

Tropical Oceanography

Institute of Oceanography and Environment (INOS)

Faculty of Science and Marine Environment

UMT

Lecturer

Prof. Dr. Mohd Fadzil Mohd Akhir

Assoc. Prof. Dr. Ong Meng Chuan

Dr. Fatin Izzati Minhat

“

WE OFFER UNIQUE LEARNING EXPERIENCE, AND THE TOPICS THAT CLOSE TO CURRENT CHALLENGES THAT FACED BY OUR OCEAN ENVIRONMENT

“

CONTEXTUAL LEARNING ON OCEANS, CLIMATE CHANGE AND POLLUTION THROUGH INTEGRATED APPROACH THAT INCLUDES THE USE OF GLOBAL DATA AND ANALYTICAL SOFTWARE

This subject will be offered by Institute of Oceanography and Environment (INOS) to all postgraduate students during Starting this Semester (Sem II - 2021)

COMPULSORY TO INOS POSTGRADUATE STUDENTS REGISTERED IN 2021

This course will explore the current impact that effecting our oceanographic system that includes atmosphere-ocean climate system, ocean pollution and geomorphology changes. The course highlights the role of the climate change and the connection between human activity and the current warming trend. This evidence of changes in many facets of oceanography sciences will be explored through ocean model, satellite images and field data analysis.



INOS

INSTITUTE OF OCEANOGRAPHY AND ENVIRONMENT

OCN 5003 'TROPICAL OCEANOGRAPHY'

NEW POSTGRADUATE ELECTIVE COURSE - 'ONLINE MODE'

OPEN FOR REGISTRATION IN ONLINE MODE

Class Started



In Collaboration

MARINE COASTAL AND DELTA SUSTAINABILITY FOR SOUTHEAST ASIA



Co-funded by the Erasmus+ Programme of the European Union

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Overview

Explain the fundamentals of oceanography in the tropical oceans as an interactive system through ocean processes, nutrient dynamics and ocean productivity

Evaluate the scientific findings through data and information from oceanographic data analysis.

Articulate scientific arguments in addressing past, present and future climate change issues on tropical ocean.

Synopsis

This course exposes students to the important ideas and concepts of Oceanography in the tropical region. It will focus on ocean physico-chemical and bio-geochemical processes as well as the interactions between the atmosphere and ocean and how this coupled process drives the ocean productivity in the tropical regions. This course also will explore the current impact that effecting our oceanographic system that includes atmosphere–ocean climate system, ocean pollution and geomorphology changes. The course concludes with the role of the climate change and the connection between human activity and the current warming trend. This evidence of changes in many facets of oceanography sciences will be explored through ocean model, satellite images and field data analysis.



Oasis e-Learning@UMT

Pelajar Pasca-Siswazah Post-Graduate Students

Tropical Oceanography

Dashboard / My courses / OCN5003

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Class Online Platform: <https://epembelajaran.umt.edu.my/oasis/course/>

Modules Content;

- Lecture
- Videos
- Assignments
- Tutorial
- ODV Software
- World Ocean Database
- Reading Materials



Oasis

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Tropical Oceanography

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NAVIGATION

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 - UMTROP403

ADMINISTRATION

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Course Announcement

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Lecturers;

Assoc. Prof Dr. Mohd Fadzil Mohd Akhir

Assoc. Prof Dr. Ong Meng Chuan

Dr. Fatin Izzati Minhat

Course Outline OCN5003 23KB Word 2007 document Uploaded 25/04/21, 12:15



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LOGGED IN USER


MOHD FADZIL BIN MOHD AKHIR

Email address: mfadzil@umt.edu.my

Log in: Sunday, 13 June 2021, 7:22 AM

SERVER INFORMATION

EL2

MODBLENDED STATUS

Syllabus : 1/1 ✓

Notes/Files : 18/7 ✓

Activity : 8/3 ✓

Assessment : 5/2 ✓

STATUS : H - > 30% BL

THIS COURSE IS MODBLENDED

E-LEARNING SUPPORT

By Phone :

1st Level Support
(09-6683674)
(09-6684434)

2nd Level Support
(09-6684433)



