St Andrew's College

Year 11 Agriculture 2016

Student Information

Teaching programme

Details of the achievement standards and their specifications

Field Trips

Year 11 Agriculture

Course outline

Welcome to the STAC agriculture department, we hope that you have an enjoyable and productive year. These notes provide you with an overview of the course of study and other useful information.

Mrs Cox is your teacher. There is no official text book so it is important that you keep complete and tidy notes and store them in a secure folder. You will be provided with an Y11 agriculture work book to assist you with homework and revision.

Please ask questions or indicate when you do not understand –it is easier to gain the understanding at the time a topic is taught, it is difficult to gain understanding at a later date.

TEACHING PROGRAMME

There are four main topics:

SOILS

Soils determine what, and how well, plants can grow. Soils differ throughout NZ and you will find out how they are different and why some soils and termed “high fertility”. Soils are managed by farmers in order to improve fertility levels and you will study practices such as fertilising, irrigation, drainage, liming, etc.

PLANT PRODUCTION

Pasture will be the focus of your study but crops such as wheat and turnips will be used to explain principles of production. You will receive instruction on sowing crops, management practice that maximise yield and crop quality and the principles associated with grazing pasture and saving excess pasture as hay and silage.

ANIMAL PRODUCTION

Animals appear to have more appeal to agriculture students than plants. You will study the nutrition of animals – their digestive systems and common feeds. Reproduction is vital to animal production and you will study reproductive systems, breeding programmes and basic genetics. Keeping healthy is essential to their production and practices that combat the effects of harmful organisms and feeds will be discussed.

AGRICULTURE AND THE ENVIRONMENT

Society is becoming more critical of how agriculture impacts on the environment. This topic introduces you to the helpful and harmful practices carried out on farms, their impacts on the environment and how the harmful effects can be reduced. The 1.5 standard is under review and could be replaced with 1.4 which examines the geographical distribution of agriculture in NZ

ASSESSMENT

Assessment is only a part of the course of study but one that you and your parents are vitally interested in. It will determine if you are successful or not.

You will be assessed by way of achievement standards, a different method of assessment to what you have experienced in the past. Achievement standards tell you what is going to be assessed just like a driver's licence test.

You will be given a copy of all achievement standards against which you will be assessed. Keep them in your folder and read them. Understand what is required and the terms used in the standards. These terms will be used in the exams. The achievement standards covered in the course and types of assessment are shown below:

NUMBER	TITLE	CREDITS	I OR E
AS90918 (1.1)	Carry out a practical investigation	4	I
AS90157 (1.2)	Demonstrate practical skills in Ag	4	I
AS90919 (1.3)	DKO Soil management practices	4	E
AS90160(1.5)	DKO impact on the environment (under review NZQA)	3	I
AS90921 (1.6)	DKO Livestock management practices	5	E
AS90155 (1.7)	DKO pasture/crop management practices	4	I

The department complies with all the College regulations regarding achievement standard assessment. Please NOTE **no reassessment opportunities** are provided for any Year 11 Agriculture Internal. Appeals, absences and lateness of work will be dealt with as per College policy.

Careers Day: ***there is a tentative opportunity to attend the Get Ahead Ag Careers Day on Thursday 3rd March***

Field Trip – TBC most likely 5-8th September 2016

NCEA Exam – Monday 14th November 2016

FIELD TRIPS

We will visit the school farm at Cave week 7 of term three and at this time your practical skills standard will be assessed following a period of practice. Rural students should have some advantages but any urban student should be able to achieve the standard provided they listen to instructions and take the opportunities to acquire basic skills. As mentioned above this is a one-off opportunity so it is essential that all students attend this field trip and hopefully succeed in this part of the practical standard. Details of dates, equipment required, parental consent forms etc., will be circulated in advance. There will be a cost incurred based on food and transport expenses.

Two external achievement standards and **four internal** achievement standards make up this year's course work of 24 credits.

Internal Assessment

Four opportunities will be provided to complete internal Achievement Standards throughout the year and the credits for these will total 15 credits.

The internals will be spread throughout terms one, two and three. The material for assessment will be a combination of workbooks and in-class exams.

