of connections between concepts.
- 5 Evidence may be written, mathematical, graphical or diagrammatic.
- 6 Aspects of mechanics will be limited to a selection from the following:
- Distance, speed, interpretation of distance and speed time graphs, average acceleration and deceleration in the context of everyday experiences such as journeys, sport, getting going. The relationships $v = \frac{\Delta d}{\Delta t}$ $a = \frac{\Delta v}{\Delta t}$.
 - Mass, weight and the acceleration due to gravity, balanced and unbalanced forces, in the context of everyday experiences such as being stationary, moving at constant speed, accelerating. The relationship $F_{net} = ma$.
 - Force and pressure in the context of everyday experiences. The relationship $P = \frac{F}{A}$.
 - Work and power, gravitational potential energy, kinetic energy, and the conservation of mechanical energy in free fall situations in the context of everyday experiences such as sports performance, dropping things, tossing balls. The relationships $\Delta E_P = mg\Delta h$ $E_K = \frac{1}{2}mv^2$ $W = Fd$ $P = \frac{W}{t}$.
- 7 Assessment Specifications for this achievement standard can be accessed through the Science Resources page found at www.nzqa.govt.nz/ncea/resources.

Quality Assurance

- 1 Providers and Industry Training Organisations must have been granted consent to assess by NZQA before they can register credits from assessment against achievement standards.
- 2 Organisations with consent to assess and Industry Training Organisations assessing against achievement standards must engage with the moderation system that applies to those achievement standards.

Achievement Standard

Subject Reference Science 1.5

Title Demonstrate understanding of aspects of acids and bases

Level 1 Credits 4 Assessment External

Subfield Science

Domain Science - Core

Status Registered Status date 30 November 2010

Planned review date 31 December 2020 Date version published 20 November 2014

This achievement standard involves demonstrating understanding of atomic structure, particle theory and rates of reaction relating to acids and base properties, uses and reactions.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Demonstrate understanding of aspects of acids and bases. 	<ul style="list-style-type: none"> Demonstrate in-depth understanding of aspects of acids and bases. 	<ul style="list-style-type: none"> Demonstrate comprehensive understanding of aspects of acids and bases.

Explanatory Notes

Version 2 of this achievement standard was republished to correct an error in the bullet points about properties of acids and bases in explanatory note 5.

This standard is also derived from Te Marautanga o Aotearoa. For details of Te Marautanga o Aotearoa achievement objectives to which this standard relates, see the [Papa Whakaako](#).

- This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, Level 6. It is aligned with the Material World strand, and is related to the material in the *Teaching and Learning Guide for Science*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.
- Demonstrate understanding* typically involves describing, identifying, naming, drawing, or giving an account of aspects of acids and bases. This may require the use of chemistry vocabulary, symbols and conventions (including names and formulae), and completing word equations.

- Demonstrate in-depth understanding* typically involves explaining aspects of acids and bases. This may require explanations that use chemistry vocabulary, symbols and conventions (including names and formulae) and writing word equations or completing given symbol equations.
- Demonstrate comprehensive understanding* typically involves linking aspects of acids and bases. It may involve explaining, elaborating, justifying, relating, evaluating, comparing and contrasting, or analysing. This may require the use of chemistry vocabulary, symbols and conventions (including names and formulae), and writing balanced symbol equations.
- Aspects of acids and bases* will be selected from:
 - Atomic structure
 - electron arrangement of atoms and monatomic ions of the first 20 elements (a periodic table will be provided)
 - ionic bonding
 - names and formulae of ionic compounds using a given table of ions.
 - Properties
 - acids release hydrogen ions in water
 - reactions (of acids with bases) to form salts
 - pH and effects on indicators.
 - Rates of reaction and particle theory.
 - Uses
 - neutralisation
 - carbon dioxide formation
 - salt formation.
- Acids and bases* are restricted to HCl, H₂SO₄, HNO₃, metal oxides, hydroxides, carbonates and hydrogen carbonates. Other acids may be included in examination questions. The names and formulae of any such acids will be given in the question.
- Assessment Specifications for this achievement standard can be accessed through the Science Resources page found at www.nzqa.govt.nz/ncea/resources.

Achievement Standard

Subject Reference	Science 1.9		
Title	Demonstrate understanding of biological ideas relating to genetic variation		
Level	1	Credits	4
		Assessment	External
Subfield	Science		
Domain	Science - Core		
Status	Registered	Status date	30 November 2010
Planned review date	31 December 2020	Date version published	20 November 2014

This achievement standard involves demonstrating understanding of biological ideas relating to genetic variation.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Demonstrate understanding of biological ideas relating to genetic variation. 	<ul style="list-style-type: none"> Demonstrate in-depth understanding of biological ideas relating to genetic variation. 	<ul style="list-style-type: none"> Demonstrate comprehensive understanding of biological ideas relating to genetic variation.

