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OCEAN AND COASTAL ENGINEERING (LECTURE NOTES)

CREATED BY: Ts. Dr. Teh Hee Min

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VEB4213 OCEAN AND COASTAL ENGINEERING

Ts. Dr. HM Teh



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BIOGRAPHY OF AUTHOR

Hee Min Teh is a Senior Lecturer at Universiti Teknologi PETRONAS, Malaysia. He graduated from Universiti Teknologi Malaysia with a bachelor's degree in civil engineering in 2000. He further pursued a master's degree in coastal and maritime engineering and graduated from the same university in 2003. He was then awarded a PhD in coastal engineering from the University of Edinburgh in 2013. His main research interests are hydrodynamics of coastal structures, wave and storm surge modelling, renewable wave energy and physical modeling. Dr. Teh secured 13 international, national and internal research grants amounting to a total of about RM2 million. He owns an IP of a floating breakwater design that won him several international awards. He published more than 70 journals and conference articles. He is also the reviewer of a number of international journals and research proposals. He is the IMarEST Chartered Engineer since 2013.

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PREFACE

Ocean and Coastal Engineering is one of the courses of Coastal Engineering elective offered by Civil Engineering Programme. The course is taken by the final year undergraduate Civil Engineering students of Universiti Teknologi PETRONAS (UTP). This 4 ECTS (approximately 3 credit hours) course aspires to develop understanding on the fundamental principles in ocean and coastal engineering among the students. There are four topics altogether in this course, namely (1) introduction to coastal environment, (2) ocean waves and coastal transformation, (3) tides and currents, and (4) coastal sediment transport and coastal morphology. The MARE subtopics on estuarine processes and morpho dynamics have been included in the syllabus. Ocean and Coastal Engineering is a subject that requires interactive discussions, sharing of exciting examples and case studies for enhanced understanding and appreciation. This skill is developed through series of lectures/modules, discussion related to case studies during execution of project assigned. The transferred skills are to be assessed by assignment/report, test and final examination. Problem-based learning will be implemented in the class. An adjunct lecture and a field trip will also be conducted to expose the students to the real coastal engineering problems and constructions.

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LIST OF THE TLM AVAILABLE:

The course was delivered using the online mode during COVID pandemic.

(a) List of Lecture Notes

- Topic 1 – Introduction to Coastal Environment
- Topic 2 – Part 1-Wave Formation & Wave Mechanics
- Topic 2 – Part 2-Wave Shoaling and Breaking
- Topic 2 – Part 3-Wave Refraction and Reflection
- Topic 2 – Part 4 – Wave Diffraction and Run up
- Topic 3 – Part 1 – Tides
- Topic 3 – Part 2 – Coastal Currents
- Topic 4 – Part 1 – Littoral Transports
- Topic 4 – Part 2 – Sediment Budget
- Topic 4 – Part 3 – Coastal Morpho-dynamics

(b) Video

Nil

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