



SAMPLE COURSE OUTLINE

MARINE AND MARITIME STUDIES GENERAL YEAR 11

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Sample course outline

Marine and Maritime Studies – General Year 11

Unit 1

It is recognised that the order in which the syllabus is delivered may vary to suit the weather constraints required to undertake some of the water activities.

Science Inquiry Skills

Science Inquiry Skills align with the Science Understanding and Science as a Human Endeavour content of the unit and are integrated into the learning experiences.

- construct questions for investigation; propose hypotheses; and predict possible outcomes
- plan investigations, including the procedure/s to be followed, the materials required, and the type and amount of data to be collected; assess risk and address ethical issues associated with these methods
- conduct investigations, including using ecosystem surveying techniques, including line transects, safely, competently and methodically for the collection of reliable data
- represent data in meaningful and useful ways; organise and analyse data to identify trends, patterns and relationships; qualitatively describe sources of measurement error and inconsistencies in data; and use evidence to make and justify conclusions
- interpret a range of scientific and media texts, and evaluate the conclusions by considering the quality of available evidence
- construct and use appropriate representations, including classification keys to communicate conceptual understanding, solve problems and make predictions
- communicate scientific ideas and information for a specific purpose, using appropriate language, nomenclature and formats, including scientific reports

Semester 1 – Snorkelling and diving

Week	Key teaching points
1–2	Structure of the syllabus <ul style="list-style-type: none"> • course outline • assessment outline Marine: Oceanography <ul style="list-style-type: none"> • definition of oceanography • properties of seawater and methods of water testing • wind formation Task 1: Science inquiry – Properties of seawater
3–5	Marine: Oceanography <ul style="list-style-type: none"> • ocean tides, waves and currents • features of Western Australian ocean currents • methods used to measure surface current speed and direction and tides Task 2: Test – Oceanography
6–7	Marine: Environmental and resource management <ul style="list-style-type: none"> • issues related to Western Australian fisheries • rules and regulations relating to Western Australian recreational fishing and commercial fisheries • an increase in the number of recreational fishers, together with an increased use of technology have impacted on the stocks of offshore demersal scalefish. Regulatory measures are used to protect stocks, and long-term sampling programs are undertaken so that predictions can be made about fish numbers in the future (SHE) Task 3: Extended response – Marine fisheries management
8–10	Maritime: Design <ul style="list-style-type: none"> • basic design process • marine construction materials – properties, purpose and uses • effects of sunlight, water, salt, oxygen and living organisms on construction materials Task 4: Science inquiry – Factors affecting corrosion of steel
11–12	Maritime: Small craft <ul style="list-style-type: none"> • nautical terminology • factors affecting buoyancy and stability • design, construction and use of pulley systems Task 5: Practical – Design and construction of pulley systems Task 6: Test – Maritime design and small craft
13–16	Snorkelling and diving <ul style="list-style-type: none"> • snorkelling equipment • pre- and post-dive care of and maintenance of equipment • buddy responsibilities • hand signals • entry and exit techniques relevant to the environment • underwater swimming • finning – technique, direction control • mask defogging and clearing a partially flooded mask • snorkel breathing and snorkel clearing • duck diving, safe descending and ascending technique • maritime communication systems, including underwater hand signals, are based on international conventions, and are subject to change through debate and resolution (SHE) • snorkelling skills Task 7: Practical – Presentation on the function and use of snorkelling equipment Task 8: Practical – Snorkelling skills assessment

Unit 2

Science Inquiry Skills

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Semester 2 – Snorkelling and diving