Learning Schedule



Tropical Oceanography

Dashboard / My courses / OCN5003

Request
a course >

Lecture list

Week	Lecture	Subject*	Discussion/Tutorial
1	12/4	Introduction to Tropical Oceanography	Review GOSR 2021 and UN Ocean Decade
	14/4	Global Ocean Observation System	
2	19/4	Physical Processes of South China Sea	World Ocean Database Exploration
	21/4	Dynamics of Monsoon Circulation	
3	26/4	Air -Sea interaction and Climate	ODV - Field data analysis: Upwelling
	28/4	Upwelling Dynamics and Processes	
4	3/5	Seawater Chemistry	
	5/5	Nutrient Cycle	
MID TERM BREAK - HARI RAYA AIDILFITRI			
5	17/5	Ocean Productivity	
	19/5	Primary and Net Primary Productivity	
6	24/5	Marine Pollution	
	26/5	Impact of pollution to environment	
7	7/6	Major Geological Events	
	9/6	Climate Change from Geological Perspective	
8	14/6	Introduction to Geological Oceanography	
	16/6	Geomorphology of Ocean Basin	

Lecture Notes



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Lectures

 Lecture 1: Introduction 8.8MB Powerpoint presentation Uploaded 25/04/21, 11:12

This lecture provides an overview of the importance of the Tropical region from the perspective of Oceanography and the global efforts in oceanography data and management

 Lecture 2: Properties of Seawater and Global Ocean Observation System 6.4MB Powerpoint presentation Uploaded 25/04/21, 11:18

The lecture explains the different scale of seawater properties by region and describe the Global Ocean Observation System initiatives that serve the world with accessible datasets from the entire world.

 Lecture 3: Air Sea Interaction 4.2MB Powerpoint presentation Uploaded 28/04/21, 11:42

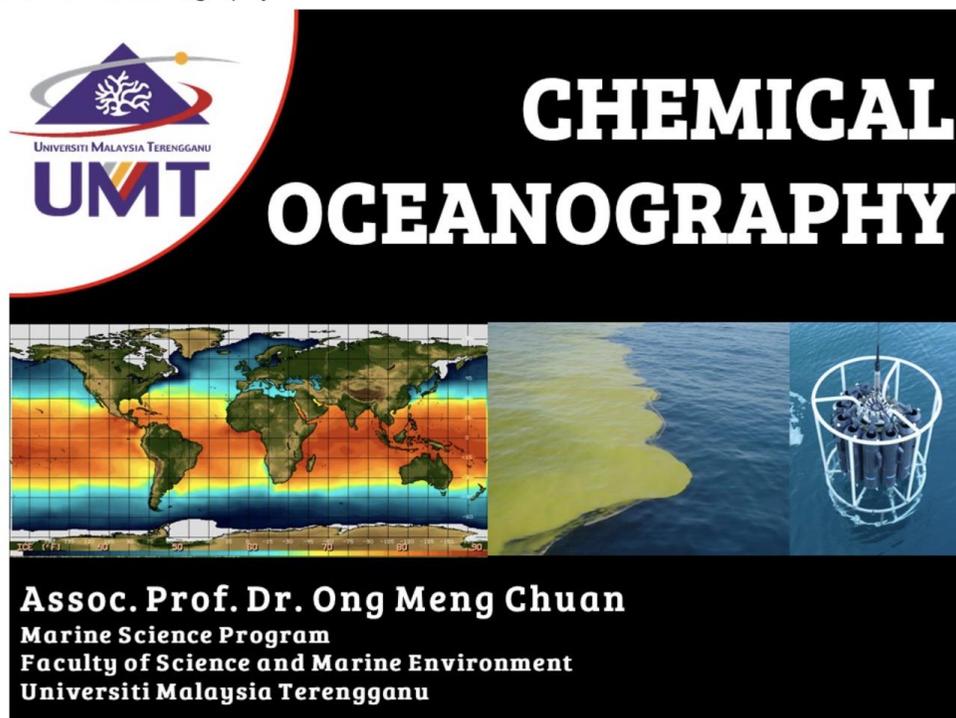
The lecture will provide basic comprehension on the concept of global atmospheric system and its influence on ocean current

 Lecture 4: Upwelling Dynamics 4.8MB Powerpoint presentation Uploaded 28/04/21, 11:45

Introduction to the concept and dynamics of upwelling at regional scale

 Lecture 5: Upwelling Case Studies 31.9MB Powerpoint 2007 presentation Uploaded 28/04/21, 11:46

