

MARINE & COASTAL STUDIES
@ UNSW

**Program for the
BSc in Marine Science,
B. AdvSci.(Marine)**

THE UNIVERSITY OF
NEW SOUTH WALES



Bachelor of Science (Marine Science) Program

In the BSc (3970) program there is a practical and exciting blend of theory, laboratory and field studies, with a depth and scope to allow you to specialize in one of three Major plans of study; Marine Biology, Physical Oceanography, and Marine Geology.

Students wishing to enroll in the BSc in Marine Science must select UAC preference 429000.

Information regarding the overall program, plus the Plan of Study outlining the specific sequence of subjects that must be undertaken for the BSc in Marine Science is attached

All enrolment should be directed to the Science Course Office located in the Webster Building (Ground Floor, Map Ref: G14)

Phone: 9385.6125

Fax: 9385.6127

Alternatively you may call the First Year BEES Office (School of Biological, Earth & Environmental Sciences) which is open Monday to Friday from 9am to 5pm.

Room G27

1st Floor, Biological Sciences Building (Map Ref: D27)

Phone: 9385.2015

Fax: 9385.2202

Email: marsci@unsw.edu.au

www.marine.unsw.edu.au

We look forward to seeing you in 2004!

Assoc. Prof. Iain Suthers,
Coordinator of MarSci @ UNSW,
School of Biological, Earth and Environmental Sciences

BSc in Marine Science

Information for Enrolling Undergraduates

Individual courses which make up the degree are either 6 or 3 units of credit (UOC; one UOC ~ one contact hour per week).

Program 3970:

Students will attempt up to 48 UOC per year. The degree will comprise 144 UOC including 12 UOC of General Education in Stages 2 and 3.

The undergraduate degree is based on a plan which enables greater freedom of choice and gives students the ability to specialize or diversify in their studies. Each student will undertake at least one 'major' together with a 'minor' or a second 'major' (see separate details).

A major is a defined sequence of courses at Stage (or Level) 2 and 3, which will entail the completion of 48 UOC. If two majors are completed then a limited degree of overlap (18 UOC) is permitted.

A minor comprises 24 UOC in a single discipline at levels 2 and 3.

Program 3990 Advanced Science:

The Advanced Science degree is similar to 3970 but includes a 4th or honours year, thus totalling 192 UOC (4 * 48 UOC per year, including 12 UOC of General Education in Stages 1, 2 or 3). There are also specific courses only available to students in Advanced Science.

BSc/BA double degree:

The double degree is generally over 4 years comprised of at least 84 UOC of a major in science, 84 UOC of a major in Arts and there is no General Education requirement. This degree may lead onto a 5th or honours year in science or arts.

Double degrees in Adv. Sci/Arts or Environmental Science/Arts have the honours year in science, not arts.

Pre-requisites/Assumed knowledge

Pre-requisites are specified for some level 2 and 3 courses. Pre-requisites are implicit in the definition of majors which require completion of a specified sequence of courses.

Some courses will not list pre-requisites but will have a statement of assumed knowledge. This defines the level of knowledge required to successfully complete a course. The onus is on the student to decide whether or not that level of knowledge has been attained. For example, if you have not completed the course specified but have read widely in the area concerned you might decide that you will be able to cope. The course will be taught on the basis of assumed knowledge and no special consideration will be given to students who lack the assumed knowledge, thus there may be a risk of failure. The shift from pre-requisites to assumed knowledge allows for more flexibility of choice but places greater responsibility for decisions on students.

Marine Science Undergraduate Study

Subject Description (Some subjects that appear in this section may be restricted to students for whom the subject comprises a compulsory part of their program).

Marine Science Level II

MSCI2001

Introductory Marine Science

Staff Contact: Dr Emma Johnston

UOC6 HPW4 S1 or S2

Notes: Fieldwork

Ocean basins, sediments, properties of seawater, ocean circulation, coasts and coastal processes. Marine biology and ecology, primary and secondary productivity. Personal expenses will be incurred.

MSCI2051

Coral Reefs: Environment and Ecology

Staff Contact: Prof Jason Middleton

UOC3 HPW Run out of session

Notes: Available February and July

Basic oceanographic processes and how these apply in the Great Barrier Reef, the characteristics of the waters of the Great Barrier Reef; the types and development of reefs, corals and reef communities, environmental damage to corals and exploitation of the reef, management by Great Barrier Reef Marine Park Authority. Laboratory classes include a study of the reef flat, its inhabitants, their distribution and interactions, the reef environment and its measurement. Personal expenses will be incurred.

