

BIOL 384 MARINE ECOSYSTEMS

School of Biological Sciences | Te Kura Pūtaiao Kōiora



Course outline | Ngā Whakamārama 2025 (Semester 2)

BIOL384-25S2 (C)

0.125 EFTS 15 Points

14 July – 17 October 2025

Lecturers | Pūkenga

Dist. Prof David Schiel (co-ordinator) SBS (West) 730

Dr Mads Thomsen SBS (JvH) 233

Dr Spencer Virgin SBS (West) 732

Lab coordinator

Jan McKenzie

Email addresses: david.schiel@canterbury.ac.nz
mads.thomsen@canterbury.ac.nz
spencer.virgin@canterbury.ac.nz
jan.mckenzie@canterbury.ac.nz

Please Note: A residential field trip is an essential part of this course and constitutes a major component of the Course assessment. This runs from SATURDAY 23 AUGUST to TUESDAY 26 AUGUST. There is no ‘make-up’ field course. Check your schedules to ensure you can fully participate in this Field Trip.

Course description | Whakamahuki

This course advances the concepts of how marine species interact with each other and the environment to form functional populations and communities. The oceans cover 71% of earth’s surface and span estuaries, nearshore rocky reefs, deep-water benthic communities, and the surface and deeper waters of the open ocean. They are interconnected through ocean currents, tides and an increasingly changing physical environment. This course uses a mixed platform of lectures, tutorials, computer labs and field-based exercises to explore and understand current issues and processes affecting marine ecosystems, using New Zealand and worldwide examples.

A highlight of the course is a multi-day field course based at Living Springs on Banks Peninsula. Students are taught hands-on field sampling techniques for monitoring biodiversity in nearshore marine benthic communities, engage in experimental design and implementation, analyse data, give oral presentations and written reports that investigate and discuss problems, avenues to solutions and results of experimental testing.

The course is intended for those wishing to pursue a deeper understanding of how marine ecosystems function, and the natural and human-induced changes affecting them. It is particularly useful for those who wish to have a good grounding for applied research and future employment, and who intend to pursue careers involving biodiversity, environmental monitoring, report-writing and oral presentations.

Course aims

‘Marine Ecosystems’ has two main aims: to provide students with up-to-date knowledge and

understanding of key concepts, processes and factual information in marine ecology, and to enhance skills of students in the laboratory and field procedures used by marine ecologists. This includes sampling and experimental design, analyses, interpretation and communication of ecological data and results.

These aims are achieved through lectures, laboratories, tutorials and a field trip. There is a variable course format discussing concepts, hypotheses and illustrative case histories of a wide range of marine ecosystems. Field-based exercises integrate concepts and techniques from lectures and laboratories, and apply them in a field setting. Skill development is in deeper knowledge, data acquisition, hypothesis testing, data analysis and presentation, and report writing.

Alignment with Strategic Development Goals of the United Nations

This course contributes knowledge relating to the United Nations Sustainable Developments Goals (SDG), in particular Goal 14 -- *Conserve and sustainably use the oceans, seas and marine resources for sustainable development*. In line with this, the course teaches about ecosystem integrity, with properly functioning biogeochemical and physical processes. It discusses the benefits provided by oceans, seas and marine resources, why they are important to all people, and our high dependency on natural resources and ecosystem services that are tied to these benefits. We discuss climate change, pollution, land-to-sea connections in coastal governance, and sustainable usage. See <https://sdgs.un.org/topics/oceans-and-seas> for more details.

Intended Learning Outcomes and Associated Assessment | Hua Akoranga

These tie in with Graduate Profile attributes: (1) Critically competent in a core academic discipline of their degree; (2) employable, innovative and enterprising; (3) bi-culturally competent and confident; (4) engaged with the community; and (5) globally aware.

By the end of the course, students should have achieved the following:

1. Have a good working knowledge of key marine species and ecological drivers of species diversity and community processes within a range of marine ecosystems, including hard and soft shores, and the open ocean (assessment: field trip and final exam);
2. Develop advanced knowledge of the physical and ecological processes affecting marine populations (assessment: lab/tutorial exercises);
3. Understand the role of key marine species in food webs, primary production and other community processes (assessment: field trip, lab exercises and final exam);
4. Understand through experience the characteristics of marine ecosystems, the threats they face and the connections of people, including Māori, with those ecosystems (discussions in tutorials and on field trip);
5. An ability to apply ecological theory to the management of current issues in marine ecosystems (assessment: internal discussion and final exam);
6. Develop practical skills in experimental design, data analysis and scientific communication (assessment: field trip and estuary exercise).
7. Improve scientific communication skills, including report writing and use of the literature (assessment: Research report, non-assessed: field trip oral presentation)

Transferable Skills | Pūkenga Ngaio

Students in this course will develop the following skills:

1. *Synthesising information* from background lectures, tutorials and the primary literature. This skill underpins the advancement of science and the development of understanding. In lectures, lab- and field-based exercises, we will discuss research in a group environment to aid your ability to understand core issues across the marine domain and use as background

for assessment tasks.

