ACTIVITY	MARE MOOC REPORT
ORGANIZER	Universiti Kuala Lumpur Malaysian Institute of Marine Engineering Technology (UniKL MIMET)
VENUE	Youtube Platform

To enhance the TLM delivery and expand the knowledge to outside MARE circle, MARE members initiated to produce YouTube channel to give an awareness to others about the existence of this project and the courses offered within the partners.

In this YouTube channel, MARE covered all the 6 themes under the project, such as.

1. Coastal Science and Management
2. Delta Science
3. Are-based Management.
4. Fisheries, Seabed Resources & Food Security
5. Offshore Exploration & Mining
6. Marine Pollution Control and Management

There are 12 interactive MOOC videos uploaded in the channel for external used for their add value and sharing knowledge. The YouTube channel can be assessed by using this link below: https://www.youtube.com/@MAREMOOC

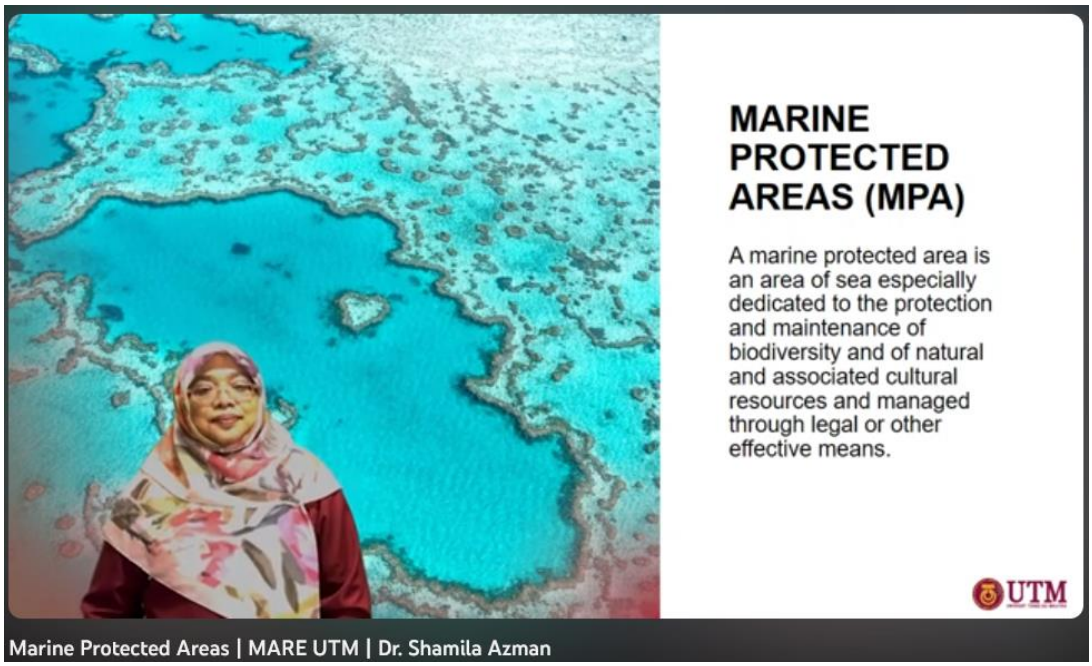
The universities participate in the development of MOOC video as follows:

1. Universiti Kuala Lumpur (UniKL)
2. Universiti Teknologi Malaysia (UTM)
3. Universiti Malaysia Terengganu (UMT)
4. Universiti Teknologi Petronas (UTP)
5. Ho Chi Minh City University of Natural Resources and Environment (HCMUNRE)

