

Marine Science 2019 v1.2

General Senior Syllabus

MERIDAN STATE COLLEGE - MRN (possible 4 QCE credits)

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www.qcaa.qld.edu.au/senior/senior-subjects

1 Course overview

1.1 Introduction

1.1.1 Rationale

At the core of all science endeavour is the inquiry into the nature of the universe. Science uses a systematic way of thinking, involving creative and critical reasoning, in order to acquire better and more reliable knowledge. Scientists recognise that knowledge is not fixed, but is fallible and open to challenge. As such, scientific endeavour is never conducted in isolation, but builds on and challenges an existing body of knowledge in the pursuit of more reliable knowledge. This collaborative process, whereby new knowledge is gained, is essential to the cooperative advancement of science, technology, health and society in the 21st century.

Tertiary study in any field will be aided by the transferable skills developed in this senior Science subject. It is expected that an appreciation of, and respect for, evidence-based conclusions and the processes required to gather, scrutinise and use evidence, will be carried forward into all aspects of life beyond the classroom.

The purpose of senior Science subjects in Queensland is to introduce students to a scientific discipline. Students will be required to learn and apply aspects of the knowledge and skill of the discipline (thinking, experimentation, problem-solving and research skills), understand how it works and how it may impact society.

Upon completion of the course, students will have an appreciation for a body of scientific knowledge and the process that is undertaken to acquire this knowledge. They will be able to distinguish between claims and evidence, opinion and fact, and conjecture and conclusions.

In each of the senior Science subjects, students will develop:

- a deep understanding of a core body of discipline knowledge
- aspects of the skills used by scientists to develop new knowledge, as well as the opportunity to refine these skills through practical activities
- the ability to coordinate their understandings of the knowledge and skills associated with the discipline to refine experiments, verify known scientific relationships, explain phenomena with justification and evaluate claims by finding evidence to support or refute the claims.

Marine Science provides opportunities for students to study an interdisciplinary science focusing on marine environments and the consequences of human influences on ocean resources. In Unit 1, students develop their understanding of oceanography. In Unit 2, they engage with the concept of marine biology. In Unit 3, students study coral reef ecology, changes to the reef and the connectivity between marine systems. This knowledge is linked in Unit 4 with ocean issues and resource management where students apply knowledge from Unit 3 to consider the future of our oceans and techniques for managing fisheries. Students will learn valuable skills required for the scientific investigation of questions. In addition, they will become citizens who are better informed about the world around them and who have the critical skills to evaluate and make evidence-based decisions about current scientific issues.

Marine Science aims to develop students’:

- sense of wonder and curiosity about the complexity of marine life and a respect for all living things and the environment
- appreciation of global stewardship, which involves an understanding of the value systems associated with the marine environment and its importance in maintaining biological support systems
- interpretation of scientific evidence to make judgments and decisions about the effective management of the marine environment
- investigative skills that can be used to evaluate environmental issues and their potential to affect the fragility of marine environments
- understanding of how marine systems interact and are interrelated; the flow of matter and energy through and between these systems, and the processes by which they persist and change
- understanding of major marine science concepts, theories and models related to marine systems at all scales, from species to ecosystem
- appreciation of how marine knowledge has developed over time and continues to develop; how scientists use marine science in a wide range of applications; and how marine knowledge influences society in local, regional and global contexts
- ability to plan and carry out fieldwork, laboratory and other research investigations, including the collection and analysis of qualitative and quantitative data and the interpretation of evidence
- ability to use sound evidence-based arguments creatively and analytically when evaluating claims and applying biological knowledge
- ability to communicate marine science understanding, findings, arguments and conclusions using appropriate representations, modes and genres.

Assumed knowledge, prior learning or experience

The Australian Curriculum: Science P–10 is assumed knowledge for this syllabus.