Achievement Standard 1.1

Subject Reference	Agricultural and Horticultural Science 1.1				
Title	Carry out a practical agricultural or horticultural investigation				
Level	1	**Credits**	4	**Assessment**	Internal
Subfield	Science				
Domain	Agricultural and Horticultural Science				
Status	Registered	**Status date**	17 December 2010		
Planned review date	31 December 2018	**Date version published**	20 November 2014		

This achievement standard involves carrying out a practical agricultural or horticultural investigation by planning the investigation, collecting and processing the data, and interpreting and reporting the findings.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Carry out a practical agricultural or horticultural investigation.	• Carry out an in depth practical agricultural or horticultural investigation.	• Carry out a comprehensive practical agricultural or horticultural investigation.

Explanatory Notes

1 This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, and based on the outcomes in the *Teaching and Learning Guide for Agricultural and Horticultural Science*, Ministry of Education, 2010 at http://seniorsecondary.tki.org.nz/.

2 An *investigation* is an activity covering a complete process: planning; collecting, recording, and processing data; interpreting; and reporting on an investigation. It will involve the student in the collection of primary data.

3 *A practical agricultural or horticultural investigation* involves:
- a statement of the purpose – this may be an aim, testable question, prediction, or hypothesis based on a scientific idea
- identification of a range for the independent variable or sample

- measurement of the dependent variable
- collecting, recording and processing data relevant to the purpose
- a conclusion based on interpretation of the processed data.

An in-depth practical agricultural or horticultural investigation involves:

- a method that describes a valid range for the independent variable or sample; a description of, and/or control of, other variables; the collection of sufficient data
- collecting, recording and processing of data to enable a trend or pattern (or absence) to be determined
- a valid conclusion based on interpretation of the processed data that links to the purpose of the investigation.

A comprehensive practical agricultural or horticultural investigation involves:

- a method that describes a valid range for the independent variable or sample; a description of, and control of, other variables; the collection of sufficient data with consideration of factors such as sampling, bias, and sources of error
- an evaluation that explains how the method used produced valid and reliable data to support a valid conclusion.

4 Conditions of Assessment related to this achievement standard can be found at http://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards.

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.

Consent and Moderation Requirements (CMR) reference 0233

Achievement Standard 1.2

Subject Reference	Agricultural and Horticultural Science 1.2				
Title	Demonstrate practical skills used in agricultural or horticultural production				
Level	1	**Credits**	4	**Assessment**	Internal
Subfield	Science				
Domain	Agricultural and Horticultural Science				
Status	Registered	**Status date**	17 December 2010		
Planned review date	31 December 2018	**Date version published**	20 November 2014		

This achievement standard involves the demonstration of practical skills associated with agricultural or horticultural production.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Demonstrate practical skills used in agricultural or horticultural production.	• Demonstrate practical skills used in agricultural or horticultural production with control.	• Demonstrate practical skills used in agricultural or horticultural production proficiently.

Explanatory Notes

1 This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, and based on the outcomes in the *Teaching and Learning Guide for Agricultural and Horticultural Science*, Ministry of Education, 2010 at http://seniorsecondary.tki.org.nz/.

2 Where animals are involved, *practical skills* 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.

3 *Demonstrate practical skills* involves:

- selection and use of appropriate equipment, materials and conditions when demonstrating the skill
- carrying out skills in a safe manner
- achieving the required outcome.

Demonstrate practical skills with control involves employment of a correct sequence of procedures that leads to effective use of equipment and materials.

Demonstrate practical skills proficiently involves fluent employment of a correct sequence of procedures that leads to effective and economical use of equipment and materials.

4 *Practical skills* could include but are not limited to: taking cuttings, pruning, cultivation, tool maintenance, tailing lambs, drenching sheep, moving a temporary electric fence, spraying weeds using a knapsack unit. Practical skills include aspects of a specific process eg the skill of pruning includes selection of equipment, cutting, and cleaning up.

5 Appropriate equipment could include but is not limited to tools such as: spade, fork, trowel, secateurs, mower, shearing handpiece, elastrators, ear marker, wire strainer, ear muffs, visors.

6 Appropriate materials could include but are not limited to: soil, potting mix, containers, sprays, seed, plants, fertilisers, animal remedies.

7 Appropriate conditions could include but are not limited to those affecting:
- soils – texture, structure, topography
- plants – nutrient deficiency, pest infection, stage of maturity
- animals – pregnancy, body condition, disease.

