Level 1 Biology





Welcome to Level 1 Biology 2017

Student Course Information:

Standard number	Credits	Version	Title	Status	Internal/ External	Timing/ Due date	FAO?
90950	4	3	Investigate biological ideas relating to interactions between humans and micro-organisms	Registered	Internal	17th March 2017	No
90926	3	3	Report on a biological issue	Registered	Internal	6th June 2017	No
90925	4	3	Carry out a practical investigation in a biology context	Registered	Internal	5-7 July 2017 depending on class	No
90928	4	3	Demonstrate understanding of biological ideas relating to the life cycle of flowering plants	Registered	External	Nov	NA
90948	4	3	Demonstrate understanding of biological ideas relating to genetic variation	Registered	External	Nov	NA

The **two external Achievement Standards** will be assessed by **two** 3 hour examinations i.e. **Biology** and **Science**, at the end of the year.

You can gain the following grades in the Achievement Standards:					
Standard not Attempted	SNA	Did not sit the standard			
Not achieved	NA	Did not meet the standard			
Achieved	A	The standard was achieved			
Achieved with Merit	M	The standard was achieved demonstrating very good work			
Achieved with Excellence	E	The standard was achieved demonstrating excellent work			

External Achievement Standards – A derived grade process will be followed as outlined in the Waikato Diocesan School for Girls 2012 Policy on Assessment in accordance with NZQA guidelines.

FURTHER ASSESSMENT OPPORTUNITIES

It is NOT feasible and/or practicable to offer a further assessment opportunity.

Internal Assessment Policy and Procedures

The Science Department will follow the procedures in the Waikato Diocesan School for Girls Assessment Policy booklet. Please ensure that you have read carefully the guidelines on **Authenticity, Appeals, Course completion, Deadlines and Absences.**

Internal Achievement Standards – A student who is absent from an internal assessment may be provided with another assessment opportunity **where feasible**. A Medical Certificate **must** be provided for any illness/accident.

For all of the following Internal Assessments, Waikato Diocesan School for Girls Science Department has decided that:

Internal Achievement Standard 1.1 (90925)

Conditions: 1.1 will be assessed by an investigation (working in groups), and report writing (working individually)

- Students will have one opportunity for a summatively assessed investigation. A further assessment opportunity will be available if there is significant evidence of further learning.
- A summative assessment will take place in Weeks 9 and 10 of Term 2
- Students will be told their grade for this Achievement Standard as soon as the quality assurance process has been completed for the whole assessment.

Internal Achievement Standard 1.2 (90926)

Conditions: 1.2 will be assessed by in-class and out-of-class research assignment and final report

Information collecting: In class and for homework Processing information: Homework

AS 1.2 will be assessed by a word processed, restricted word count essay written out of class time. The essay will be submitted on turnitin in an electronic format **Google Document**. A further assessment opportunity will be available **if** there is significant evidence of further learning.

- Students will research a biological issue of which the context will be set by the classroom teacher in Week 4 Term
 2.
- The report will be completed in **Week 6 of Term 2 and electronically submitted by Tuesday 6th of June.**
- A scrapbook/clearfile must be kept to provide evidence that you have completed a research process.
- The data or information must be collected from a 'range of sources'.
- All written material used must be photocopied and put into your scrapbook/clearfile and important relevant scientific information is highlighted, annotated, sorted and summarised as evidence of **processed** information. Other resources eg pamphlets, videos, etc must be handed in.
- There will be checkpoints where you will meet with your classroom teacher to show your progress in gathering information and processing information. You must have your scrapbook for this.
- Record all resources used in the Reference format suggested in your instruction sheets. This scrapbook/clearfile with processed research material and the referencing must also be handed in with your final report. Sources of information must be recorded in a way so that it can be accessed by others
- The essay will be submitted in electronic format using **Turnitin**, your teacher will instruct you how to do this closer to the due date. Turnitin can be used throughout the assessment to check authenticity *but only once every 24 hours*.
- All assessed work will be kept on file.

Plagiarism and consequence: All assessed work will be kept on file and can be easily checked if there is any suggestion of plagiarism. <u>Anything over 10% will be a concern</u> and will be thoroughly checked for referencing. <u>Should the references be lacking, or no quotation marks supporting the quote, then the consequence will be a Not Achieved grade without any possibility of rewriting or resubmitting.</u>

Internal Achievement Standard 1.11 (90950)

Conditions: 1.11 will be assessed by in-class and out-of-class research assignment and final report

Information collecting:	In class and for homework
Processing information:	Homework
Write up:	This is done during class time only

AS 1.11 will be assessed by a word processed, restricted word count essay written in class time only. The essay will be submitted on Turnitin in an electronic format (Google Document). A template assignment is available for each student to use in Google Classroom. A further assessment opportunity will be available if there is significant evidence of further learning. This is at the discretion of the HOD of Science.

