

## Year 9 and 10 Electives (Home)

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### Year 9 & 10 Electives

The electives offered in year 9 are of a semester duration, and electives offered in year 10 extend over both semesters.

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{mospagebreak title=Broadwater Studies (Year 9)}

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### Broadwater Studies (Year 9)

It is recommended that students have achieved a Sound Achievement in Core Science and an associated interest in our local marine environment.

Students study relationships between the animal and plants of the Broadwater and its islands and flats.

Topic areas covered include:

- Energy flow through water and sand flats
- Food webs and food chains in the Broadwater
- Substrate of sand flats and islands (practical work)
- Natural cycles which occur in our local area
- Pollutants and the effect of people on the aquatic environment
- Case study of specific organisms of the sand/mud flats.

Local excursions are also conducted to compliment and reinforce contextual applications of topics covered.

Broadwater Studies provides a pathway to senior Chemistry, Biology, Marine Studies and Marine & Aquatic Practices.

{mospagebreak title=Physiology (Years 9, 10)}

### Physiology (years 9 & 10)

This elective is also being offered as a semester elective in year 9 in 2009.

It is recommended that students have achieved a Sound achievement in Core Science.

Students will study a variety of mechanisms found in 'functioning bodies, including:

- Homeostasis.
- Nervous controls.
- Hormonal controls.
- Students will investigate some body systems associated with homeostatic control:
- Circulation system.
- Nervous system.

- Reproduction/development.
- Muscular movement and function.

Students may also be required to participate in various physical activities to measure and study body response in certain contexts.

Physiology provides a pathway to senior Biological Science.

{mospagebreak title=Agriculture and Animal Studies (Year 9)}

#### Agriculture & Animal Studies (year 9)

It is recommended that students have an interest in animals and plants.

Students will be exposed to general farm management practices as they relate to the School farm. This course is designed to give students the chance to experience a number of important agricultural industries. These include:

- Beef cattle.
- Sheep.
- Bees.
- Poultry .
- Some horticultural crops.

Students will gain an appreciation of the importance of Agriculture to the Australian economy. Agriculture & Animal Studies provides a pathway to Certificates I & II in Rural Operations.

{mospagebreak title=Farm Focus (Years 9, 10) }

#### Farm Focus (years 9 & 10)

In 2009, this elective is being offered as a semester elective in year 9, and as a year elective in year 10.

The areas of study will revolve around growing and marketing produce on the School farm and the marketing and running of the mobile animal nursery at nominated venues. Students will be study:

- The daily needs of animals
- Establishing and maintaining seasonal horticultural crops
- The publication of marketing material
- Constructing spreadsheets using industry standard software such as Excel
- Constructing and following a budget.

Students will develop and use marketing strategies to promote the animal nursery as a small business, and develop an understanding of the role of small business within the local community.

Farm Focus provides a pathway for further studies in Certificates I and II in Rural Operations.

{mospagebreak title=Chemistry (Year 10) }

#### Chemistry (yr 10)

It is recommended that students have achieved a Sound achievement in Core Science. Students will participate in the practical application of Chemistry concepts in a variety of contexts, covering topic areas including:

- Classify matter as atoms/molecules, elements/compounds, pure substances/mixtures and ions (cations/anions).
- Separate mixtures, using a variety of techniques.
- Make accurate observations and state measurements to an appropriate degree of accuracy, using scientific notation where appropriate.
- Find the densities of samples of matter, from experimentally-determined masses and volumes, or from second hand data.
- Convert between temperature units (°C and K).
- Calculate average atomic masses of various elements from given isotope data.
- Identify patterns of interactions using the Periodic Table.
- Explain the structure and properties of matter using models of atoms and molecules.
- Classify compounds as ionic or covalent/molecular.
- Name and write formulae for ionic and covalent compounds, common acids and bases.

Students will be expected to participate in the RACI national chemistry quiz, at a cost to each student of approximately \$3.50 &ndash; \$4.

Produces informed citizens relating to the structure and properties of a wide range of materials used in our community, especially in the Chemistry Laboratory.

This subject is a recommended pre-requisite for senior Chemistry and senior Biological science.