2. *Collecting field data*. Important for research and in scientific organisations. This will be developed in the field and will provide hands-on and model-based contexts for data acquisition.
3. *Analysing data*. Important for research, and in some non-scientific organisations. This skill will be developed as we help you work with data collected in the field and will involve modern analytical and graphical techniques for visualising, interpreting and presenting results.
4. *Writing a report* on findings. Communication of science is fundamental to its use and advancement. We will have discussions to provide instruction on the elements of successful reports and help you identify these elements with clear marking rubrics.

Students will develop the ability to:

1. Understand ecological drivers creating and maintaining structure and diversity within a range of marine ecosystems, including hard and soft shores, and the open ocean (assessment task: final exam)
2. Understand advanced theory and principles relating to marine ecosystems (assessment task: laboratory projects);
3. Understand NZ marine ecosystems and how they compare to other areas of the world (assessment task: final exam);
4. Apply ecological theory to the mitigation and management of current issues in marine ecosystems (assessment task: final exam);
5. Develop practical skills in field sampling techniques (assessment task: research project and field trip exercises);
6. Develop practical skills in analysing data and writing a scientific report (assessment tasks: laboratory and research project report).
7. Be increasingly aware of the nature of multiple cultures and perspectives as they apply to marine species as taonga and mahinga kia, and the mauri of the sea. This occurs through lectures, labs and associated discussion.

Learn - learn.canterbury.ac.nz The Learn website is your ‘home base’ for BIOL384 and other courses that you are taking at University of Canterbury. On the BIOL384 Learn pages, you will find the topics of each lecture, and how to prepare for each lecture and lab. Video recordings of each lecture are available from Echo360 in Learn.

Check your UC email regularly!

From time to time, we will email you information about various aspects of the course. These emails will be sent to your UC email address. Please check your email daily.

Questions?

Contact the teaching team if you have questions or need help or support.

Course Structure and Timing: Lectures, Labs, Field Trip

Lectures (4 x 1-hr)

Monday, 14, 21 July, 10-11 am, LINK309

Tuesday, 15, 22 July, 10-11 am, A8

Lectures/Tutorials/Labs (6 x 4-hr)

Tuesday 22, 29 July; 12 Aug, 16 September, Noon – 4pm, Rehua 008

Tuesday 5, 19 August, Noon – 4pm, West 433

Mid-term break with Field Trip

23 August – 7 September

Field Trip

Saturday 23 August (from 0800) to Tuesday 26 August (c 1400).

This field trip is mandatory, and the work and write-up constitute a major part of the course assessment. **Check your schedules at the start of the course to ensure you can be on this field course. If you think you are unable to do the field trip, you must discuss this with Prof Schiel at the start of the course.**

Note that there is no online version of this field trip.

Assessment | Aromatawai

The principal objectives of assessment are to:

1. Evaluate your academic performance;
2. Provide you with feedback to promote improvement and self-directed learning;
3. Ensure that you have appropriate experience in understanding, presenting and evaluating ecological work.

Item of assessment	When due	Details	Location	Marks
End of lab, written summary	By 5pm on the Friday after lab session	During each lab/tutorial, you will be set a series of questions to answer (briefly)	Assignments to be printed and handed into the BIOL384 Box, Lobby SBS Floor 2	20 (total)
Field trip initial analyses	By Monday 22 September noon	Analyses of <u>class data</u> from Field trip, much of which can be done during field trip	To be printed and handed into the BIOL384 Box, Lobby SBS Floor 2	15
Field trip participation and presentation	Teacher assessment; No hand-in due	Based on field work, application in field and experiments, and end-of-post-trip presentation	Field trip at Living Springs; plus presentation in lab period	5
Field Trip report	Monday 6 October (noon)	Full written report on field trip project	To be printed and handed into the BIOL384 Box, Lobby SBS Floor 2	25
Final Exam	TBA	3-hr University-scheduled exam period	TBA	35

To gain a passing grade in BIOL384, you must achieve:

- An average of at least 40% for the in-course hand-ins AND
- An average of at least 40% for the field trip hand-ins AND
- A total course average of at least 50%.

