Biology
Units 1-2

Biology explores the dynamic relationships that exist between organisms and their interactions with the non-living world. It also explores the processes of life, from the molecular world of the cell to that of the whole organism. Students examine classical and contemporary research to examine how our knowledge has evolved in response to new evidence and discoveries.

Students need to have studied Units 1 and 2 Biology before attempting Units 3 and 4 Biology.

UNIT 1
In this unit students examine the cell as the structural and functional unit of life, including the requirements for sustaining cellular processes. Students focus on cell growth, replacement and death and the role of stem cells. They explore how systems function and consider the role homeostatic mechanisms play in maintaining an animal's internal environment.

LEARNING ACTIVITIES
Practical reports, completion of worksheets, problem solving tasks, text reading and questions, maintaining class notes and summaries. Plant and animal dissections are a part of Unit 1. An excursion to the Melbourne Zoo or Melbourne Museum may be included.

KEY SKILLS REQUIRED
Multimedia skills, data analysis, problem solving, laboratory techniques, microscope use and dissection skills.

ASSESSED TASKS
SACs based on practical activities and class work.

UNIT 2
In this unit students explore reproduction and the transmission of biological information from generation to generation and the impact this has on species diversity. They explain the inheritance of characteristics,and analyse patterns of inheritance, They study structural, physiological and behavioural adaptations that enhance an organism's survival.

LEARNING ACTIVITIES
Practical reports, research, completion of worksheets, problem solving tasks, text reading, text questions, maintenance of class notes and summaries and fieldwork excursions to a local bushland and coastal area.

KEY SKILLS REQUIRED
Data analysis, problem solving, laboratory techniques, microscope use, multimedia skills and an ability to prepare for tests and an examination.

ASSESSED TASKS
Field study report, SACs based on practical activities, class work and end of semester examination.

Biology

Units 3-4

Biology is a dynamic scientific discipline where it impacts on everyday life at the individual level. It can inform choices at the personal and at the societal level. It includes fields of biochemistry, neuroscience, genetics, evolutionary biology, behavioural science and cell and molecular biology including studies of genomics and proteomics.

UNIT 3
In this unit students explore the relationship between nucleic acids and proteins as key molecules in cellular processes. They examine the biological consequences of manipulating the DNA molecule and applying biotechnologies. Students explore the structure, regulation and rate of biochemical pathways, with reference to photosynthesis and cellular respiration. They explore how the application of biotechnologies to biochemical pathways could lead to improvements in agricultural practices.

LEARNING ACTIVITIES
Practical investigations, research, drawing and labelling diagrams, constructing tables and concept maps, text reading and answering questions

KEY SKILLS REQUIRED
Listening, reading biological texts, investigating and inquiring scientifically, applying biological information and understandings and communicating understanding (orally or in written form).

ASSESSED TASKS
Reports of three practical activities, a report of an investigation of an organism's response to a specific chemical or physical signal and a response to an issue or aspect related to the human immune response.

UNIT 4
In this unit students consider the continual change and challenges to which life on Earth has been, and continues to be, subjected to. They study the human immune system and the interactions between its components to provide immunity to a specific pathogen. They investigate the impact of various change events on a population's gene pool and the biological consequences of changes in allele frequencies. Students examine the evidence for relatedness between species and change in life forms over time and examine the evidence for trends in the human fossil record.

LEARNING ACTIVITIES
Practical investigations, research, modeling, concept maps, posters, text reading and answering questions.

KEY SKILLS REQUIRED
Investigating and inquiring scientifically, applying biological understandings to familiar and new contexts, analysing issues and implications relating to scientific and technological developments and communicating biological information and understanding.

ASSESSED TASKS
Reports of three practical activities, a report on evolutionary relationships and a response to an issue related to human intervention in evolutionary processes.

VCAA ASSESSMENT – The overall Study Score will consist of:
School Assessed Coursework (40%) and 2ó hour written examination in November (60%).