8 Fluent refers to the carrying out of a skill in a non-hesitant, confident manner and in a time-frame relevant to the skill.

9 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 (1.3)

Subject Reference	Agricultural and Horticultural Science 1.3				
Title	Demonstrate knowledge of soil management practices				
Level	1	**Credits**	4	**Assessment**	External
Subfield	Science				
Domain	Agricultural and Horticultural Science				
Status	Registered	**Status date**	17 December 2010		
Planned review date	31 December 2018	**Date version published**	20 November 2014		

This achievement standard involves demonstrating knowledge of soil components, their effects on the properties of soil and the management practices used to modify soil.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Demonstrate knowledge of soil management practices.	• Demonstrate in-depth knowledge of soil management practices.	• Demonstrate comprehensive knowledge of soil management practices.

Explanatory Notes

3 This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, and based on the outcomes in the *Teaching and Learning Guide for Agricultural and Horticultural Science*, Ministry of Education, 2010 at http://seniorsecondary.tki.org.nz/.

4 *Demonstrate knowledge* requires describing how soil management practices are carried out.

Demonstrate in-depth knowledge requires explaining why soil management practices or steps within practices are carried out.

Demonstrate comprehensive knowledge requires applying knowledge of soil management practices to given situations. This may involve comparing and/or contrasting, or justifying management practices.

3 *Soil management practices* are those carried out by the grower to improve plant growing conditions. These could include fertiliser application, liming, cultivation, adding compost material, drainage, irrigation, crop rotation, effluent application.

4 Explanations of soil management practices relating to soil properties and how these influence plant growth will refer, where relevant, to soil components, soil texture and soil structure.

5 Soil components include mineral matter (sand, silt, clay), organic matter, soil organisms (earthworms and micro-organisms), air and water.

6 Soil properties include physical, chemical and biological properties.

- Physical properties: drainage and aeration, water holding capacity and temperature.
- Chemical properties: nutrient retention, status and soil pH.
- Biological properties: those influenced by living organisms and organic matter eg decomposition of organic matter and disease status.

7 Soil texture refers to the proportions of sand, silt and clay.

8 Soil structure refers to the way soil particles are grouped together.

9 Assessment Specifications for this achievement standard can be accessed through the Agricultural and Horticultural Science Resources page found at www.nzqa.govt.nz/ncea/resources.

Achievement Standard (1.4)

Subject Reference	Agricultural and Horticultural Science 1.4				
Title	Demonstrate knowledge of the geographic distribution of agricultural and horticultural primary production in New Zealand				
Level	1	**Credits**	3	**Assessment**	Internal
Subfield	Science				
Domain	Agricultural and Horticultural Science				
Status	Registered	**Status date**	17 December 2010		
Planned review date	31 December 2018	**Date version published**	20 November 2014		

This achievement standard involves demonstrating knowledge of the geographic distribution of agricultural and horticultural primary production in New Zealand.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Demonstrate knowledge of the geographic distribution of agricultural and horticultural primary production in New Zealand.	• Demonstrate detailed knowledge of the geographic distribution of agricultural and horticultural primary production in New Zealand.	• Demonstrate comprehensive knowledge of the geographic distribution of agricultural and horticultural primary production in New Zealand.

Explanatory Notes

1 This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, and based on the outcomes in the *Teaching and Learning Guide for Agricultural and Horticultural Science*, Ministry of Education, 2010 at http://seniorsecondary.tki.org.nz/.

2 *Demonstrate knowledge* requires description of the geographic distribution of types of agricultural and horticultural primary production and of the factors influencing this distribution.

Demonstrate detailed knowledge requires explanation of the geographic distribution of types of agricultural and horticultural primary production and of the factors influencing this distribution.

Demonstrate comprehensive knowledge requires applying knowledge of the factors influencing geographic distribution of types of agricultural and horticultural primary production. This may involve comparing and/or contrasting specific factors influencing geographic distribution.

3 Factors influencing the *geographic distribution of primary production* refer to physical, climatic and market factors.

4 Physical factors may include topography and soil.

5 Climatic factors may include sunshine, rainfall, frost, wind and temperature.

6 Market factors may include labour availability, proximity and transport to market, access to airports and/or seaports and access to processing plants.