If you fail to achieve the 40% minimum requirements, a grade of D (or E) will be awarded, even if your total score is greater than 50%. See below for more details and grade boundaries.

Work submitted late for assessment (without an agreed extension) will be penalised (according to School regulations):

1. To gain full credit, work must be in by the due date;
2. Work handed in up to 7 days after the deadline will be marked, but the marks earned will be discounted by 25% before they are recorded to the student's credit;
3. Any work handed in more than 7 days after the deadline date will not be marked, and will not earn credit, unless by prior arrangement with the course coordinator.

The above conditions will be varied only in situations similar to those applying to formal examinations and course work as spelled out in the University Regulations. If you anticipate missing a deadline for a valid reason, see the lecturer as soon as possible.

Several of the laboratory and field trip exercises may involve collection and analysis of class data sets. Although reports will contain common data, the written interpretation of data and discussion of results must be done by individual students, independently. Failure to comply with this instruction may result in grades of all colluding parties being reduced; *we encourage you to discuss your results with others, but your written reports must be your own work.*

Background material

This course has pre-requisites and suggested courses as background. It is assumed that all students in this course have a fundamental knowledge of marine biology on which we will build. Students are also expected to have taken a course in statistical analyses.

There will be suggested reading and background material posted on LEARN that can be used both as fundamental tutelage and as a refresher of basic knowledge and concepts.

Each 4-hour lab/tutorial session will have an assessment to be handed in. These will be fully explained at the start of the course.

Attendance at lectures

Because each 4-hour session will have a hand-in assessment based on the work in that session, students will find it challenging to pass the course unless sessions are attended. Because some of these sessions will be held in labs, verbal explanations and discussion may not be recorded for later viewing. There is considerable feedback to the students during the course and many opportunities to expand on topics of interest. Many of the examples discussed in the various instructive sessions are not contained in textbooks. Absence from sessions can be expected to compromise the ability to achieve a high grade. If you anticipate missing lectures, tutorials or laboratories for a valid reason, please inform the current lecturer or the course coordinator and determine if or how the work can be made up.

The Field Trip

This is an integral and crucial part of the course, and the work from it comprises a significant portion of your in-course assessment. Missing the field trip will severely compromise your ability to pass the in-course assessment. You should contact the course coordinator as soon as possible if you anticipate problems in attending the field trip. This is held during the August - September break (at Living Springs, Banks Peninsula).

The field trip fee does not cover transport to the field trip, but does cover food and accommodation on the field trip.

Course Textbook

We will not be recommending a single course textbook this year. Rather, we will use selected papers from scientific journals and texts to illustrate key concepts. We will either supply you with these papers or guide you to their location. As well,

- Almost all of the Castro & Huber book was taught in BIOL212 so we expect the content of this book to be a background for this course:
- Castro, P and Huber M (2019, updated 2024) Marine Biology. McGraw-Hill Higher Education
- <https://www.vitalsource.com/nz/products/ise-marine-biology-peter-castro-v9781260289244?duration=perpetual&srsltid=AfmBOopbSJrLsSxsLIS2kAE28kYrd2HzjdmR6tL6EdHc8A6epdK7OZAhp1Y>
- Canterbury University Library access: <https://libcat.canterbury.ac.nz/Record/2861259>
- Another textbook that we have used previously for this course is currently out of print, but you may be able to source a second-hand copy from UBS and there are two copies on reserve in the library (QH 91 .N993 2005).
- Nybakken, James W. and Bertness, Mark D. (2005). Marine biology: an ecological approach. 6th Edition. 579pp
- The University has excellent and substantial holdings of books and journals dealing with marine biology/ecology and you are strongly urged to use them.
- The LEARN site has review chapters that all of you should read by the first week of the course.

BIOL384- Course Schedule 2025						
	Day	ISO Week	Date	Time	Duration (hr)	Where
Lecture	Mon	29	14-Jul	10-11am	1	LINK 309
Lecture	Tue	29	15-Jul	10-11am	1	A8
Lecture	Mon	30	21-Jul	10-11am	1	LINK 309
Lecture	Tue	30	22-Jul	10-11am	1	A8
Lect/Tut	Tue	30	22-Jul	12 - 4pm	4	Rehua 008 (computer)
Lect/Tut	Tue	31	29-Jul	12 - 4pm	4	Rehua 008 (computer)
Lect/Lab	Tue	32	05-Aug	12 - 4pm	4	West 433
Lect/Lab	Tue	33	12-Aug	12 - 4pm	4	Rehua 008 (computer)
Lect/Lab	Tue	34	19-Aug	12 - 4pm	4	West 433
Mid-Term Break: 23 August -- 7 September						
FIELD TRIP: 23 -- 26 August (week 35) -- Living Springs						
Lect/Lab	Tue	37	09-Sep	12 - 4pm	4	Rehua 008 (optional, FT help)
Lect/Lab	Tue	38	16-Sep	12 - 4pm	4	Rehua 008 (FT presentations)
Lect/Lab	Tue	39	23-Sep	12 - 4pm	4	Erskine 248 (Extra period, if needed))