- Students will research a biological issue of which the context will be set by the classroom teacher in Week 5 Term
 1.
- The report will be completed in Week 7 of Term 1 and electronically submitted at the conclusion of the 3 hour report-writing component during class time in week
- A scrapbook/clearfile must be kept to provide evidence that you have completed a research process.
- The data or information must be collected from a 'range of sources'.

- All written material used must be photocopied and put into your scrapbook/clearfile and important relevant scientific information is highlighted, annotated, sorted and summarised as evidence of **processed** information. Other resources eg pamphlets, videos, etc must be handed in.
- There will be checkpoints where you will meet with your classroom teacher to show your progress in gathering information and processing information in weeks 5 and 6. You must have your scrapbook for this.
- Record all resources used in the Reference format suggested in your instruction sheets. This scrapbook/clearfile with processed research material and the referencing must also be handed when you make you electronic submission of the final report. Sources of information must be recorded in a way so that it can be accessed by others.
- The essay will be submitted in electronic format using **Turnitin**, your teacher will instruct you how to do this closer to the due date. Turnitin can be used throughout the assessment to check authenticity *but only once every 24 hours*.
- All assessed work will be kept on file.

Plagiarism and consequence: All assessed work will be kept on file and can be easily checked if there is any suggestion of plagiarism. <u>Anything over 10% will be a concern</u> and will be thoroughly checked for referencing. <u>Should the references be lacking, or no quotation marks supporting the quote, then the consequence will be a Not Achieved grade without any possibility of rewriting or resubmitting.</u>

ALL Internal Assessments are assessed by the following Assurance Process:

- Assessed by class/assigned teacher.
- Three samples across range 'Not Achieved, Achieved, Achieved with Merit, Achieved with Excellence of assessed work per class submitted for assurance to teacher in charge of Level 1 Biology.
- Samples are compared to exemplars.
- Samples indicate assessment decisions made by the teacher across the whole class.
- Students' results confirmed once assurance process has occurred.

Verifying Grades

Students are required to verify the final grades awarded by checking and signing the recorded results.

Retention of Student Work

ALL student internal assessment material will be retained by the Department.

STUDENT OBLIGATIONS

- 1. Ensure you understand the assessment programme and policy.
- 2. Ensure you understand the requirements of each assessment being completed.
- 3. Ensure you keep a record of each assessment on your student tracking sheet.
- 4. Discuss problems/concerns with the Teacher/Head of Department.

NOTES

Achievement Standard - Biology 1.1 (90925)

Title: Carry out a practical investigation in a biological context, with direction

Level 1	Credits 4	Assessment Internal
Subfield Science	Domain Biology	Status Registered
Status date 30 November 2010	Planned review date 31 December 2018	Date version published 30 November 2014

This achievement standard involves demonstrating investigation skills by collecting, processing, and interpreting primary data in a biological context, with direction.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
Carry out a practical investigation in a biological context, with direction.	Carry out an in-depth practical investigation in a biological context, with direction.	Carry out a comprehensive practical investigation in a biological context, with direction.

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 Nature of Science and Investigating in Science strands, and is related to the material in the *Teaching and Learning Guide for Biology*, Ministry of Education, 2010 at http://seniorsecondary.tki.org.nz. 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. Investigations must comply with the Animal Welfare Act 1999, as outlined in *Caring for Animals: A Guide for Teachers, Early Childhood Educators, and Students,* Learning Media, Ministry of Education, 1999.

The primary data being collected may come from field work, laboratory practical work, or from the use of models. *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 organisms from which to choose. A template or suitable format for planning the investigation will be provided for the student to use. *A practical investigation in a biological context* includes: making accurate measurements, recording primary data, appropriate processing of the data (eg calculations, tabulating, graphing), techniques relevant to the biology context (eg culturing micro-organisms, use of a microscope, quadrat sampling), identification and control of variables, interpretation of processed data, relating findings to the purpose to reach a conclusion.

Carry out a practical investigation in a biological context involves:

- developing a method with sequential steps for collecting data. The collection method will include:
 - identification of the range of the independent variable or the sample (at least three values)
 - measurement of the dependent variable (or the collection of field data) with units
- collecting, recording and processing primary data relevant to the purpose. The raw data must be within a range of
 values feasible for the context.
- reaching a conclusion based on interpretation of the processed data.
- *Carry out an in-depth practical investigation in a biological context* involves:
 - a statement of purpose written as a hypothesis
 - a method that includes: a valid range for the independent variable (or sample); a description of, and where possible control of, other significant variables that may affect the results; accurate measurement of the dependent variable (or collection of field data) with units and consideration of factors such as sampling bias, and/or sources of error
 - a method of collecting, recording and processing data that enables a trend or pattern (or its absence) to be determined

• a valid conclusion based on interpretation of the processed data that links to the purpose of the investigation. *Carry out a comprehensive practical investigation in a biological context* involves justifying the choices made during the in-depth investigation, i.e. evaluating the validity of the method or reliability of the data and explaining the conclusion in terms of applicable biological ideas.

