

Environmental Science

Units 1-2

Environmental Science provides students the scientific knowledge required to examine the issues currently being experienced by our planet's natural environment. Unit 1 focuses on the characteristics of a typical ecosystem and how we can measure and monitor changes within an environment. While in Unit 2 students explore the concepts of food/water security, pollution and associated impacts on Earth's four systems through global, national and local perspectives.

UNIT 1

In this unit students examine Earth as a set of four interacting systems: the atmosphere, biosphere, hydrosphere and lithosphere. Students apply a systems perspective when exploring the physical requirements for life in terms of inputs and outputs, and consider the effects of natural and human-induced changes in ecosystems.

LEARNING ACTIVITIES

Research projects, practical activities, fieldwork activities, text reading/responses and problem-solving activities.

KEY SKILLS REQUIRED

Collecting data from fieldwork and practical work, research and problem solving.

ASSESSED TASKS

Topic test, a survey project and a structured scientific poster according to the VCAA standard template..

UNIT 2

In this Unit, students explore how pollutants can be produced through natural and human activities and how pollutants can generate adverse effects for living and non-living things when released into ecosystems. Students examine how pollutant effects produced in one of Earth's four systems may have an impact on the other systems. They explore the factors that affect the nature and impact of pollution including pollutant sources, transport mechanisms and potential build-up due to long-term or repeated exposure. Students look further into the concept of food security and consider factors that enable individual, national and global security of resources.

LEARNING ACTIVITIES

Research reports, practical activities, fieldwork activities, text reading/responses and problem-solving activities.

KEY SKILLS REQUIRED

Collecting data from fieldwork and practical work, research tasks and problem solving.

ASSESSED TASKS

Topic tests, research projects and an end of semester written examination.

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Units 3-4

Environmental Science provides students the scientific knowledge required to examine the issues currently being experienced by our planet's natural environment. Unit 3 tries to answer the question '**How can biodiversity and development be sustained?**' Students will analyse the processes that threaten biodiversity and learn to apply scientific principles in evaluating biodiversity management strategies. Unit 4 investigates the question '**How can the impacts of human energy use be reduced?**' by looking at the social and environmental impacts of energy production and use on society and the environment. Students continue to explore the complexities of interacting systems of water, air, land and living organisms that influence climate.

UNIT 3

Students will need to analyse the processes that threaten biodiversity and apply scientific principles in evaluating biodiversity management strategies for a selected threatened endemic species. Students use a selected environmental science case study with reference to the principles of sustainability and environmental management to explore management at an Earth systems scale, including impact on the atmosphere, biosphere, hydrosphere and lithosphere.

LEARNING ACTIVITIES Research projects, practical activities, fieldwork activities, text reading/responses and problem-solving activities.

KEY SKILLS REQUIRED

Collecting and analysing data from fieldwork and practical work, research and problem solving.

ASSESSED TASKS

Evaluation of a case study relating to an endemic Victorian species considering sustainability principles and stakeholder perspectives, as well as a designed response to an environmental issues or challenge.

UNIT 4

Students examine scientific concepts and principles associated with energy, compare efficiencies of the use of renewable and non-renewable energy resources, and consider how science can be used to reduce the impacts of energy production and use. They distinguish between natural and enhanced greenhouse effects and discuss their impacts on living things and the environment, including climate change. Students will produce their own primary data on current environmental, climate and energy issues and present their findings.

LEARNING ACTIVITIES

Research reports, practical activities, fieldwork activities, text reading/responses and problem-solving activities.

KEY SKILLS REQUIRED

Collecting and analysing data from fieldwork and practical work, research and problem solving.

ASSESSED TASKS

Presentation of recommendations on primary data relating to the production of sustainable energy, as well as the application of Earth systems thinking to evaluate an issue and a scientific poster based off of locally sourced primary data.

VCAA ASSESSMENT – The overall Study Score will consist of:

School Assessed Coursework Unit 3: 20%, School Assessed Coursework Unit 4: 30%, written examination in November: 50%.