7 Types of *agricultural and horticultural primary production* may include apples, dairying, deer, fine wool, forestry, arable cropping, kiwifruit and grapes.

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 unit standard 7076.

Achievement Standard (1.6)

Subject Reference	Agricultural and Horticultural Science 1.6				
Title	Demonstrate knowledge of livestock management practices				
Level	1	**Credits**	5	**Assessment**	External
Subfield	Science				
Domain	Agricultural and Horticultural Science				
Status	Registered	**Status date**	17 December 2010		
Planned review date	31 December 2018	**Date version published**	20 November 2014		

This achievement standard involves demonstrating knowledge of livestock management practices.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Demonstrate knowledge of livestock management practices.	• Demonstrate in-depth knowledge of livestock management practices.	• Demonstrate comprehensive knowledge of livestock management practices.

Explanatory Notes

1 This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, and based on the outcomes in the *Teaching and Learning Guide for Agricultural and Horticultural Science*, Ministry of Education, 2010 at http://seniorsecondary.tki.org.nz/.

2 *Demonstrate knowledge* involves describing livestock management practices and related structural features and functions, and/or agricultural concepts.

Demonstrate in-depth knowledge involves explaining why livestock management practices or steps within practices are carried out. The explanation includes an understanding of related structural features and functions, and/or agricultural concepts.

Demonstrate comprehensive knowledge involves applying knowledge of livestock management practices to given situations. This includes comparing and contrasting or justifying management practices.

3 *Livestock management practices* are those related to feeding, breeding and health that affect livestock production.

4 Structural features and functions, and/or agricultural concepts relating to:
- feed management practices may include digestive systems (ruminant and non-ruminant); the nutritional value of feeds; digestibility; and feed requirements of maintenance, growth, pregnancy and lactation
- breeding management practices may include reproductive systems and basic genetics eg simple Mendelian genetics, variation, selection, artificial breeding of cattle
- health management practices may include the scientific principles of disease prevention and control eg quarantine, building resistance, early treatment.

5 Assessment Specifications for this achievement standard can be accessed through the Agricultural and Horticultural Science Resources page found at www.nzqa.govt.nz/ncea/resources.

Quality Assurance

5 Providers and Industry Training Organisations must have been granted consent to assess by NZQA before they can register credits from assessment against achievement standards.

6 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.

Consent and Moderation Requirements (CMR) reference 0233

Achievement Standard (1.7)

Subject Reference		Agricultural and Horticultural Science 1.7			
Title		Demonstrate knowledge of pasture/crop management practices			
Level	1	**Credits**	4	**Assessment**	Internal
Subfield	Science				
Domain	Agricultural and Horticultural Science				
Status	Registered	**Status date**	17 December 2010		
Planned review date	31 December 2018	**Date version published**	20 November 2014		

This achievement standard involves demonstrating knowledge of the management practices used in pasture/crop production.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Demonstrate knowledge of pasture/crop management practices.	• Demonstrate in-depth knowledge of pasture/crop management practices.	• Demonstrate comprehensive knowledge of pasture/crop management practices.

Explanatory Notes

1 This achievement standard is derived from *The New Zealand Curriculum*, Learning Media, Ministry of Education, 2007, and based on the outcomes in the *Teaching and Learning Guide for Agricultural and Horticultural Science*, Ministry of Education, 2010 at http://seniorsecondary.tki.org.nz/.

Demonstrate knowledge involves describing how pasture/crop management practices are carried out.

Demonstrate in-depth knowledge involves explaining why pasture/crop management practices or steps within practices are carried out.

Demonstrate comprehensive knowledge involves applying knowledge of pasture/crop management practices. This may involve comparing and contrasting or justifying management practices.

2 *Pasture* refers to grass/clover mix used to feed livestock.

3 *Crop* refers to a field-grown, annual crop eg an arable crop such as wheat, a forage crop such as kale, or a processed crop such as potatoes and field tomatoes.

4 *Pasture/crop management practices* are those management practices that impact on pasture/crop production, from establishment and maintenance through to harvesting, grazing, and conservation.

Conditions of Assessment related to this achievement standard can be found at http://ncea.tki.org.nz/Resources-for-Internally-Assessed-Achievement-Standards.