Discussion on various dynamics and dynamics that influence upwelling in specific region



UMT **CHEMICAL
OCEANOGRAPHY**

Assoc. Prof. Dr. Ong Meng Chuan
Marine Science Program
Faculty of Science and Marine Environment
Universiti Malaysia Terengganu

The graphic features the UMT logo in the top left corner. The main title 'CHEMICAL OCEANOGRAPHY' is displayed in large, bold, white letters on a black background. Below the title, there are three images: a world map with a color-coded temperature scale, a close-up of a coastal area with a yellowish-green sediment plume, and a white metal cage structure floating in the ocean. At the bottom, the name and affiliation of the instructor, Assoc. Prof. Dr. Ong Meng Chuan, are listed in white text on a black background.

Lecture Notes

 Lecture 1 : Introduction 1.3MB PDF document Uploaded 19/05/21, 10:49

This lecture note explains the following topics: Oceanography studies, Major Ions of Seawater, Trace Elements in Seawater, Controls on the Composition of Seawater, Ocean Carbonate Chemistry and Why seawater is salty

 Lecture 2 : Ocean Productivity 833.4KB PDF document Uploaded 19/05/21, 11:00

This lecture discusses the primary productivity that occurs in the ocean, the role of bacteria in composting organic material, productivity at different region.

 Lecture 3 : Marine Pollution 778KB PDF document Uploaded 19/05/21, 11:03

This lecture discusses 5 types of major marine pollution; oil, debris, microplastics, industrial and aquaculture pollution.

 Lecture 4 : Heavy Metals Pollution 1.3MB PDF document Uploaded 19/05/21, 11:07

This lecture discusses the type of heavy metals pollution, toxicity of metals, sediment as a biomarker, org assessment of heavy metals pollution and affect to human health



Geological Oceanography



 Lecture 1- Introduction to geological oceanography 24.9MB Powerpoint 2007 presentation Uploaded 31/05/21, 08:21

This topic provide introduction to the field of marine geology including the geological time scale.

 Lecture 2- General morphology of the ocean floor 86.1MB Powerpoint 2007 presentation Uploaded 31/05/21, 08:13

This topic provide introductions to the geomorphological features of the ocean floors and theories of the plate tectonic.

 Lecture 3 - The Major Geological Events 53.2MB Powerpoint 2007 presentation Uploaded 30/05/21, 22:25

This lecture provide general introduction to the several important geological events that help shaped planet Earth. Examples of important geological events include the formation of our Solar System and planet Earth some 4.6 billion years ago, the great oxygenation event and the snow ball Earth.

Assignments and Tutorial

Assignments

Group Assignment 1: Global Ocean Scientific Reports (GOSR 2021)

Dear Students,

In a group, please discuss and provide a conclusion from each chapter of the GOSR2021.

Also, please read the UN Ocean Decades documents (attached), and relate how it related to help overcome problems highlighted by the GOSR2021 reports.

Docs: <https://unesdoc.unesco.org/ark:/48223/pf0000375147>

Group 1: Chapter 2

Data Collection and Data Analysis

Group 2: Chapter 3

Funding for Ocean Science

Group 3: Chapter 4

Research Capacity and Infrastructure

Group 4: Chapter 5

Ocean Science Production and Impact

Individual Assignment 1: Importance of World Ocean Database

Please write a short essay describing the importance of World Ocean Database. What the effort really means to the oceanography scientific community?

Please submit by 25 April 5pm

Upwelling Assignment: Due 1st May 5pm

Read all 3 papers;

Please write a short summary (1 page) on the upwelling forcing from all the 3 sites, please highlights the similarity and distinguish the uniqueness of each upwelling site.

Tutorial

Tutorial 1: Accessing Data in World Ocean Database 3.8MB Word 2007 document Uploaded 28/04/21, 13:08

In this exercise, students will learn how to download, import and visualize ocean data from World Ocean Databas

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Additional Resources

 Global Ocean Scientific Report



GOSR2020 not only provides consistent reference information at the start of UN Decade for Ocean Science for Sustainable Development 2021–2030, it evolves as a living product. The global community is given the online facility to submit and update data on the GOSR portal and consult data to regularly assess progress on the efficiency and impact of policies to develop ocean science capacity.

 United Nation Decade of Ocean Science



Thank you