{mospagebreak title=Physics (Year 10)}

Physics (yr 10)

It is recommended that students have achieved a Sound achievement in Core Science. Students will participate in the practical application of Physics concepts in a variety of contexts, covering topic areas including:

- Quantities and units
- Forces and motion
- Simple components of force
- Motion (velocity and acceleration)
- Energy, work and power
- Electricity
- Electromagnetic spectrum
- Reflection and refraction
- Alternative energy

Students are also provided the opportunity to participate in local science competitions. This subject provides a pathway to senior Physics.

{mospagebreak title=Cert I in Rural Ops (Year 10)}

Certificate I in Rural Operations RTE10103 (year 10)

Students should have an interest in animals & agriculture.

A total of 6 units of competency must be completed :

- 1 compulsory unit RTC1801A &ndash; Prepare for Work
- 2 additional units from GROUP B :
  - o RTC1006A &ndash; Support nursery work
  - o RTC1201A &ndash; Maintain the workplace
  - o RTC1202A &ndash; Support landscape work
  - o RTC1301A &ndash; Operate basic machinery & equipment

- o RTC1302A &ndash; Assist with routine maintenance of machinery & equipment
- o RTC1701A &ndash; Follow basic chemical safety rules
- o RTD1501A &ndash; Support natural area conservation
- o RTE1001A &ndash; Support agricultural crop work
- o RTE1005A &ndash; Support horticultural production
- o RTE1101A &ndash; Support extensive livestock work
- o RTE1102A &ndash; Support intensive livestock work
- o RTE1103A &ndash; Support woolshed operations
- o RTE1104A &ndash; Support horse work
- o RTE1106A &ndash; Undertake basic shearing and crutching
- o RTE1106A &ndash; Shear sheep to novice level
- o RTE1601A &ndash; Support irrigation work
- o RTF1002A &ndash; Support agricultural work
- o RTF1004A &ndash; Support gardening work
- o RTF1007A &ndash; Support floricultural production.

3 additional units from Group B (above) or C which includes other units of competency from RTD02 Conservation & Land Management, RTE03 Rural Production, RTF03 Amenity Horticulture, and/or other endorsed Training Packages.

This course must be completed successfully to continue on to Certificate II in Rural Operations

{mospagebreak title=Marine Biology (Year 10)}

Marine Biology (year 10)

It is recommended that students have achieved a Sound achievement in Core Science or in a year 9 Science elective. The student will study:

#### WAVE STRUCTURE

- &bull; the identification & properties of different types of waves
- &bull; the physical effects of waves on beaches and marine life
- &bull; the processes involved in the formation of a wave

#### CANOEING

- &bull; types of craft
- &bull; relevant terminology
- &bull; equipment safety & maintenance
- &bull; environmental considerations
- &bull; navigation

- &bull; types of ropes and usage

#### DANGEROUS CREATURES

- &bull; identify different dangerous creatures and their habitats
- &bull; DRABC action plan
- &bull; types of treatment associated with bites, stings & puncture wounds inflicted by these creatures

#### SNORKELLING

- &bull; snorkelling skills
- &bull; identification and use of equipment
- &bull; basic fundamentals of snorkelling
- &bull; safe practices
- &bull; Boyle&rsquo;s Law
- &bull; Underwater communication.

Marine Biology provides a pathway to OP Marine Studies in Years 11 & 12 with direct entry to Griffith University Marine Biology faculty. The subject gives students the opportunity to practice skills and processes required for Senior Marine Studies.

{mospagebreak title=Discovery Science (Year 10)}

Discovery Science (year 10)

The Discovery Science elective is structured to cater for students who have an interest in the Sciences and current scientific issues.

Students study the following topics embedded in various contexts:

- History of scientific thought and discoveries
- Health & disease
- Energy and the environment
- Genetics and biotechnology
- Natural disasters
- Forensic science

This course is designed for students who have a broad interest in science and its effects on society and the environment. It may be used to complement other science and social science courses. The course will integrate a number of traditional science disciplines using a cross-curricular approach.

This subject provides students the opportunity to pursue active and informed citizenship whilst gaining a sound foundation for the study of senior science.