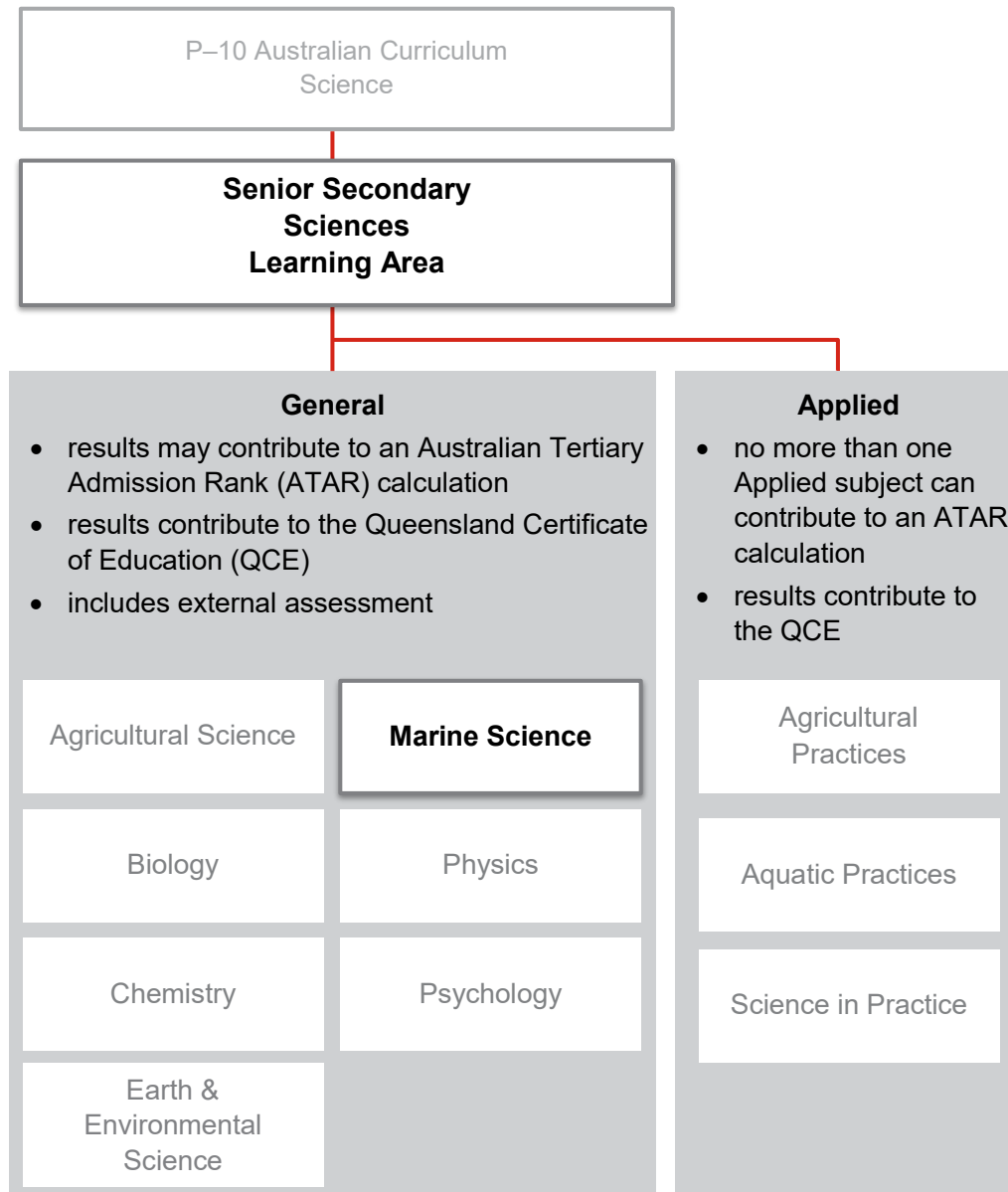
Pathways

Marine Science is a General subject suited to students who are interested in pathways beyond school that lead to tertiary studies, vocational education or work. A course of study in Marine Science can establish a basis for further education and employment in the fields of marine sciences, biotechnology, aquaculture, environmental rehabilitation, biosecurity, quarantine, conservation and sustainability.

1.1.2 Learning area structure

All learning areas build on the P–10 Australian Curriculum.

Figure 1: Learning area structure



1.1.3 Course structure

Marine Science is a course of study consisting of four units. Subject matter, learning experiences and assessment increase in complexity from Units 1 and 2 to Units 3 and 4 as students develop greater independence as learners.