Conditions of Assessment related to this achievement standard can be found at <u>www.tki.org.nz/e/community/ncea/conditions-assessment.php</u>.

Achievement Standard - Biology 1.2 (90926)

Title: Report on a biological issue

Level 1	Credits 3	Assessment Internal
Subfield Science	Domain Biology	Status Registered
Status date 30 November 2010	Planned review date 31 December 2018	Date version published 30 November 2014

This achievement standard involves collecting and processing data and/or information to report on a biological issue.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence	
Report on a biological issue.	Report in depth on a biological issue.	Report comprehensively on a biological issue.	

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 Participating and Contributing achievement objective in the Nature of Science strand, and is related to the material in the *Teaching and Learning Guide for Biology*, Ministry of Education, 2010 at http://seniorsecondary.tki.org.nz.

Report involves:

- refining a given or agreed question or purpose
- describing the biological ideas that are related to the question or purpose
- collecting and processing primary or secondary data and/or information from a range of sources
- taking a position on the issue
- presenting findings.

Report in depth involves:

- refining a given or agreed question or purpose
- explaining the biological ideas that are related to the question or purpose
- collecting and processing primary or secondary data and/or information from a range of sources
- identifying at least two different points of view supported by evidence
- taking and justifying a position on the issue\presenting findings.

Report comprehensively involves:

- refining a given or agreed question or purpose
- identifying multiple links between the biological ideas that are related to the question or purpose
- collecting and processing primary or secondary data and/or information from a range of sources
- evaluating sources of information/data in respect to the question or purpose
- identifying at least two different points of view supported by evidence
- taking and justifying a position on the issue with a recommendation for action
- presenting findings.

An *issue* is a subject on which people hold different opinions or viewpoints. The biological ideas and processes related to the issue must be derived from the Living World strand, Level 6 of *The New Zealand Curriculum*.

Data or information for processing must be collected from a range of sources. Sources may be provided to the student. Sources of data and information must be recorded in a way that can be accessed by others.

Processing information could involve listing, sorting, collating, highlighting, or summarising relevant scientific information.

Conditions of Assessment related to this achievement standard can be found at <u>www.tki.org.nz/e/community/ncea/conditions-assessment.php</u>.

Achievement Standard - Biology 1.4 (90928)

Title: Demonstrate understanding of biological ideas relating to the life cycle of flowering plants

Level 1	Credits 4	Assessment External
Subfield Science	Domain Biology	Status Registered
Status date 30 November 2010	Planned review date 31 December 2018	Date version published 30 November 2014

This achievement standard involves collecting and processing data and/or information to report on a biological issue.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence	
Report on a biological issue.	Report in depth on a biological issue.	Report comprehensively on a biological issue.	

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 Process achievement objective in the Living World strand, and is related to the material in the Teaching and Learning Guide for Biology, Ministry of Education, 2010 at <u>http://seniorsecondary.tki.org.nz</u>. 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 defining, using annotated diagrams, and giving characteristics of, or an account of, the life cycle of flowering plants.

Demonstrate in-depth understanding involves explaining the plant processes and biological ideas relating to the life cycle of flowering plants.

Demonstrate comprehensive understanding involves linking biological ideas relating to the life cycle of flowering plants. It may involve explaining, elaborating, applying, justifying, relating, evaluating, comparing and contrasting, or analysing.

The plant processes related to *the life cycle of flowering plants* will be selected from:

- asexual and sexual reproduction of flowering plants (including dispersal)
- germination and growth (including development such as flowering, primary and secondary growth and photosynthesis)

Biological ideas relating to *the life cycle of flowering plants* will be selected from:

- related life processes
- structural components involved with the plant processes
- the functioning of the structural components
- the overall functioning of the plant processes
- products or outcomes of the plant processes (including raw materials and requirements)
- the effect of environmental factors, such as light intensity, temperature, wind, moisture and oxygen, on the selected plant processes.

Assessment Specifications for this achievement standard can be accessed through the Biology Resources page found at <u>www.nzqa.govt.nz/ncea/resources</u>.