Week	Key teaching points
1–4	<p>Marine: Oceanography</p> <ul style="list-style-type: none"> location and characteristics of ocean zones adaptations of marine organisms living within these zones classification of marine organisms based on habitat and motility identification and classification of Western Australian marine organisms classification systems have been developed to allow scientists to identify and communicate information about organisms. Classification systems are reviewed based on new information and evidence (SHE) food chains and webs relevant to the ocean zones studied <p>Task 9: Scientific skills – Classifying Western Australian marine organisms Task 10: Test – Oceanography</p>
5–6	<p>Marine: Environmental and resource management</p> <ul style="list-style-type: none"> marine-protected areas, parks, reserves and sanctuary zones roles and responsibilities of Western Australian marine resource management organisations techniques in conjunction with measurement of abiotic factors, can be used so that a complete picture of the health of an ecosystem and its resilience to change may be obtained (SHE) a world-wide sighting and photo-identification system has been created which enables people to act as citizen scientists, assisting in the conservation of whale sharks and enhancing knowledge of the demographics of this species (SHE) <p>Task 11: Investigation – Case study to illustrate roles and responsibilities of Western Australian marine resource management organisations</p>
7–8	<p>Maritime: Design</p> <ul style="list-style-type: none"> design features of marine or maritime equipment methods of maritime construction
9–10	<p>Maritime: Small craft</p> <ul style="list-style-type: none"> features of small craft propulsion systems steering and gear systems <p>Task 12: Extended response – Compare and contrast outboard and inboard motors Task 13: Test – Maritime design and small craft</p>
11–14	<p>Snorkelling and diving</p> <ul style="list-style-type: none"> underwater vision underwater hearing effects of diving on the body e.g. barotraumas, heat loss, ear pressure snorkelling and diving requires knowledge of the effect of pressure on the body at depth in order to prevent barotraumas. Diving equipment is designed to enhance the safety and comfort of the user. Materials are chosen, and equipment designed, to improve efficiency and safety (SHE) <p>Task 14: Practical – Light box investigation of refraction of light and colour</p>
15–16	<p>Snorkelling and diving</p> <ul style="list-style-type: none"> Archimedes' principle and buoyancy tired buddy tow cramp release ditch and recovery of an object – weight belt <p>Task 15: Practical – Snorkelling and diving skills assessment Task 16: Test – The science of snorkelling theory test</p>

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Semester 1 – Sailing

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3–5	Marine: Oceanography <ul style="list-style-type: none"> • ocean tides, waves and currents • features of Western Australian ocean currents • methods used to measure surface current speed and direction and tides Task 2: Test – Oceanography
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11–12	Maritime: Small craft <ul style="list-style-type: none"> • nautical terminology • factors affecting buoyancy and stability • design, construction and use of pulley systems Task 5: Practical – Design and construction of pulley systems Task 6: Test – Maritime design and small craft
13–16	Sailing <ul style="list-style-type: none"> • the history of sail and its significance • types of sailing craft • parts of a sailing dinghy • sail design • machines in sail boats and forces acting on a sail boat • Bernoulli's principle and sails Task 7: Practical – Design and construction of model sail craft Task 8: Test – Sailing theory test

Unit 2

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Semester 2 – Sailing

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5–6	<p>Marine: Environmental and resource management</p> <ul style="list-style-type: none"> • marine-protected areas, parks, reserves and sanctuary zones • roles and responsibilities of Western Australian marine resource management organisations • techniques in conjunction with measurement of abiotic factors, can be used so that a complete picture of the health of an ecosystem and its resilience to change may be obtained (SHE) • a world-wide sighting and photo-identification system has been created which enables people to act as citizen scientists, assisting in the conservation of whale sharks and enhancing knowledge of the demographics of this species (SHE) <p>Task 11: Investigation – Case study to illustrate roles and responsibilities of Western Australian marine resource management organisations</p>
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11–14	<p>Sailing</p> <ul style="list-style-type: none"> • knots and rope skills • boat preparation and launching • centre board position • sails and sailing manoeuvres <p>Task 14: Practical – Knot board Task 15: Practical – Knot tying test</p>
15–16	<p>Sailing</p> <ul style="list-style-type: none"> • disabled sail craft • diagnose and repair common equipment problems and breakages • skipper’s responsibilities • IALA buoyage <p>Task 16: Practical – Sailing skills assessment</p>