MSCI6200

Coastal Monitoring Techniques

Staff Contact: A/Prof AD Albani

UOC6 HPW5 WKS14 S1

Notes: Field work of up to 4 days is a compulsory part of this subject. Students will incur personal costs. Excluded: GEOL6231

General principles of surveying. Optical and electronic methods of distance and elevation measuring. Coastal position fixing. Coordinate systems and their application to coastal mapping. Map projections. Long and short term monitoring of coastal changes. Tides, their measurement.

Marine Science Level III

MSCI3001

Physical Oceanography

Staff Contact: Dr Matthew England

UOC6 HPW4 WKS14 S2

Pre-requisite: MSCI2001

Assumed knowledge: Any first year mathematics course

Notes: Laboratory and fieldwork

An introduction to the physical properties and circulation of the oceans. The geography of the sea and properties of seawater. Understanding what controls coastal ocean currents, water-mass formation, upwelling, storm surges and large-scale ocean flow. The dynamics of a range of ocean processes, including waves, tides, beach currents and the El-Nino/Southern Oscillation. Oceanographic instruments and the design of ocean measuring programs.

MSCI6300

Coastal Environmental Assessment

Staff Contact: A/Prof AD Albani

UOC6 HPW5 WKS14 S1

Notes: Field work of up to 3 days is a compulsory part of this subject. Students will incur personal costs. Details will be provided in the first week of the course.

Excluded: GEOL6231

The interaction of water masses, bottom sediments and benthic organisms. Sampling techniques, analytical methodology and statistical data evaluation. Environmental assessment of Australian and overseas areas. An important aspect of this course is its practical approach: from data gathering, data evaluation and environmental assessment report writing. Practical work in the course involves each student as an active member of a project team.

Marine Science Level IV

MSCI4003/MSCI4009

Marine Science 4 (Honours)

Staff Contact: A/Prof Iain Suthers

UOC48 HPW30 WKS28

Pre-requisite: Completion of appropriate study plan, totaling 144 UOC, including Level III subjects totaling 36 UOC *with a Credit average* and including the General Education requirement (essentially 12 UOC of Gen. Edn. with two or three different prefix codes; only one Science; prefix GENSxxxx)

Program is broad and adaptable to cope with the variety of schools and disciplines within marine science. Specialise in Biology, Chemistry, or Oceanography and learn other disciplines through essays and seminars.

3970 Marine Science Plans of Study At UNSW

See p. 260 of current handbook

Marine Science (Marine Biology)

Stage 1

Code	Core Course	UOC + Session	Code	Recommended Electives: Select 36 UOC from:	UOC + Session
BIOS1101	Evolutionary & Functional Biology	6 S1	CHEM1011	Fundamentals of Chemistry 1A	6 S1/S2
BIOS1201	Molecules Cells & Genes	6 S1	CHEM1021	Fundamentals of Chemistry 1B	6 S2/ Summer
			GEOS1111	Earth Systems & Dynamics	6 S1
			GEOS1211	Earth Environment & Resources	6 S2
			GEOS1701	Environment of systems and process	6 S1
			MATH1031	Mathematics for Life Sciences	6 S1
			MATH1041	Statistics for Life & Social Sciences	6 S2
			OR		
			MATH1011	General Maths 1B	6 S1/S2
			MATH1021	General Maths 1C	6 S2
			OR		
			MATH1113	Mathematics 1A	6 S1/S2
			MATH1231	Mathematics 1B	6 S2

Stage 2

Code	Core Courses	UOC	Session	
MSCI2001	Introductory Marine Science	6	S1/S2	
MSCI6200	Coastal Monitoring Techniques	6	S1	
<i>Plus any two of the following 3 (as appropriate for your Stage 3):</i>				
BIOS2031	Biology of Invertebrates	6	S2	
BEES2041	Data analysis			
MICR2201	Fundamentals of Microbiology & Immunology	6	S1	
				Select courses to complete double majors or marine science major and a minor of your choice

Stage 3

MSCI3001	Physical Oceanography	6	S2
BIOS3081	Ocean Biology and Fisheries	6	S1
BIOS3091	Marine & Aquatic Ecology	6	S2
MICR3071	Environmental Microbiology	6	S1

General Education subjects to be completed in Stages 2 and 3

Stage 4

Marine Science Honours (all Marine Science Majors)

Entry to the Honours year (Stage 4) is subject to permission of the MarSci Co-ordinator

Marine Science (Physical Oceanography)