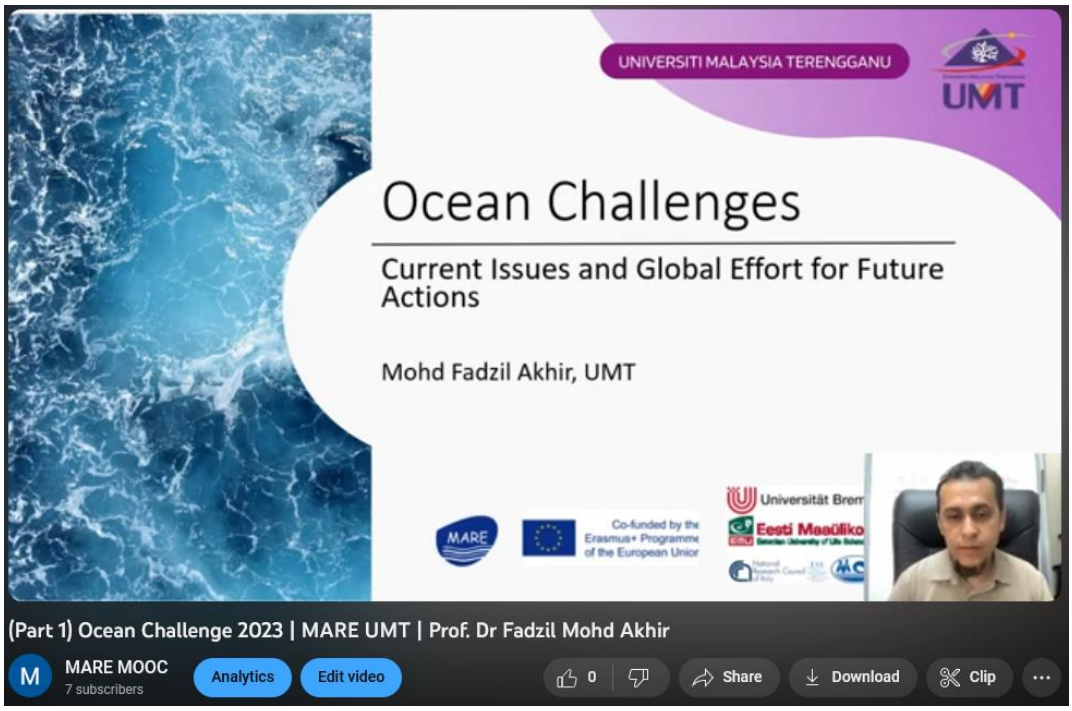
Enclosed the footage of the MOOC video and abstract to expose the primary knowledge shared in the MOOC video.

ABSTRACT: Oil spills pose a grave threat to our oceans and coastal ecosystems, demanding effective and sustainable solutions. In this MARE MOOC video, " Oil spill Combating Method" embarks on an enlightening journey through the cutting-edge techniques revolutionizing the field of oil spill cleanup. Join us as we explore the intricate process of oil spill response, showcasing a diverse array of methods and technologies, from mechanical skimming to bioremediation, that are making waves in environmental conservation. Through compelling visuals and expert insights, we demystify the science behind each approach, revealing their strengths, limitations, and real-world applications. Witness the tireless efforts of scientists, engineers, and environmentalists who are dedicated to safeguarding our natural habitats and marine life. " Oil spill Combating Method " is a celebration of their unwavering commitment to protecting the planet and its fragile ecosystems. This video is not just an exploration of innovative cleanup techniques but a call to action, inspiring viewers to support and advocate for the adoption of eco-friendly and sustainable methods in mitigating the devastating effects of oil spills. Together, we can be the eco-saviors our planet needs, ensuring cleaner, healthier oceans for generations to come. Join us in the quest for a greener, more resilient world. " Oil spill Combating Method " is your guide to the present and future of oil spill cleanup methods, revealing the path to a cleaner and more sustainable world.