RULES, REGULATIONS, AND WHAT TO DO WHEN THINGS GO WRONG

[updated March 2023]

If in doubt: ASK! The course coordinator is happy to answer questions. All staff involved in the course are available for advice on specific issues.

What do I do if I have to miss a test/exam or if my performance was impaired?

In Biological Sciences, we require a satisfactory level of achievement in both the theoretical aspects of the discipline and in practical activities. **This means you must attend all class activities (labs, tutorials, fieldtrips)** and submit all items of assessment unless you have a very good reason not to (e.g. medical reasons) and if this has been approved by your course coordinator.

If you feel that **illness, injury, bereavement or other extenuating circumstances beyond your control** prevented you from completing a **test/exam** worth 10% or more of the total course assessment, or if these circumstances affected your performance in such assessments, you should apply for Special Consideration. Applications for Special Consideration should be submitted via the Special Consideration website <http://www.canterbury.ac.nz/study/special-consideration/> within five working days of the assessment or its due date. You should also notify the course coordinator. If you apply for Special Consideration because of medical reasons, you should visit a doctor within a reasonable timeframe (application form available on the website above or from the Student Health Centre).

The Special Consideration provisions are intended to assist students who have covered the work of a course but have been prevented by illness or other critical circumstances from demonstrating their mastery of the material or skills at the time of a text/exam – **they do not excuse you from doing the test/exam** within a reasonable time agreed with the course coordinator.

What do I do if I have to miss a quiz or assignment or if I need an extension?

You cannot apply for Special Consideration if you miss an assessment that is not a test/exam, such as a quiz, lab report, essay, literature review or other assignment, or if the test/exam is worth less than 10% or more of the total course assessment. If this happens or if you need an extension because of **illness, injury, bereavement or other extenuating circumstances beyond your control**, please contact the course coordinator and arrange an alternate activity and/or submission date. You should also do this if you have to miss a laboratory, tutorial or field trip.

What are other valid reasons to miss an assessment or mandatory course activity?

The Special Considerations policy (<https://www.canterbury.ac.nz/about/governance/ucpolicy/student/special-consideration-procedures-and-guidelines/>) outlines only a few kinds of activities that UC considers valid reasons for missing an assessment or mandatory course activity other than those outlined above. These include **involvement in international or national representative sport or cultural groups**. Holiday trips, birthday parties, weddings, work-related commitments etc. are not given special status in this University policy. Please contact your course coordinator to ask for an alternate activity and/or submission date if you are eligible.

Special Consideration for late discontinuation of a course

Students prevented by **extenuating circumstances** from completing the course after the final date for withdrawing, may apply for Special Consideration for late discontinuation of the course. Applications must be submitted via <http://www.canterbury.ac.nz/study/special-consideration/> no later than five working days after the examination period has finished.

Academic Integrity

It is the responsibility of each student to be familiar with the definitions, policies and procedures concerning academic misconduct/dishonest behaviour. Instances of academic misconduct will be dealt with in a serious and appropriate manner. Students should refer to: <https://www.canterbury.ac.nz/about/ako/academic-quality/academic-integrity/>

Plagiarism

It is essential that you are aware that plagiarism is considered a very serious offence by the academic community, the University and the School of Biological Sciences. Plagiarism is defined as taking content from another work or author and presenting it, without attribution, as if it is your own work. Content here includes text (sentences or major parts of sentences), display items (graphs and tables), and overall structure (the detailed sequence of ideas). Plagiarism includes:

- re-use of previous assignments (even if each individual sentence has been rephrased to say the same thing in different words, if the overall structure is re-used).
- copying of another student's work (with or without their consent).
- the unreferenced use of published material or material from the internet, e.g. cutting and pasting of paragraphs or pages into an essay.
- the use of text generated using artificial intelligence technology without disclosure and when it is not intended to be part of an assignment.

For most pieces of in-term assessment you will be given information concerning the use of direct and indirect quotes from previously published work. If you have any doubt about the appropriate use of published material, please speak with an academic staff member. If you are unsure what plagiarism is, seek advice.

