

Year 11 – Marine Science – 2019

New Curriculum (ATAR)

Term 1		Term 2		Term 3		Term 4	
W1 UNIT 1, Topic 1		W1 UNIT 2, Topic 1		W1	Subject matter: Biodiversity, Adaptations	W1 Revision (Unit 2)	
							Subject matter: Biotic components
	Introduction (31) Water, Carbon, Oxygen cycles (3, 156-157)		Types of diversity-genetic, species, ecosystem (38) 3 characteristics of Marine Biodiversity (39) Ecosystems (40)		Subject matter: Abiotic components		
W2 PRAC: Convection experiment (suggested)	Bathymetric features of ocean floor (1, 38-39) Apply models to understand geological features (2, 36-37)	W2 Hand out IA2	Connectivity (41, 116-117) Factors the lead to a loss of biodiversity (42)	W2 UNIT 2, Topic 2	Arguments for preserving species (80)	W2 Revision (Unit 1)	
	Chemical properties of water (6, 32-34) Surface ocean currents (4, 50- 52)		Simpson's diversity index (43) Determining biodiversity indices (44, 45)		Value of Marine Species (81)		
	Distribution of water (5, 54-56, 62-64)		Ecosystem resilience, disturbance and recovery (46)		Role of stakeholders (82)		
W3 PRAC: Investigate thermoclines, salinity, stratification (suggested)	Thermocline Pycnocline, Halocline (7, 46-47) PRAC	W3	Abiotic factors, water and air (55, 44-45) Abiotic factors (56)	W3 Hand out IA3	Specific value systems stakeholders use (83)	W3 Block Exams	
	Thermoclines produce oxygen minimum (8) Thermohaline- salinity and water density (9)		Limiting factors (57) Assess data to identify organisms tolerance limit (58)		Recognise issues affecting a selected marine system (84)		
	Catch up		Zonation (59)		Ecosystem resilience, disturbance and recovery (85)		
W4 UNIT 1, Topic 2	Tides (13, 48-49) How are coastlines shaped (12)	W4	IA2 lesson	W4	IA3 lesson	W4 Y11/Y12 Camp	
	Sand budget and longshore drift (14) Refraction, reflection, and diffraction (15)		IA2 lesson		IA3 lesson		
	Movement of water (16) Processes of coastal erosion (17)		IA2 lesson		Precautionary principle (86)		
W5 PRAC: Conduct beach profile and use sand sifts to decide sphericity (suggested)	PRAC	W5 PRAC: Population dynamics and assessing abiotic components (Mandatory)	IA2 lesson	W5	Criteria informing decisions (87)	W5 UNIT 3, Topic 1	Introduction
	Catch up		IA2 lesson		Criteria informing decisions (87) Representative areas Program (RAP) Mapping - GBRMPA		Distribution of coral reefs (17, 84-85) Abiotic factors that have affected corals over time (18)
	Atmosphere, oceans and weather (18) Properties of waves (20)		Marine Science Camp 21, 22, 23 May (60-76)		Criteria informing decisions (87) Representative areas Program (RAP) Mapping - GBRMPA		Corals and geological record (20, 93, 168-170) GBR shaped by changes in sea levels (21)
W6 PRAC: wave tank experiment (suggested)	Wave formation (19) PRAC	W6	IA2 lesson	W6	Strategies and techniques for marine planning (88)	W6	Reef structure (fringing, platform, ribbon, etc.) (22, 92-94) Zonation within a reef cross-section (23, 95)
