UNSW Course Outline

MSCI5004 Oceanographic Processes - 2024

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General Course Information

Course Code : MSCI5004
Year : 2024
Term : Term 2
Teaching Period : T2
Is a multi-term course? : No
Faculty : Faculty of Science
Academic Unit : School of Biological, Earth and Environmental Sciences
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Postgraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

The way water circulates around the oceans impacts climate variability and change, marine ecology and human society and economy. In this course, we will dive into the way the ocean works throughout our lectures, tutorials and lab-based classes. From the East Australian Current

to the global conveyor belt, and from eddies to beach waves. We will cover the properties and dynamics of the ocean, how we measure the ocean, and methods for analyzing oceanographic information, applying our understanding to problems like El Nino, the great garbage patches and Global Warming. Assumed knowledge: Any 6 Units of Credit of Level I Mathematics.

Course Aims

This is a descriptive course in physical oceanography. The main aim is understand how simple physical principles can lead to a deep understanding of how different phenomena related to the ocean work (including El Nino/La Nina cycles, coastal upwelling, the East Australian Current, waves and tides). Throughout the course we will highlight how ocean physics affects marine biology and chemistry.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Analyse real world oceanographic data, solve quantitative problems using tools such as MATLAB, and provide a critical interpretation of results.
CLO2 : Describe and critically assess the tools used to observe and measure an often hostile and remote ocean.
CLO3 : Describe the forces that drive ocean motion and their associated mathematical equations and how this gives rise to different ocean phenomena.
CLO4 : Critically evaluate and present scientific literature that links physical oceanography to marine biology or other marine applications.
CLO5 : Describe the oceans role in driving changes to the wider climate system and how the ocean is affected by Global Warming and climate variability.
CLO6 : Calculate quantitative solutions to the physical equations that describe ocean motion.

Course Learning Outcomes	Assessment Item
CLO1 : Analyse real world oceanographic data, solve quantitative problems using tools such as MATLAB, and provide a critical interpretation of results.	• Research Project • Tutorial Assessments • MATLAB assessments
CLO2 : Describe and critically assess the tools used to observe and measure an often hostile and remote ocean.	• Final Exam • Research Project • Tutorial Assessments • MATLAB assessments
CLO3 : Describe the forces that drive ocean motion and their associated mathematical equations and how this gives rise to different ocean phenomena.	• Final Exam • Research Project • Tutorial Assessments • MATLAB assessments
CLO4 : Critically evaluate and present scientific literature that links physical oceanography to marine biology or other marine applications.	• Final Exam • Research Project
CLO5 : Describe the oceans role in driving changes to the wider climate system and how the ocean is affected by Global Warming and climate variability.	• Final Exam • Tutorial Assessments • Research Project
CLO6 : Calculate quantitative solutions to the physical equations that describe ocean motion.	• MATLAB assessments • Final Exam • Tutorial Assessments

Learning and Teaching Technologies

Moodle - Learning Management System

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Research Project Assessment Format: Individual Short Extension: Yes (3 days)	21%	
Final Exam Assessment Format: Individual	25%	
Tutorial Assessments Assessment Format: Individual Short Extension: Yes (3 days)	30%	
MATLAB assessments Assessment Format: Individual Short Extension: Yes (3 days)	24%	

Assessment Details

Research Project

Assessment Overview

You will be expected to choose a research topic related to oceanography and its applications/ impacts. This activity will last for the duration of the term and will culminate in a short report (1200-1500 words) and a 5-minute presentation.

The Project Report will count towards 16% of your final course mark, and the Presentation will count 5% of your final course mark.

You will also be required to provide a project outline early in the term for which you will receive feedback during Week 4.

Course Learning Outcomes

- CLO1 : Analyse real world oceanographic data, solve quantitative problems using tools such as MATLAB, and provide a critical interpretation of results.
- CLO2 : Describe and critically assess the tools used to observe and measure an often hostile and remote ocean.
- CLO3 : Describe the forces that drive ocean motion and their associated mathematical equations and how this gives rise to different ocean phenomena.
- CLO4 : Critically evaluate and present scientific literature that links physical oceanography to marine biology or other marine applications.
- CLO5 : Describe the oceans role in driving changes to the wider climate system and how the ocean is affected by Global Warming and climate variability.

Final Exam

Assessment Overview

The final exam covers all content from your lectures and tutorials. It will take place during the normal exam period and last for two hours. The exam is split into two parts, where you will be expected to respond to both short and longer format questions.

Course Learning Outcomes

- CLO2 : Describe and critically assess the tools used to observe and measure an often hostile and remote ocean.
- CLO3 : Describe the forces that drive ocean motion and their associated mathematical equations and how this gives rise to different ocean phenomena.
- CLO4 : Critically evaluate and present scientific literature that links physical oceanography to marine biology or other marine applications.
- CLO5 : Describe the oceans role in driving changes to the wider climate system and how the ocean is affected by Global Warming and climate variability.
- CLO6 : Calculate quantitative solutions to the physical equations that describe ocean motion.