Stage 1					
Code	Core Course	UOC + Session	Code	Recommended Electives: Select 24 UOC from:	UOC + Session
PHYS1121	Physics 1A	6 S1/S2	BIOS1101	Evolutionary & Functional Biology	6 S2
PHYS1221	Physics 1B	6 S2	BIOS1201	Molecules, Cells & Genes	6 S1
MATH1131	Mathematics 1A	6 S1/S2	CHEM1011	Fundamentals of Chemistry 1A	6 S1/S2
MATH1231	Mathematics 1B	6 S2	CHEM1021	Fundamentals of Chemistry 1B	6 S2
			GEOS1111	Earth Systems & Dynamics	6 S1
			GEOS1211	Earth Environments & Resources	6 S2
			GEOS1701	Environmental systems and process	6 S1

Stage 2

Code	Core Courses	UOC	Session	
MSCI2001	Introductory Marine Science	6	S1/S2	Select courses to complete double majors or marine science major and a minor of your choice
MATH2011	Several Variable Calculus	6	S1	
MATH2240	Introduction to Oceanography & Meteorology	6	S1	
MATH2120	Mathematical Method for Differential Equations	6	S1/S2	
MATH2301	Mathematical Computing A	6	S1	

Stage 3

MSCI3001	Physical Oceanography	6	S2
MATH3121	Mathematical Methods	6	S1
MATH3241	Fluid Dynamics	6	S1
MATH3261	Atmosphere Ocean Dynamics	6	S2
	OR		
MATH3270	Dynamical Meteorology	6	S1

General Education subjects to be completed in Stages 2 and 3

Stage 4

Marine Science Honours (all Marine Science Majors)

Entry to the Honours year (Stage 4) is subject to permission of the MarSci Co-ordinator

Marine Science (Marine Geology)

Stage 1

Code	Core Course	UOC + Session	Code	Recommended Electives: Select 36 UOC from:	UOC + Session
GEOS1111	Earth Systems & Dynamics	6 S1	MATH1031	Mathematics for Life Sciences	6 S1
GEOS1211	Earth Environments & Resources	6 S2	MATH1041	Statistics for Life & Social Sciences	6 S2
			OR		
			MATH1011	General Maths 1B	6 S1/S2
			MATH1021	General Maths 1C	6 S2
			OR		
			MATH1131	Mathematics 1A	6 S1/S2
			MATH1231	Mathematics 1B	6 S2
			CHEM1011	Fundamentals of Chemistry 1A	6 S1/S2
			CHEM1201	Fundamentals of Chemistry 1B	6 S2
			BIOS1101	Evolutional & Functional Biology	6 S2
			BIOS1201	Molecules Cells & Genes	6 S1
			GEOS1701	Environmental systems and process in Australia	6 S1/S2

Stage 2

Code	Core Courses	UOC	Session	
MSCI2001	Introductory Marine Science	6	S1/S2	Select courses to complete double majors or marine science major
MSCI6200	Coastal Monitoring Techniques	6	S1	
GEOS2101	Sedimentary Environments	6	S1	
GEOS2181	Earth Materials	6	S1	
				Select courses to complete double majors
				or
				marine science major and a minor of your choice

Stage 3

MSCI3001	Physical Oceanography	6	S2
MSCI6300	Coastal Environmental Assessment	6	S1
At least 6 units of credit from:		6	S2
GEOS2290	Ground and Surface Water	3	S1
GEOS3731	Catchment & Coastal Geomorphology	6	S2
GEOS3761	Environmental Change	6	S2

6 UOC selected from Level III Geology subjects

General Education subjects to be completed in Stages 2 and 3

Stage 4

Marine Science Honours (all Marine Science Majors)

Entry to the Honours year (Stage 4) is subject to permission of MarSci Co-ordinator

3990 Advanced Science -Marine Science Plans of Study At UNSW

See p. 262 of current handbook

Marine Science (Marine Biology)

Stage 1					
Code	Core Course	UOC + Session	Code	Recommended Electives: Select 12 UOC from:	UOC + Session
BIOS1101	Evolutionary & Functional Biology	6 S1	CHEM1011	Fundamentals of Chemistry 1A	6 S1/S2
BIOS1201	Molecules Cells & Genes	6 S1	GEOS1701	Environment of systems and process	6 S1
GEOS1111	Earth Systems & Dynamics	6 S1	PHYS1211	Energy & Environmental Physics	6 S2
GEOS1211	Earth Environment & Resources	6 S2	MATH1031	Mathematics for Life Sciences	6 S1
MATH1041	Statistics for Life & Social Sciences	6 S2	OR		
One General Education course		3 S2	MATH1011	General Maths 1B	
And one of either:			MATH1021	General Maths 1C	6 S2
LIFE1001	Life Sciences	3 S2	OR		
OR	Advanced Seminar Series		MATH1113	Mathematics 1A	6 S1/S2
MATH1000	Modelling Real World Phenomena	3 S2	MATH1231	Mathematics 1B	6 S2