	Catch up		IA2 lesson		IA3 lesson		Recall soft and hard corals (24, 86-88) Anatomy of a typical reef forming hard coral (26, 90-91)
	Pollution (25), Point source and non-point source pollution (28), Monitoring water pollution (29) (small prac see book)		IA2 lesson		IA3 lesson		Classify a specific coral using a relevant identification key (25)
W7	Biochemical oxygen demand (BOD) (30) BOD indirectly assess water pollution (31)	W7 IA2 Draft	Biotic components of an ecosystem (47, 118-119)	W7	Evaluate marine environmental planning and management processes (89)	W7	Skeleton is built with calcium and carbonate ion (27, 90-91) Describe the process of coral feeding (28, 86)
	Eutrophication (32) Land management practices (33)		Categorising biotic interactions (48)		Evaluate marine environmental planning and management processes (89)		Symbiotic relationships in a coral colony (29, 89) Life cycle stages of a typical reef-forming hard coral (30,82)
	Catch up		Classifying organisms in trophic levels (49)		Evaluate marine environmental planning and management processes (89)		Larval dispersal, site selection, settlement and recruitment (31, 82)
W8 PRAC: Water quality measurements (Mandatory)	Indirect method of measuring pollution levels (34) Recall a bio indicator (35)	W8	Assess population data (52-54)	W8	Evaluate marine environmental planning and management processes (89)	W8	Growth of reefs is dependent on accretion processes (32)
	PRAC: Temperature, pH, DO, DOsat., conductivity, salinity, Nitrogen, Phosphorous, Turbidity		Assess population data (52-54)		IA3 lesson		Assess data that affect the distribution of coral reefs (33)
	PRAC: Temperature, pH, DO, DOsat., conductivity, salinity, Nitrogen, Phosphorous, Turbidity		Matter cycling through food webs (50)		IA3 lesson		Revision/ Catch up/ Practice test
W9 IA1 - DATA TEST	Revision	W9 PRAC: Identify structures of organisms (suggested)	Categorise different groups of animals (77)	W9	IA3 lesson	W9	Holidays
	IA1 - DATA TEST		PRAC: Identify structures of Molluscs (cephalopods), crustaceans, cnidarians and vertebrates		IA3 lesson		Holidays
	IA1 - DATA TEST		Identify and classify adaptations (78)		IA3 lesson		Holidays
W10	Coastal engineering (21) Longitudinal studies (22)	W10 IA2 DUE DATE	Role of adaptation in enhancing organisms survival (79)	W10 IA3 DUE DATE	Reflection/ Study techniques	W10	Holidays
	Succession (23) Population density (24)		Review and reflect on term- that which was not covered sufficiently can be taught again in week 1 of next term		Reflection/ Study techniques		Holidays
	Limited knowledge of oceans (10), EEZ (11) Sustainable management practice & education (26, 27)		Review and reflect on term- that which was not covered sufficiently can be taught again in week 1 of next term		Reflection/ Study techniques		Holidays