ABSTRACT: In a world where our oceans are facing unprecedented threats, understanding the sources of marine pollution is crucial. In this MARE MOOC video, " Sources of Marine Pollution," takes you on a journey beneath the waves to reveal the hidden perpetrators of marine pollution. Through vivid imagery and expert insights, we shed light on the diverse origins of this global crisis. From industrial discharges to plastic waste, from oil spills to agricultural runoff, we uncover the multifaceted sources of marine pollution that imperil our oceans and their delicate ecosystems. You'll witness the impact of human activities on marine life and the environment and gain a deeper appreciation for the importance of preserving our oceans. Join us on this educational and eye-opening expedition to learn how you can be a part of the solution. Together, we can become the true guardians of the sea, working to combat and mitigate the sources of marine pollution, ensuring a healthier, more sustainable future for our oceans and the planet. "Sources of Marine Pollution " is a call to action, inspiring viewers to take responsibility for our marine environments and contribute to a cleaner, safer world beneath the waves.

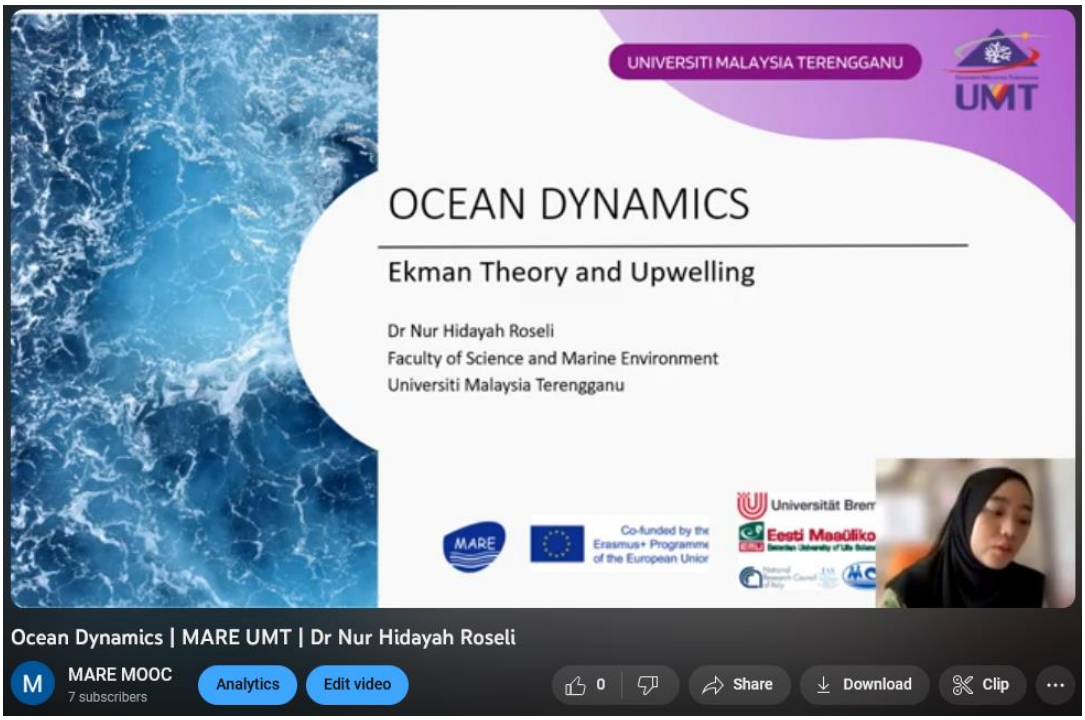


ABSTRACT: In recent years, the importance of marine protected areas (MPAs) has become increasingly recognized as means to safeguard our oceans and their diversity. MPAs are designated areas of the ocean where human activity is restricted or prohibited, allowing marine ecosystems to thrive and replenish. In this lecture, we will explore the various types of MPAs, their benefits, and the challenges they face. In Malaysia, the MPAs can be accorded to all states in Peninsular Malaysia with exception of the Federal Territory of Kuala Lumpur and Putrajaya. Malaysia first introduced