Explanatory Notes

- This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, Level 6. It is aligned with the Evolution achievement objectives in the Living World strand, and is related to the material in the *Teaching and Learning Guide for Science*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.

This standard is also derived from Te Marautanga o Aotearoa. For details of Te Marautanga o Aotearoa achievement objectives to which this standard relates, see the [Papa Whakaako](#).
- Demonstrate understanding* involves recognising, naming, drawing, and giving characteristics of, or an account of, genetic variation.
- Demonstrate in-depth understanding* involves explaining how or why genetic variation occurs.

- Demonstrate comprehensive understanding* involves linking biological ideas about genetic variation. It may involve explaining, elaborating, applying, justifying, relating, evaluating, comparing and contrasting, or analysing.
- Biological ideas relating to genetic variation* are limited to concepts and processes connected with:
 - the continuity of life based on the inheritable nature of DNA
 - links between DNA and variation in phenotypes
 - variation in phenotypes as adaptive features.
- Biological concepts and processes relating to the inheritable nature of DNA will be selected from:
 - the roles of DNA in both carrying instructions to the next generation and determining phenotype
 - the relationship between DNA, alleles, genes, and chromosomes
 - the way in which genotype determines phenotype
 - the way chromosomes exist as pairs so that individuals inherit two copies of each gene.
- Biological concepts and processes relating to variation in phenotype will be selected from:
 - the significance of an allele as an alternative version of a gene
 - the role of mutations in forming new alleles
 - the role of meiosis in generating gametes (students are not required to provide the names of the stages of meiosis)
 - the significance of sexual reproduction (in producing a new mix of alleles)
 - the patterns of inheritance involving simple monohybrid inheritance showing complete dominance, sex determination, possible genotypes, and phenotype ratios.
- Biological concepts and processes relating to variation in phenotypes as adaptive features will be selected from:
 - inheritable and non-inheritable variations that exist within a group of living organisms
 - differing rates of survival by various members of a group may depend on their phenotype
 - the importance of variation within populations (population and species survival) in a changing environment such as pest infestation, disease, drought, or flood
 - the advantages and disadvantages of sexual reproduction.
- The student must be familiar with the following genetic language and conventions: gene, allele, mutation, genotype, phenotype, gamete, zygote, dominant, recessive, homozygous, heterozygous, pure breeding, Punnett square, and pedigree chart.
- Assessment Specifications for this achievement standard can be accessed through the Science Resources page found at www.nzqa.govt.nz/ncea/resources.

Achievement Standard

Subject Reference		Chemistry 1.1	
Title		Carry out a practical chemistry investigation, with direction	
Level	1	Credits	4
Subfield	Science	Assessment	Internal
Domain		Chemistry	
Status		Registered	Status date 30 November 2010
Planned review date		31 December 2020	Date version published 20 November 2014

This achievement standard involves carrying out a procedure to collect and process primary data and interpret the results, with direction.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Carry out a practical chemistry investigation, with direction. 	<ul style="list-style-type: none"> Carry out an in-depth practical chemistry investigation, with direction. 	<ul style="list-style-type: none"> Carry out a comprehensive practical chemistry investigation, with direction.

Explanatory Notes

- 1 This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, Level 6. It is aligned with the Nature of Science and Material World strands and is related to the material in the *Teaching and Learning Guide for Chemistry*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.

This standard is also derived from Te Marautanga o Aotearoa. For details of Te Marautanga o Aotearoa achievement objectives to which this standard relates, see the [Papa Whakaako](#).

- 2 The procedures outlined in *Safety and Science: A Guidance Manual for New Zealand Schools*, Learning Media, Ministry of Education, 2000, must be followed during the practical component of the investigation.

- 3 With writi

Achievement Standard

Subject Reference		Science 1.10
Title		Investigate life processes and environmental factors that affect them

and the equipment and/or chemicals from which to choose. A template or suitable format for planning the investigation will be provided for the student to use.

- 4 A *practical chemistry investigation* includes collecting, processing, and interpreting primary data to reach a conclusion in a chemistry context using chemistry vocabulary, symbols, conventions and equations as appropriate. Suitable contexts could include: acid-metal reactions, acids and bases, rates of reaction, energy output of fuels, fermentation.
- 5 Carry out a *practical chemistry investigation* involves:
- developing a method for collecting primary data with units, relevant to the purpose, based on the manipulation of the independent variable over a range of values
 - processing and representing the data in an appropriate way (graph, table, calculation etc)
 - writing a conclusion based on the processed data.
- 6 Carry out an *in-depth practical chemistry investigation* involves:
- developing a procedure for collecting primary data, with units, relevant to the purpose, based on the manipulation of the independent variable over a valid range of values with repetition to show reliability
 - controlling the variable(s) that could have a significant effect on the results
 - using techniques to increase the accuracy of the measured values of the dependent (and independent) variable
 - processing and representing the data to enable a conclusion to be reached
 - writing a conclusion based on the processed data that links to the purpose of the investigation.
- 7 Carry out a *comprehensive practical chemistry investigation* involves an in-depth investigation that also:
- justifies the choices made to increase accuracy during the investigation
 - justifies the conclusion in terms of the processed data and the purpose of the investigation
 - relates investigation findings to applicable chemistry ideas.
- 8 Conditions of Assessment related to this achievement standard can be found at <http://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards>.