Achievement Standard - Science 1.9 (90948)

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 2018	Date version published 30 November 2014

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

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of	Demonstrate in-depth understanding	Demonstrate comprehensive
biological ideas relating to genetic	of biological ideas relating to genetic	understanding of biological ideas
variation.	variation.	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.

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 <u>www.nzqa.govt.nz/ncea/resources</u>.

Achievement Standard - Science 1.11 (90950)

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 2018	Date version published 30 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
Investigate biological ideas relating to interactions between humans and micro-organisms.	Investigate, in depth, biological ideas relating to interactions between humans and micro-organisms.	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 <u>http://seniorsecondary.tki.org.nz</u>.

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 <u>www.tki.org.nz/e/community/ncea/conditions-assessment.php</u>.

TERM ONE (11 weeks)			
Week	Teaching Programme	Achievement Standard	Assessment
1	Admin		
2	 1.11 Introduction Basic cell structure with organelle functions Enzyme structure and function 	Science 1.11 (90950) INTERNAL	
3	Bacteria – structure and life processes: Nutrition, respiration, excretion, growth, reproduction.		
	Fungi – structure and life processes Nutrition, respiration, excretion, growth, reproduction		
4	1.1 Disinfectant Formative (to support 1.11 understanding)		
5	 1.11 Internal Assessment Commences Students to enrol into turnitin. Hand out Research Component How to research and process data (Templates) 		Science 1.11 (90950) due Week 7 (after 3 hrs report
6	 1.11 Internal Assessment Research component 		writing in class) Via Electronic Submission on Turnitin
7	 1.11 Internal Assessment Reports due end of week (<i>electronic submission</i>) 		
8	 1.4 Life Cycle of Flowering Plants Introduction Plant vs animals review Plant classification, including monocotyledon vs dicotyledon Parts of a flowering plant and function Asexual reproduction - structures involved and advantages/disadvantages 	Biology 1.4 (90928) EXTERNAL	
9	 Sexual reproduction - structures involved and advantages/disadvantages Flower structure and functions Review Meiosis Pollination - compare and contrast self vs cross, wind vs animal pollination 		
10	 Fertilisation and Seed Dispersal Seed structure Seed Germination Conditions required for germination 		
11	 Photosynthesis - process and requirements Raw materials and products Structure and function of the leaf in PS Factors affecting plant growth Effect of environmental factors on PS 		

TERM TWO (10 weeks)			
Week	Teaching Programme	Achievement Standard	Assessment
1	САМР		
2	 Growth - Mitosis Primary growth - processes and benefits Secondary Growth - processes and benefits Compare and contrast primary and secondary growth 		
3	Revision Test		Biology 1.4 (90928) TEST
4	 1.2 Internal Assessment Commences Instructions handed out in class Research should be conducted out of class time 	Biology 1.2 (90926) INTERNAL	
5	 1.2 Internal Assessment Report writing component 		
6	 1.2 Internal Assessment Reports due start of week (Tuesday 6th June - <i>electronic submission</i>) 		Biology 1.2 (90926) due 8am Tuesday
	1.1 Internal Assessment Commences Biology 1.1 Introduction to fair testing	Biology 1.1 (90925) INTERNAL	6th June Via Electronic Submission on Turnitin
7	 1.1 Fair testing Formative task 		
8	 1.1 Fair testing Formative reflection - peer-marked and teacher-marked Time to clarify anything regarding the fair testing process 		
9	1.1 Internal Assessment Commences - Summative Assessment		Biology 1.1
10	1.1 Internal Assessment Continues- Summative Assessment		Week 10

TERM THREE (10 weeks)			
Week	Teaching Programme	Achievement Standard	Assessment
1	 1.9 Genetic Variation Introduction Cells and DNA Cells Plant vs Animal cells DNA Structure DNA replication 		
2	 DNA and proteins Cell Division Mitosis (review) Asexual reproduction 		
3	 Meiosis Importance of Meiosis to variation and survival of species Fertilisation and sex determination 		
4	 Monohybrid Cross Mendelian Genetics terms Relationship between chromosomes, genes, alleles and DNA 		
5	 Punnett squares and probable outcome Use of the Test cross Interpreting Pedigrees 		
6	 Importance of variation in phenotypes as adaptive features for population and species survival Revision 		
7	+ Revision (prelim counts as formative test)		
8	Prelims	Biology 1.4 (90928) and Science 1.9 (90948) PRELIMS	
9	Prelims		
10	Preliminary Exam Review		

TERM FOUR (8 weeks)			
Week	Teaching Programme	Achievement Standard	Assessment
1	+ Revision		
2	+ Revision		
3	+ Revision NCEA Examinations begin 9th November		
4	NCEA Examinations		
5	NCEA Examinations		
6	NCEA Examinations		
7			
8			