MPA in the 1980s via the Department of Fisheries Malaysia (DOFM) to halt overfishing and improve coastal zone fishing resources. After a review of the Fisheries Act 1963, the Malaysian marine parks gazettement was issued in 1994, and it became a constitutional legislation in 1995. While MPAs are intended to protect habitats and marine resources, they also double as a management tool to improve fisheries sustainability. To date, Malaysia has gazette 53 MPAs in Peninsular Malaysia under the Fisheries Act of 1989. A total of 9.99% (15,908.73 km2) of marine areas of the coast of the states in Malaysia are accorded protection either as Marine Parks, MPA gazette by state, Fisheries Prohibited Zones and Fisheries Conservation Zones. Join us as we dive into the fascinating world of marine protected areas and discover how they are crucial for the health of our oceans and the planet.

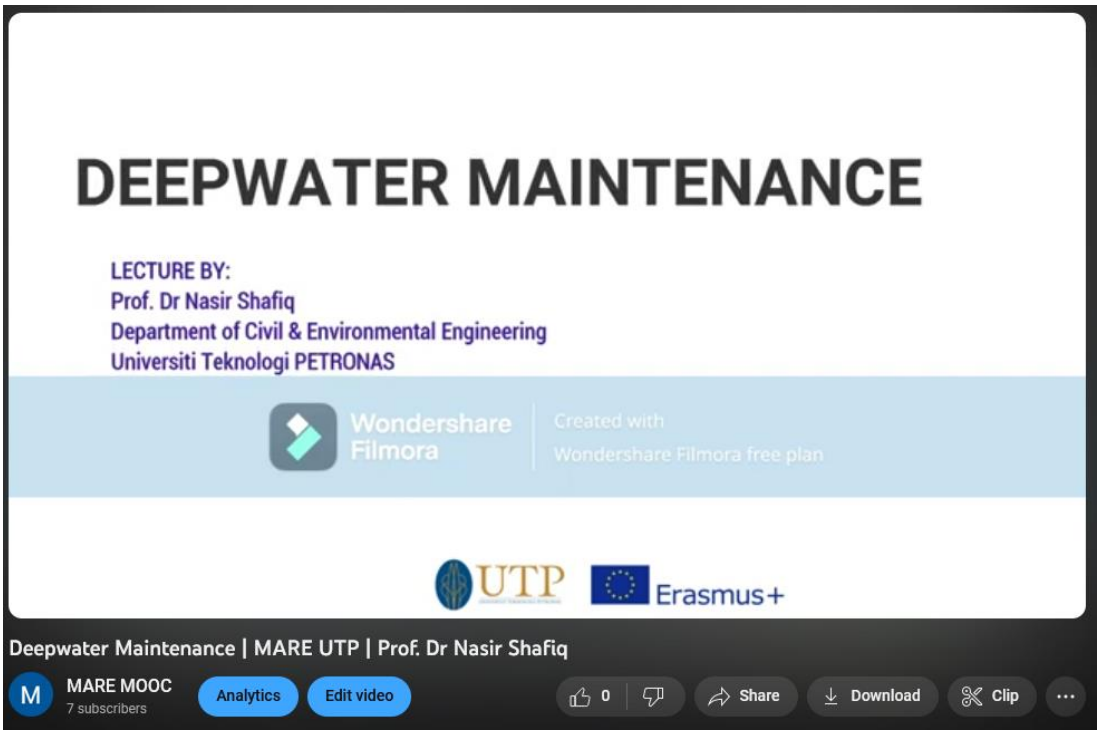


ABSTRACT: Oceanography plays a crucial role in unravelling the mysteries of Earth's oceans and addressing the pressing challenges that affect our planet. This abstract highlight the significance of oceanography in comprehending ocean dynamics, ecosystems, and their interconnectedness with global processes. It underscores the pivotal role of the ocean scientific community in tackling contemporary issues such as climate change, ocean acidification, plastic pollution, and habitat destruction. As the oceans face unprecedented threats, collaboration between researchers, policymakers, and environmentalists is imperative to preserve and protect this invaluable resource for current and future generations. This lecture provides a glimpse into the 7 major challenges in multifaceted field of oceanography, emphasizing its essential contribution to understanding and mitigating the challenges facing our oceans.