It is a School policy that courses will likely that you submit work electronically for subsequent analysis of originality using *Turnitin*. Students agree that by taking courses in BIOL, assessments may be submitted to Turnitin.com for textual similarity review. All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers. Use of the Turnitin.com service is subject to the Terms and Conditions of Use as posted on the Turnitin.com site.

Where do I hand in assignments and then collect them once marked?

All assignments should be submitted as directed by the course coordinator. Typically, this will be electronically via Learn for on-line grading and for analysis in *Turnitin*. If a hard copy is requested, assignments should be placed in the designated collection boxes in the foyer of the 2nd floor of the School of Biological Sciences (Julius von Haast building, at the top of the stairs). All assignments must be accompanied by a cover sheet signed by you stating that the submitted work is not plagiarised. Cover sheets are available on top of the collection boxes, or you can download one from the Biology website (<http://www.canterbury.ac.nz/media/documents/science-documents/assignment-coversheet.pdf>).

Marked assignments will be returned through Learn or, if in hard copy, can be collected from the School of Biological Sciences reception, unless directed otherwise by the course coordinator. Teaching staff will endeavour to return work as soon as possible, and should contact you if there are likely to be any delays that will prevent return within the maximum 4-week timeframe.

What if I can't get it finished in time?

Reports and assignments should be handed in on time. Extensions may be granted if you have a valid reason (see above). **If you require an extension, you should request one from the course coordinator** (or the lecturer responsible for marking the work), with as much notice as possible. Please do this BEFORE the deadline for the assignment. **If you have been given an extension and you have been asked to submit a hard-copy of your work, you should hand the work DIRECTLY to the course coordinator** (do not put it in the drop box as it may not be cleared after the due date).

If an extension has not been granted:

- work handed in within 1 hour of the deadline: penalty of up to 5 percentage points of the mark for the assignment (e.g., a mark of 75% might be reduced to 70%).
- work handed in 1 – 24 hours after the deadline: penalty of 10 percentage points of the mark for the assignment (e.g., a mark of 75% is reduced to 65%).
- work handed in 1 – 7 days after the deadline: penalty of 15 percentage points of the mark for the assignment (e.g., a mark of 75% is reduced to 60%).
- work handed in more than 7 days after the deadline will not be marked or earn credit.

What if I have written more than the word or page limit?

If there is a word limit on an assignment, it is usually there to stop you doing too much work and to encourage you to write succinctly. You can be up to 10% over without too much worry, but if the length increases beyond that your mark may suffer due to failure to follow the requirements. If you find yourself way over the word limit talk to the lecturer concerned about how to get your assignment to an acceptable length. Unless specifically advised that there is flexibility, you must adhere to the word limit indicated.

What if I fail part of the course?

In Biological Sciences, we require a satisfactory level of achievement in both the theoretical aspects of the discipline and in practical activities. This means you must attend all class activities and submit all items of assessment unless you have a very good reason not to (e.g. medical reasons). **A student must attain an average score of at least 40% for in-course assessments (e.g. assignments, reports, quizzes) and an average score of at least 40% in the exam and/or tests, AND score at least 50% overall for the course, to be awarded a passing grade. See the course outlines for clarification of the assessment items included in each category and ask the coordinator if you are still unsure.**

What's the best way to give feedback?

We welcome constructive feedback at all times – help us to make this a valuable course for you. We endeavour to remain approachable at all times. If you would rather give feedback anonymously, please use the online course survey or talk to lab demonstrators, or your class rep (who will all report back to the staff-student liaison committee that includes a representative from each of the undergraduate classes). Class representatives will be selected from each class at the start of course.

What's the best way to complain?

If you feel you have not been fairly treated during this course, please raise the issue with the lecturer or course coordinator in the first instance. Other avenues include your class rep., who can raise issues anonymously, or the UCSA education coordinator.

Grading

A+	90% or above
A	85 – 90
A-	80 – 84
B+	75 – 79

B	70 – 74
B-	65 – 69
C+	60 – 64
C	55 – 59
C-	50 – 54

A restricted pass (R) **may** be awarded to those who are close to a pass (i.e. an overall score of 48-49.9%) AND who have achieved at least a 40% overall score in both in-course assessment and tests/exams. If an R grade is awarded you gain credit for the course but **cannot continue into papers that require this course as a pre-requisite**. NB. The R grade is only available at 100 and 200 level - it cannot be awarded for third year papers.

Failing grades: D 40-49 E 0-39