Tutorial Assessments

Assessment Overview

You will be expected to complete two quantitative assessments based on tutorial/exam style questions (worth 13% and 17% of your final course mark). These will need to be completed Week 7 and Week 9.

Course Learning Outcomes

- CLO1 : Analyse real world oceanographic data, solve quantitative problems using tools such as MATLAB, and provide a critical interpretation of results.
- CLO2 : Describe and critically assess the tools used to observe and measure an often hostile and remote ocean.
- CLO3 : Describe the forces that drive ocean motion and their associated mathematical equations and how this gives rise to different ocean phenomena.
- CLO5 : Describe the oceans role in driving changes to the wider climate system and how the ocean is affected by Global Warming and climate variability.
- CLO6 : Calculate quantitative solutions to the physical equations that describe ocean motion.

MATLAB assessments

Assessment Overview

You will be required to write 3 pieces of MATLAB code and associated short descriptions based on the analysis of oceanographic data. These assessments will be integrated into a series of computer labs designed at teaching you the essentials of MATLAB. Labs to be completed by

Wks 7, 8 and 10. (Labs are each worth 8% of the final mark).

Course Learning Outcomes

- CLO1 : Analyse real world oceanographic data, solve quantitative problems using tools such as MATLAB, and provide a critical interpretation of results.
- CLO2 : Describe and critically assess the tools used to observe and measure an often hostile and remote ocean.
- CLO3 : Describe the forces that drive ocean motion and their associated mathematical equations and how this gives rise to different ocean phenomena.
- CLO6 : Calculate quantitative solutions to the physical equations that describe ocean motion.

General Assessment Information

Grading Basis

Standard

Course Schedule

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

General Schedule Information

I HIGHLY RECOMMEND IN PERSON ATTENDANCE TO ALL COMPONENT OF THE COURSE. BUT, IF YOU ARE JOINING THE CLASS BY ZOOM PLEASE CONSIDER TURNING YOUR CAMERA ON. IT REALLY HELPS ME AND THE DYNAMIC OF OUR CLASS. HOPEFULLY THE MIC WILL STAY ON DURING CLASSES, SO YOU ARE VERY WELCOME TO INTERUPT ME AT ANY TIME TO ASK QUESTIONS

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
	Alex Sen Gupta					No	Yes
	Neil Malan					No	No

Other Useful Information

Academic Information

Upon your enrolment at UNSW, you share responsibility with us for maintaining a safe,

harmonious and tolerant University environment.

You are required to:

- Comply with the University's conditions of enrolment.
- Act responsibly, ethically, safely and with integrity.
- Observe standards of equity and respect in dealing with every member of the UNSW community.
- Engage in lawful behaviour.
- Use and care for University resources in a responsible and appropriate manner.
- Maintain the University's reputation and good standing.

For more information, visit the UNSW Student Code of Conduct Website.

Academic Honesty and Plagarism

Referencing is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism.
Further information about referencing styles can be located at https://student.unsw.edu.au/referencing

Academic integrity is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits: honesty, trust, fairness, respect, responsibility and courage. At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.
Further information about academic integrity, plagiarism and the use of AI in assessments can be located at:

- The Current Students site,
- The ELISE training site, and
- The Use of AI for assessments site.

The Student Conduct and Integrity Unit provides further resources to assist you to understand your conduct obligations as a student: https://student.unsw.edu.au/conduct

Submission of Assessment Tasks

Penalty for Late Submissions

UNSW has a standard late submission penalty of:

- 5% per day,
- for all assessments where a penalty applies,
- capped at five days (120 hours) from the assessment deadline, after which a student cannot submit an assessment, and
- no permitted variation.

Any variations to the above will be explicitly stated in the Course Outline for a given course or assessment task.

Students are expected to manage their time to meet deadlines and to request extensions as early as possible before the deadline.

Special Consideration

If circumstances prevent you from attending/completing an assessment task, you must officially apply for special consideration, usually within 3 days of the sitting date/due date. You can apply by logging onto myUNSW and following the link in the My Student Profile Tab. Medical documentation or other documentation explaining your absence must be submitted with your application. Once your application has been assessed, you will be contacted via your student email address to be advised of the official outcome and any actions that need to be taken from there. For more information about special consideration, please visit: https://student.unsw.edu.au/special-consideration

Important note: UNSW has a "fit to sit/submit" rule, which means that if you sit an exam or submit a piece of assessment, you are declaring yourself fit to do so and cannot later apply for Special Consideration. This is to ensure that if you feel unwell or are faced with significant circumstances beyond your control that affect your ability to study, you do not sit an examination or submit an assessment that does not reflect your best performance. Instead, you should apply for Special Consideration as soon as you realise you are not well enough or are otherwise unable to sit or submit an assessment.

Faculty-specific Information

Additional support for students

- The Current Students Gateway
- Student Support
- Academic Skills and Support
- Student Wellbeing, Health and Safety
- Equitable Learning Services
- UNSW IT Service Centre

- Science EDI Student Initiatives, Offerings and Guidelines