ABSTRACT: The oceans are essential to human health and well-being because they provide food to billions, livelihoods for millions and are the source of multiple essential medicines. However, the oceans are under threat, and human activity is the main source of this threat. Pollution sources such as from land base, plastic waste, toxic, and industrial waste, as well as uncontrolled development and population growth are the major sources of threat to marine ecosystem. As the Asia region produces half of the world's plastic production, it is an alarming state that needs attention and effort from various stakeholders. This presentation covers the sources and impacts of ocean pollution, as well as projecting future direction for effective pollution monitoring. Effective monitoring is an important step for better understanding the trend of pollution, as an early stage for strategizing their removal and remediation from the ocean.

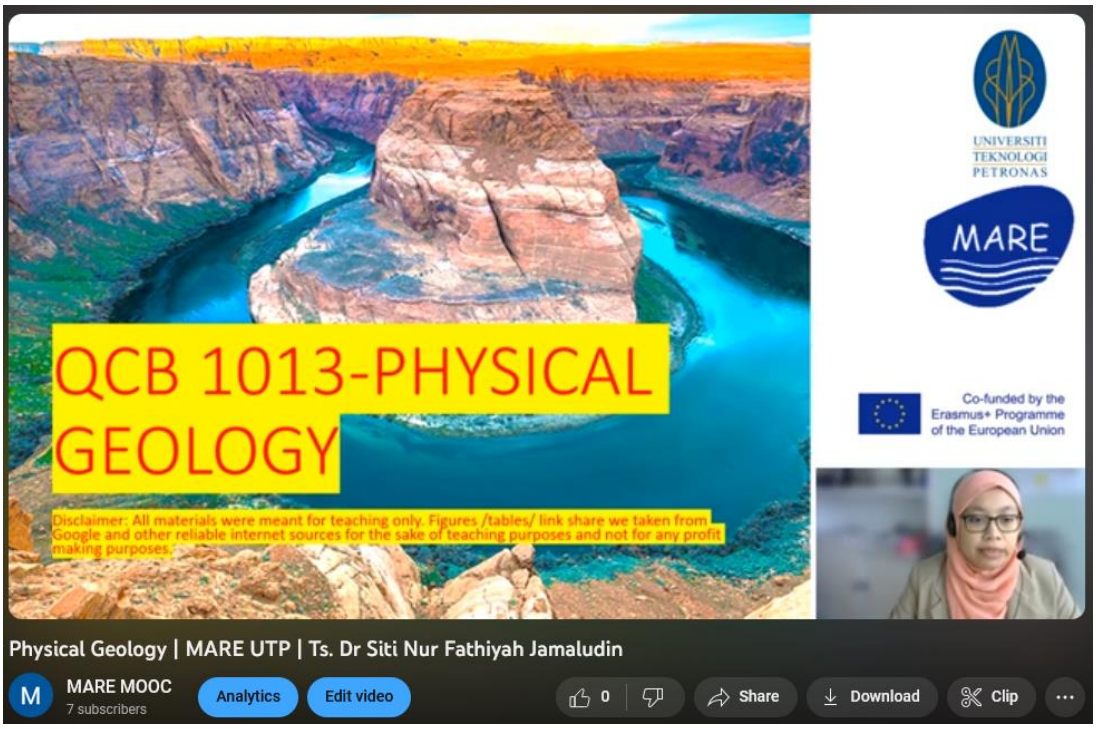


ABSTRACT: Ekman dynamics in the ocean is important for upwelling process. The Ekman theory was first described by Swedish scientist, V. Walfrid Ekman in 1902. According to Ekman theory, Ekman spiral is a consequence of Coriolis effect. When surface winds blow parallel to the coastline, over the ocean surface creates surface currents. Due to the Earth's rotation, the Coriolis force caused surface currents to deflect 45°to the right of the wind in the northern hemisphere (and vice versa for the southern hemisphere). The