Replacement Information

This achievement standard replaced AS90169.

The procedures outlined in *Safety and Science: A Guidance Manual for New Zealand Schools*, Learning Media, Ministry of Education, 2000, must be followed during any practical component investigation.

- 3 Investigate involves describing observations or findings about the structure, function and environmental factors related to life processes of the organism.

Achievement Standard

Subject Reference		Physics 1.1			
Title		Carry out a practical physics investigation that leads to a linear mathematical relationship, with direction			
Level	1	Credits	4	Assessment	Internal
Subfield		Science			
Domain		Physics			
Status		Registered	Status date		30 November 2010
Planned review date		31 December 2020	Date version published		20 November 2014

This achievement standard involves carrying out a practical physics investigation that requires the graphical representation and mathematical description of a linear relationship, with direction.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Carry out a practical physics investigation, with direction, that leads to a linear mathematical relationship. 	<ul style="list-style-type: none"> Carry out an in-depth practical physics investigation, with direction, that leads to a linear mathematical relationship. 	<ul style="list-style-type: none"> Carry out a comprehensive practical physics investigation, with direction, that leads to a linear mathematical relationship.

Explanatory Notes

- This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, Level 6. It is aligned with the Physical Inquiry and Physics Concepts achievement objective in the Physical World strand and the Investigating in Science achievement objectives in the Nature of Science strand, and is related to the material in the *Teaching and Learning Guide for Physics*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.

This standard is also derived from Te Marautanga o Aotearoa. For details of Te Marautanga o Aotearoa achievement objectives to which this standard relates, see the [Papa Whakaako](#).

- The procedures outlined in *Safety and Science: A Guidance Manual for New Zealand Schools*, Learning Media, Ministry of Education, 2000, must be followed during the practical investigation.
- With direction* means that general instructions for the investigation will be specified in writing and direction will be given in the form of a purpose, an outline of the method, and the equipment and/or materials from which to choose. A template or suitable format for planning the investigation will be provided for the student to use.
- A *practical investigation* is an activity that includes collecting, processing and interpreting data. The investigation must lead to a linear mathematical relationship.
- Carry out a practical physics investigation* involves:
 - developing a method for collecting the data
 - collecting primary data, with units, relevant to the purpose, based on the manipulation of the independent variable over a reasonable range and number of values
 - drawing a graph, based on the data
 - writing a conclusion that links the processed data to the identified trend on the graph.
- Carry out an in-depth practical physics investigation* involves:
 - controlling the variable(s) that could have a significant effect on the results
 - using technique(s) that increase the accuracy of the measured values of the dependent (and independent, if appropriate) variable
 - drawing a linear graph, valid for the data
 - writing a conclusion that states the equation of the relationship.
- Carry out a comprehensive practical physics investigation* involves writing a discussion that validates the conclusion. The discussion may include as appropriate:
 - a justification for the accuracy-improving techniques used
 - a reason that there is a limit to either end of the value chosen for the independent variable
 - a justification why a variable needs to be controlled.
 - a description of any difficulties encountered when making measurements and how these difficulties were overcome
 - a link between investigation findings and applicable physics ideas
 - a description of any unexpected outcomes of the processing of the results and a suggestion of how these outcomes could have been caused and/or the effect they had on the validity of the conclusion.
- Conditions of Assessment related to this achievement standard can be found at <http://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards>.

Achievement Standard

Subject Reference Science 1.11

Title Investigate biological ideas relating to interactions between humans and micro-organisms

Level 1 **Credits** 4 **Assessment** Internal

Subfield Science

Domain Science - Core

Status Registered **Status date** 30 November 2010

Planned review date 31 December 2020 **Date version published** 20 November 2014

This achievement standard involves investigating biological ideas relating to how humans use and are affected by micro-organisms.

Mutual exclusion exists between this standard and AS90927.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
<ul style="list-style-type: none"> Investigate biological ideas relating to interactions between humans and micro-organisms. 	<ul style="list-style-type: none"> Investigate, in depth, biological ideas relating to interactions between humans and micro-organisms. 	<ul style="list-style-type: none"> Investigate, comprehensively, biological ideas relating to interactions between humans and micro-organisms.

