

AQFI 251 Principles of Aquaculture

(Second Semester 0.15 EFTS 18 points)

This paper introduces the key challenges to farming aquatic organisms, and how these factors apply more widely to the functioning and management of aquatic environments. This paper demonstrates how physical, chemical and biological processes interact in aquatic systems and control productivity of marine and freshwater aquaculture systems. An introduction to aquaculture production systems from husbandry through to processing and product development will be provided along with practical and technical skills necessary for designing and maintaining aquaculture facilities. The course further aims for participants to develop an understanding of the cultural, market, and food safety framework in which aquaculture operates through trips to local aquaculture facilities.

Course Coordinator	Dr Gaya Gnanalingam Marine Science	gaya.gnanalingam@otago.ac.nz
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Course Structure:

Lectures 11.00-11:50am Monday and Friday; Lab Monday/Tuesday 2-6pm

Lectures	
Week 1	Overview/Introduction
Week 2	Chemical processes I Chemical processes II
Week 3	Production systems I Pond farming and pen farming Production systems II Recirculating and integrated systems
Week 4	Feeding and growth I Feeding and growth II
Week 5	Control of fish reproduction Climate change implications for aquaculture
Week 6	Aquaculture and behaviour I Aquaculture and behaviour II
Week 7	Current animal welfare issues in aquaculture I Current animal welfare issues in aquaculture II
<i>Mid semester Break</i>	
Week 8	Water Quality I Water Quality II
Week 9	Aquaculture products I Aquaculture products II
Week 10	Salmon Aquaculture from an industry perspective Rakiura fieldtrip / Environmental Impacts
Week 11	Fisheries restoration through aquaculture Rakiura fieldtrip / Environmental Impacts
Week 12	Physical processes Habitat restoration through aquaculture
Week 13	Seaweed Aquaculture Course Review

Practical Timetable 2:00pm – 5:50 pm (if scheduled) Bus* leaves for Portobello at 1.55pm, returns at 5.50pm

1. Kelp Lab at Portobello Marine Laboratory

Students will examine the effects of light and stock source on the culturing of Giant kelp (*Macrocystis pyrifera*) gametophytes and sporophytes. Students will measure the effects on fertilisation rates, survival, growth, and nutrient uptake

Week 2 - Set up lab

Week 3 - Maintain experiment, visit aquaculture array

Week 4 - Tidy up experiment

Week 5 - On campus computer lab Monday (ACAL) Tuesday (HUCAL) 2-5pm

Report Due Week 7 Monday or Tuesday 5pm.

2. Mussel Lab at Portobello Marine Laboratory

Students will examine the effect of predicted climate change stressors on Green lipped mussels (*Perna canaliculus*). Here, students will design and set up an experiment that tests the effects of ocean warming and decreasing food availability on reproduction in *P. canaliculus*, and key reproductive traits will be measured.

Week 6 - Set up lab

Week 7 – On campus computer lab (HU119) 2-5pm

Week 8 - Dissection and clean up lab

Report Due Week 11 Monday or Tuesday 5pm.

***Bus departs from marine science driveway opposite entrance to Cumberland College**

Field Trip (Will be replaced with a desktop exercise if there are travel restrictions)

Rakiura/Stewart Is Field trip

Trip 1 Week 10

Trip 2 Week 11

Students will visit aquaculture facilities in Southland including the Sanford salmon hatchery in Kaitangata, the Ocean Beach aquaculture park in Bluff (pāua, whitebait, *Asparagopsis* farming), and Sanford salmon and mussel aquaculture in Rakiura.

Bus leaves for Bluff at 9:00am Friday and returns on Sunday Evening.

Note: Accommodation and food provided. Sleeping bag, warm clothes, gumboots and wet weather gear or similar required.

Seasickness: We will be spending a lot of time aboard boats so if you get seasick or are concerned about getting seasick go to the chemist and get some motion sickness medication and use it before you get on the boat (follow the instructions provided).

Reports due Week 12 or 13 at 5pm

Assessment

Kelp report (20%)

Mussel Report (20%)

Rakiura aquaculture briefing document (10%)

Final exam (50%)

Communication

When the Department of Marine Science communicates with you, it will be via your student email address (@student.otago.ac.nz). Please make sure that you check this address regularly, or that you arrange forwarding to an address you check regularly.

There will be a student representative chosen by students to take care of official communications and feedback for this group of students. Make sure you know who they are.

Plagiarism

Any student involved in dishonest practice, whether intentional or arising through failure to take reasonable care, will be subject to the University's Dishonest Practice Procedures which contain a range of penalties. Dishonest practice is seeking to gain for yourself, or assisting another person to gain, an academic advantage by deception or other unfair means. The most common form of dishonest practice is plagiarism.

Dishonest practice in relation to work submitted for assessment (including all course work, tests and examinations) is taken very seriously at the University of Otago. If you are ever in doubt concerning what may be acceptable academic practice in relation to assessment, you should clarify the situation with your lecturer before submitting the work.

Useful Links

Department of Marine Science website	http://www.otago.ac.nz/marinescience
Postgraduate student support	http://hedc.otago.ac.nz/hedc/sld/Postgraduate-Students.html
University policy on plagiarism	http://www.otago.ac.nz/study/plagiarism.html
Student Learning development	http://hedc.otago.ac.nz/hedc/sld.html
University Library E-Journals	http://rb6fc7tv6s.search.serialssolutions.com/
University Library E-Reference	http://www.library.otago.ac.nz/research/index.html
Otago staff contacts	http://www.otago.ac.nz/phonebook/letters.html

Help

If you are worried, upset, sick, technologically challenged, overtired, or overwhelmed, please ask for help. You can come see me in my office. You can send me an email (gaya.gnanalingam@otago.ac.nz) or give me a call. You may refer questions to the Student Rep in the class if you don't feel comfortable asking me yourself. If that won't work, please find another staff member with whom you feel comfortable to talk to. Or head over to Student Health, where they have counselling available. Please don't suffer alone. We all want you to succeed.