frictional movement on the surface creates another motion downward as the water gets deeper. The spiraling pattern of water motion downward is called Ekman Spiral. If the magnitudes and direction of the movement of each layer are added, the net movement of upper 100m water is 90°relative to the right of original wind direction in the northern hemisphere (vice versa for the southern hemisphere). When the surface water was transported away from the coastline, the bottom water uplifted to replace it. This process is called upwelling. Another process, downwelling, occurs when Ekman transports moves the surface water towards the coast caused the water to pile up and sink below surface currents. Compared to downwelling, the area with upwelling is known as a high productivity area. The world's major systems of upwelling are mostly associated with Eastern Boundary Currents (part of subtropical ocean gyre). Bakun (1990) hypothesized that global warming will result in changes of land-sea pressure gradients due to isopycnal deepening between the gyre and coastal region that will affect global wind patterns and enhance the upwelling intensity.

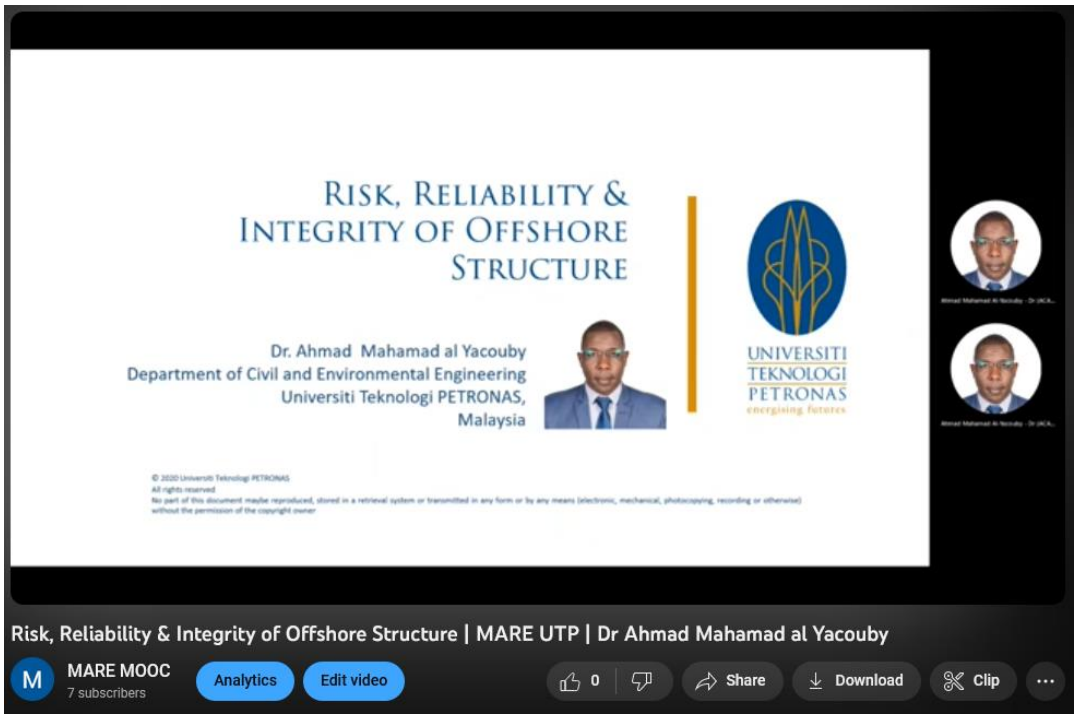


ABSTRACT: In this MOOC challenges in deepwater oil & gas exploration and production is presented. This includes the basics, design and integrity of mooring lines, pipelines and risers. Related facility operations are also presented along with other topics such as geo-hazards and concrete floater concept.