Explanatory Notes

- This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, Level 6. It is aligned with the Life Processes achievement objective in the Living World strand and the Investigating in Science, Communicating in Science, and the Participating and Contributing achievement objectives in the Nature of Science strand, and is related to the material in the *Teaching and Learning Guide for Science*, Ministry of Education, 2010 at <http://seniorsecondary.tki.org.nz>.

This standard is also derived from Te Marautanga o Aotearoa. For details of Te Marautanga o Aotearoa achievement objectives to which this standard relates, see the [Papa Whakaako](#).

- This investigation involves collecting information about interactions between humans and micro-organisms. The information could come from a variety of sources such as direct observations, collection of experimental data, resource sheets, photos, videos, websites, and reference texts.

The procedures outlined in *Safety and Science: A Guidance Manual for New Zealand Schools*, Learning Media, Ministry of Education, 2000, must be followed during any practical component investigation.

- Investigate* involves using observations or findings to describe how humans use or are affected by micro-organisms.
- Investigate in depth* involves using findings and biological ideas to explain how or why humans use or are affected by micro-organisms.
- Investigate comprehensively* involves using findings and biological ideas to make significant links about the interactions between humans and micro-organisms, including the impacts of this knowledge on human's personal actions or everyday life. It may involve explaining, elaborating, applying, justifying, relating, evaluating, comparing and contrasting, and analysing.
- Micro-organisms* will be selected from: bacteria, fungi and viruses.
- The ways that humans use and are affected by micro-organisms may include: disposal of organic wastes, sewage treatment, composting, food production and preservation, food poisoning, microbial action on everyday materials (helpful and harmful micro-organisms), disease in humans and animals they are in contact with, antibiotics, resistance to antibiotics, and origins and control of pandemics.
- Biological ideas* relating to how humans use and are affected by micro-organisms may include the following:
 - structure and life processes of micro-organisms
 - culturing of micro-organisms
 - factors that affect the life processes of micro-organisms.
- Conditions of Assessment related to this achievement standard can be found at <http://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards>.

2022 Advanced Science (SCI101) – Student Guide to Bibliographies / Referencing

A bibliography is the 'trail' of reading that you did to inform your thinking for your essay or assignment. A bibliography is organised alphabetically by the author's last name.

Setting up a bibliography

(a) Books

- Author's last name and initial
- Date published – in brackets
- Name of book underlined
- Place of publication
- Publisher

Single Author

Eg. Ward, M. (1995) Celebrating Women Cambridge, University Press

More than one author

Eg Edwards, B., Horrocks, N. (1992) Reporting for Television Palmerston North, Dunmore Press

(b) Journals, Magazines, Newspapers

- Author's name and initial
- Date published – in brackets
- Title of the article in quotation marks
- Name of paper or magazine –underlined
- Place of publication
- Volume (if applicable)
- Page number

Eg Booth, P. (1986) "The Arthur Thomas Case Revisited" NZ Herald Feb 11, 2: 13

(c) Internet

- Author's name and initial if available
- Article name if appropriate
- Full date of resource if available
- Date of access
- Site address

Eg Midbon, M (2000), Jan 13 2004 A Day Without Yesterday: George Lemaitre and the Big Bang
<http://catholiceducation.org/articles/science/sc0022.html>

To create automatically correct references, the following websites are useful. It will create references for ISBN numbers and webpages.

www.harvardgenerator.com

**De La Salle College 2022
Assessment Result Appeal Form**

Name: _____

Class: _____

Name/number of standard being appealed: _____

Subject: _____

Teacher who marked work: _____

Grade awarded for standard: _____

Date work returned to student: _____ Date of appeal: _____

Reason for appeal:

Student signature: _____

Caregiver's signature: _____

OFFICE USE ONLY

Teacher response:

HOF response:

Principal's Nominee response:

Final decision:

De La Salle College 2022
Absence From Internal Assessment
Application for Extension

Student: _____ Class: _____
Subject: _____ Teacher: _____

Assessment title: _____

Standard number: _____

Type of assessment activity (*test, practical, assignment etc*).

Date of assessment or due date: _____

Reason for application:

- ☐ Illness or injury: *medical certificate or a letter from parent / caregiver* must be attached.
- ☐ Family / personal trauma: documentation must be attached (*eg. a letter from parent / caregiver, counsellor or Dean*).
- ☐ School activity (*sporting or cultural*) _____

Signature of the teacher-in-charge of the activity: _____

Decision by Principal's Nominee:

- ☐ Extension granted, new due date: _____
- ☐ New assessment granted, new date: _____
- ☐ Compassionate consideration will be used to determine a grade. HOD / TIC to attach documentation of evidence used to determine the grade and the grade awarded.
- ☐ Application denied. Comment: _____

The reason for this has been explained to me and I accept the decision.

Signed: _____ (Student) _____ (Teacher)