Stage 2					
Code	Core Course	UOC + Session	Code	Recommended Electives: Select 18 UOC from:	UOC + Session
MSCI2001	Introductory Marine Science	6 S2	BIOS2011	Evolutionary and Physiological Ecology	6 S1
MSCI6200	Coastal Monitoring Techniques	6 S1	GEOS2721	Soils & Landforms	6 S1
BIOS2031	Biology of Invertebrates	6 S2	GEOS2811	Remote Sensing Applications & Digital Image Analysis	6 S2
GEOS2101	Sedimentary Environments	6 S1	GEOS2821	Geographic Info Systems	6 S1
OR			GEOS2181	Earth Materials	6 S1
BEES2041	Data Analysis	6 S1	MICR2201	Fundamentals of Microbiology & Immunology	6 S1
6 units of General Education		6 S1/S2			

Stage 3					
Code	Core Course	UOC + Session	Code	Recommended Electives: Select 21 UOC from:	UOC + Session
MSCI3001	Physical Oceanography	6 S2	BIOS3071	Conservation Biology & Biodiversity	6 S1
BIOS3681	Ocean Biology & Fisheries (Advanced)	6 S1	BIOS3111	Population & Community Ecology	6 S2
BIOS3091	Marine & Aquatic Ecology	6 S2	GEOS3731	Catchment & Coastal Geomorphology	6 S2
MSCI6300	Coastal Environmental Assessment	6 S1	GEOS3761	Environmental Change	6 S2
OR					
GEOH3911	Environmental Impact Assessment	6 S1	GEOH3921	Coastal Resource Management	6 S2
3 units of General Education		3 S1/S2	GEOS2291	Ground & Surface Water	6 S2
			MICR3071	Environmental Microbiology	6 S1

Stage 4

Marine Science Honours (all Marine Science Majors) MSCI4003 Full time 48 UOC
 Marine Science Honours (all Marine Science Majors) MSCI4009 Part time 48 UOC

Consult with the MarSci Coordinator for entry to the Honours year

Marine Science affiliated UNSW staff:

Name	School/ Department	Faculty	phone	e-mail
MarSci Coordinator: Assoc. Prof. Iain Suthers	BEES	Science	9385 2065	i.suthers@unsw.edu.au
Undergraduate studies: Dr Matthew England	Maths	Science	9385-7065	m.england@unsw.edu.au
Dr Emma Johnston	BEES	Science	9385-1825	e.johnston@unsw.edu.au
Dr Alistair Poore	BEES	Science	9385-2154	a.poore@unsw.edu.au
Dr Rob Brander	BEES	Science	9385-2899	rbrander@unsw.edu.au
Assoc. Prof. Peter Steinberg	BEES	Science	9385-3273	p.steinberg@unsw.edu.au
Prof. Jason Middleton	Aviation/Maths	Science	9385-6747	j.middleton@unsw.edu.au
Dr John Middleton	Maths	Science	9385-7069	john.middleton@unsw.edu.au
Ms Sue Middleton	Maths	Science	9385-7032	sue@maths.unsw.edu.au
Dr Geoff Waugh	Economics	Commerce	9385-3354	G.Waugh@unsw.edu.au
Prof. Michael Banner	Maths	Science	9385-7072	banner@maths.unsw.edu.au
Assoc. Prof. Paul Adam	BEES	Science	9385-2076	p.adam@unsw.edu.au
Assoc. Prof. Alberto Albani	BEES	Science		a.albani@unsw.edu.au
Research Fellows:				
Dr Mark Baird	Maths	Science	9385-7196	mbaird@maths.unsw.edu.au
Dr Dustin Marshall	BEES	Science	9385-2110	d.marshall@unsw.edu.au
Dr Michael Dawson	BEES	Science	9385-3446	mndawson@unsw.edu.au
Dr Paul Gribben	BEES	Science	9385-3738	
Research Associates				
Dr Philip Gibbs	NSW Fisheries		9527 8450	gibbsp@fisheries.nsw.gov.au
Mr Ron Szymczak	ANSTO		9717-9221	rsx@ansto.gov.au
Dr David Rissik	DIPNAR		9228 6347	drissik@dlwc.nsw.gov.au