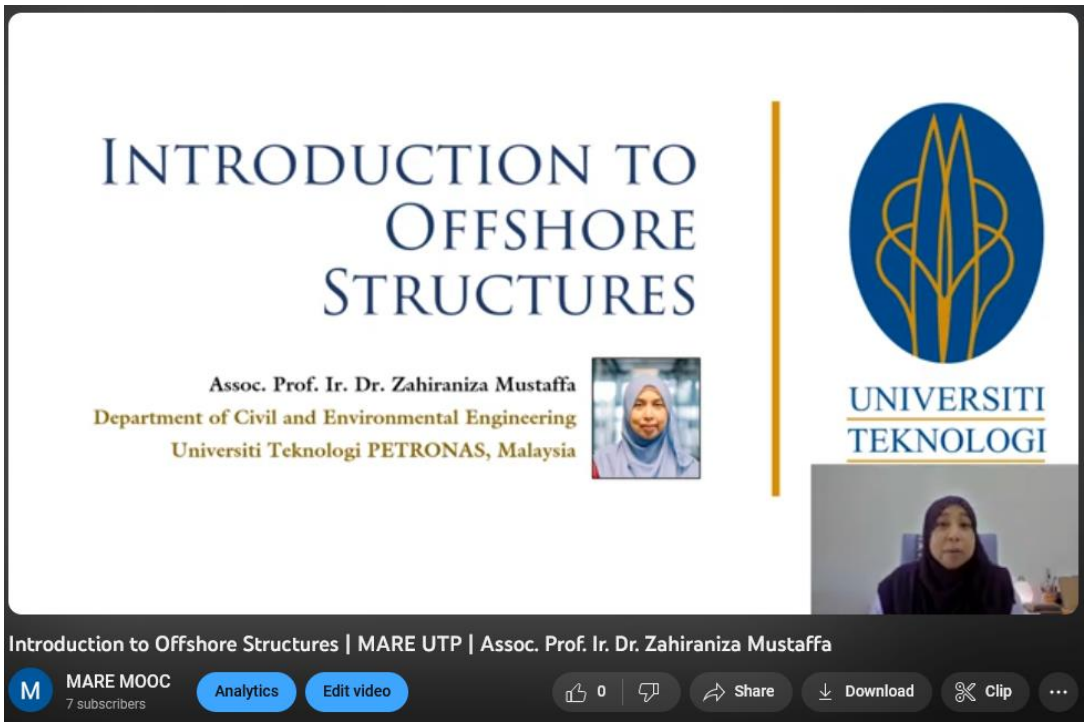
ABSTRACT: This MOOC on Marine Pollution Control and Management aims to provide an overview to the students on the impacts of oil and gas activities on the marine environment. It presents awareness on the effects of hydrocarbon exploration, and briefly describes on the rules and regulations in marine pollution management. This video is expected to enhance the students' understanding and learning experience on the topic.