Year 12 – Marine Science – 2020

New Curriculum (ATAR)

Term 1		Term 2		Term 3		Term 4	
W1 *processes in this sub-topic interact to have an overall net effect, i.e. they do not occur in isolation*	Corals are habitat formers or ecosystem engineers (64)	W1	The effect of ocean acidification on sea water (103)	W1	IA3 lesson	W1 Revision (Unit 4)	
	Habitat complexity influences diversity of other species (65)		Explain how the carbonate compensation depth (CCD) varies (104)		IA3 lesson		
			Ocean's capacity to absorb carbon dioxide is changing (105)		IA3 lesson		
W2 *processes in this sub-topic interact to have an overall net effect, i.e. they do not occur in isolation*	Connectivity between ecosystems (66) (116-117) (118-119) (100-101)	W2 Hand out IA2 PRAC: ***** (Mandatory)	PRAC: Investigate the effects an altered ocean pH has on marine carbonate structures (111)	W2	IA3 lesson	W2 Revision (Unit 3)	
	Fish life cycles are integrated within habitats (67)		IA2 lesson		IA3 lesson		
	How fish benefit coral reefs (68)		IA2 lesson		IA3 lesson		
W3 *processes in this sub-topic interact to have an overall net effect, i.e. they do not occur in isolation*	Ecological tipping points and coral reefs (69)	W3	IA2 lesson	W3	IA3 lesson	W3 Revision (Units 3/4)	
	Hysteresis and reef resilience (70)		Carbonate ions have an implication for the development of shell forming organisms (106)		IA3 lesson		
	Assess the diversity of a reef system (71)		Interpret trends in data in relation to the carbonate system and changes in pH (107)		IA3 lesson		
W4 *processes in this sub-topic interact to have an overall net effect, i.e. they do not occur in isolation*	Reef diversity data to determine rank abundance (72)	W4	Distinguish what laboratory-scale and field-based experiments demonstrate about ocean acidification (108)	W4 UNIT 4, Topic 1 IA3 DUE DATE	Use the arguments for preserving species and habitats (113) Criteria used to design protected marine areas (114)	W4 Revision Block Exams	
	Coral cover has changed on a reef over time (73)		Potential consequences of ocean acidification for coral reef ecosystems (109)		Management strategies used to support marine ecosystem health (115)		
	Factors that reduce coral cover are linked to water quality (74)		Resilience may partially offset ocean acidification responses in the short term (110)		Evaluate the success of a named protected marine area (116)		
W5	Catch up	W5	IA2 lesson	W5	Restoration of ecosystems and their relative abilities to respond (117)	W5 Revision Block Exams	
	Revision		IA2 lesson		Evaluate future scenarios for a named marine system (118)		
	Revision		IA2 lesson		Compare historical geological data (119)		
W6 IA1 - DATA TEST	IA1 - DATA TEST	W6 IA2 DUE DATE	IA2 lesson	W6	Ocean acidification has indirect consequences (120)	W6 Revision Block Exams	
	IA1 - DATA TEST		IA2 lesson		Factors between the atmosphere and the oceans that drive weather patterns and climate (121)		
	Catch up		IA2 lesson		Average global temperature increases impact on marine environments (122)		
W7 UNIT 3, Topic 2	Results from models to determine potential reef futures (89)	W7 UNIT 4, Topic 2	Term fishery has a variety of meanings (125) Significance of fish as the major source of protein (127) World's fisheries are in decline (128)	W7 UNIT 4, Topic 2	Identify the Australian Fishing Zone (AFZ) (147) Australian edible seafood export and import product (149)	W7 Revision Block Exams	
	Anthropogenic factors affecting the distribution of coral (90) Coral bleaching or ocean acidification not in coral cores (92)		Distribution of fish populations (129)		Status of Australian fisheries (148)		
	Specific pressures affecting coral reefs (91)		Assess rugosity data and link this to fish diversity (130)		High amount of seafood in Australia is imported (150) Australian Fisheries have an economic value (151)		
W8	Concept of bleaching in terms of Shelford's law of tolerance (93)	W8	Bioaccumulation through the food web into edible seafood (131)	W8	Monitoring and control of TAC and fixed quotas (152)	W8	
	Thermal threshold data for the Great Barrier Reef (94)		Alteration of thermal regimes is and the distribution of fish (132)		Dynamic spatial zoning fish management (153)		
	Ecological effects on other organisms after bleaching (95)		Compare study of a fish population in decline and recovery (133)		Precautionary principle applied to ecosystem management (154)		
W9 PRAC: ***** (Mandatory) Marine science camp	Conditions necessary for recovery from bleaching (96) Responses to bleaching events between two regions (97)	W9 PRAC: Lincoln Index capture-recapture (Mandatory)	Interpret fish population data using the Lincoln index (134)	W9	Current state of aquaculture and food security (155)	W9	
	Interpret data demonstrates that coral cores can act as a proxy for the climate record (98)		PRAC: Apply the Lincoln index in a modelled capture-recapture scenario (140-146)		Changes in fisheries practices over the past 10 years (156)		
	PRAC: Examine connectivity within or between habitats by investigating the impact of water quality on reef health		Factors that determine reliability of population data (135) International agreement managing migratory species (136)		Identify attributes of an aquaculture species (157)		
W10	Reason for differences between ocean pH and freshwater (99)	W10 Hand out IA3	Maximum sustainable yields and maximum economic yields (137)	W10	Carrying capacity of an aquaculture system (158)	W10	
	Carbonate system is linked to geological processes and operates on geological timescales (100)		Shift from MSY to ecosystem-based fisheries management (138)		Contrast different aquaculture systems (159)		
	Increased atmospheric carbon dioxide (101) CO2 influences on ocean chemistry (102)		Value of marine protected areas to sustainability (139)		Understand issues with aquaculture (160)		