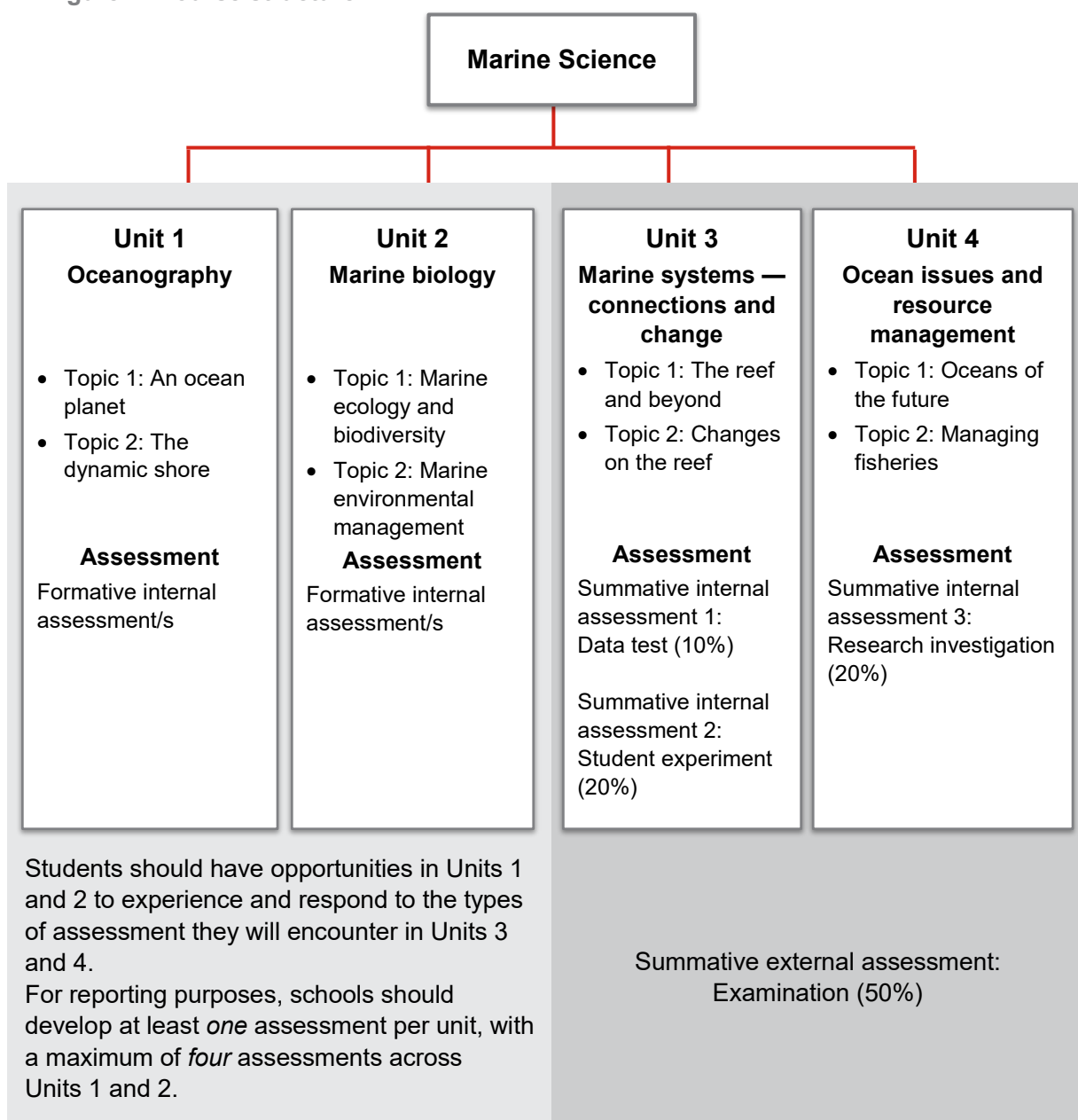
Units 1 and 2 provide foundational learning, which allows students to experience all syllabus objectives and begin engaging with the course subject matter. Students should complete Units 1 and 2 before beginning Units 3 and 4.

Units 3 and 4 consolidate student learning. Only the results from Units 3 and 4 will contribute to ATAR calculations.

Figure 2 outlines the structure of this course of study.

Each unit has been developed with a notional time of 55 hours of teaching and learning, including assessment.

Figure 2: Course structure



Additional Requirements

Study Requirements	Special Requirements
<p>This is a General subject and as such requires a significant commitment of time and energy to complete the course successfully. This includes:</p> <ul style="list-style-type: none">• Three lessons per week face to face teaching.• Individual/study group/tutorial sessions 1-2 hours per week. <p>Students may be required to complete experimental work in their own time in order to complete their assessment.</p>	<p>Students must have access to the internet at home or at a local library. Students must also be able to borrow texts from the school library at all times.</p> <p>Due to the large amount of technologically based assessment and classwork it is recommended that students are participants in the College's BYOx program.</p>