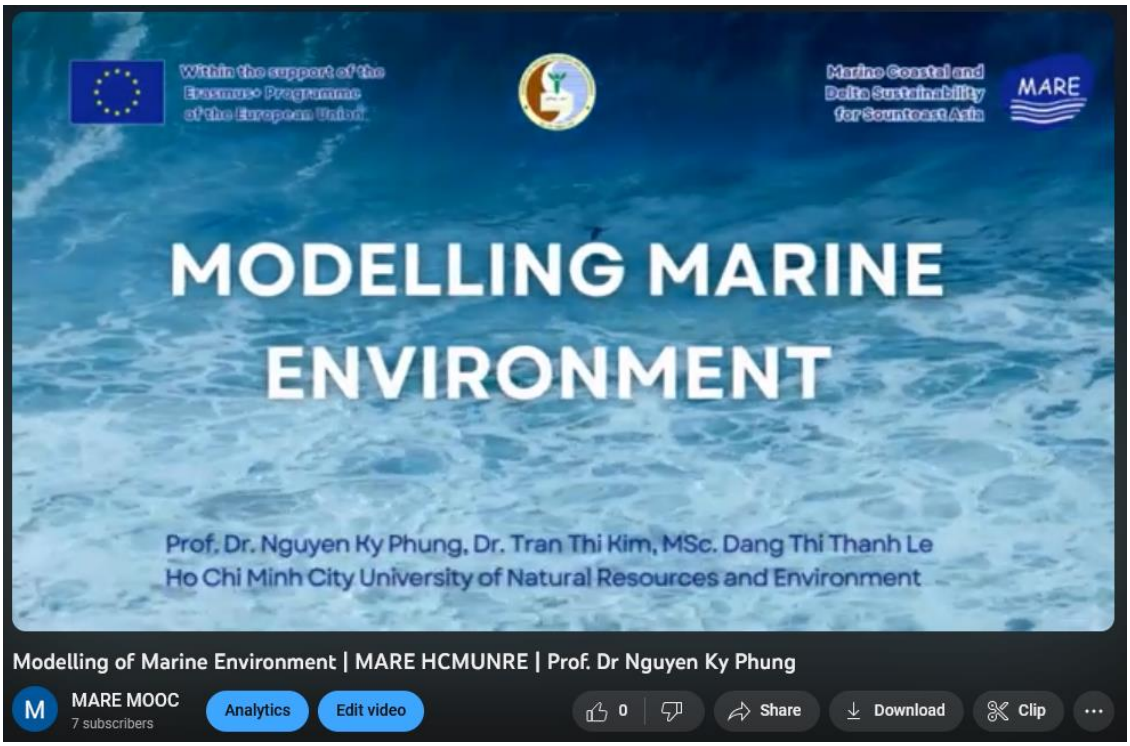
ABSTRACT: This MOOC presents the basic knowledge on coastal morphology which is an important topic in physical geology. Coastal hazards and disasters are elaborated, which include the rise of sea level, erosion, storms and flooding. Various methods for mitigation of coastal hazards are also presented.



ABSTRACT: Offshore structures consist of offshore oil platforms and offshore wind turbines. They are special types of complex structures capable to accommodate facilities and equipment for drilling, extraction and processing of oil and natural gas. For design and analysis of marine structures, calculation of wave loads and other related factors are highly crucial in ensuring structural integrity. Probabilistic design and assessment procedures are useful for this and are presented in this MOOC.



ABSTRACT: Offshore construction projects involving oil and gas operations have many technical issues and strict deadlines. This MOOC presents various types of offshore structures and the complications involved. The operations vary from shallow to deepwater. Weather conditions, such as high winds and rough seas, can limit the working window for construction activities.



ABSTRACT: Modelling of marine environment is one of the subjects that apply multidisciplinary knowledge to explain, explore and predict the response of the marine environment to natural and man-made disasters. The coastal waters are suffering from dual impacts from overexploitation of marine resources and discharges from economic activities in coastal areas. To serve the management of marine environments, modeling has emerged as an effective tool to make predictions and provide appropriate solutions to protect and develop marine resources. Modeling the marine environment is a very important course in the field of marine resources management. This course aims to train you with the necessary knowledge and skills to understand and analyze phenomena in the marine environment. For example, marine pollution, dam breaks, erosion, sedimentation, tsunamis, floods, droughts, saltwater intrusion, and so on. The main contents of this course include: the theory of modeling marine environments, research methods and applications of modeling in marine resource management, and the applications of modeling in predicting changes in the marine environment. By the end of this course, you will be well-prepared to contribute to ongoing efforts to preserve our marine ecosystems and protect this invaluable resource for future generations. Together, we'll unlock the mysteries of the deep and apply our knowledge to create positive change.