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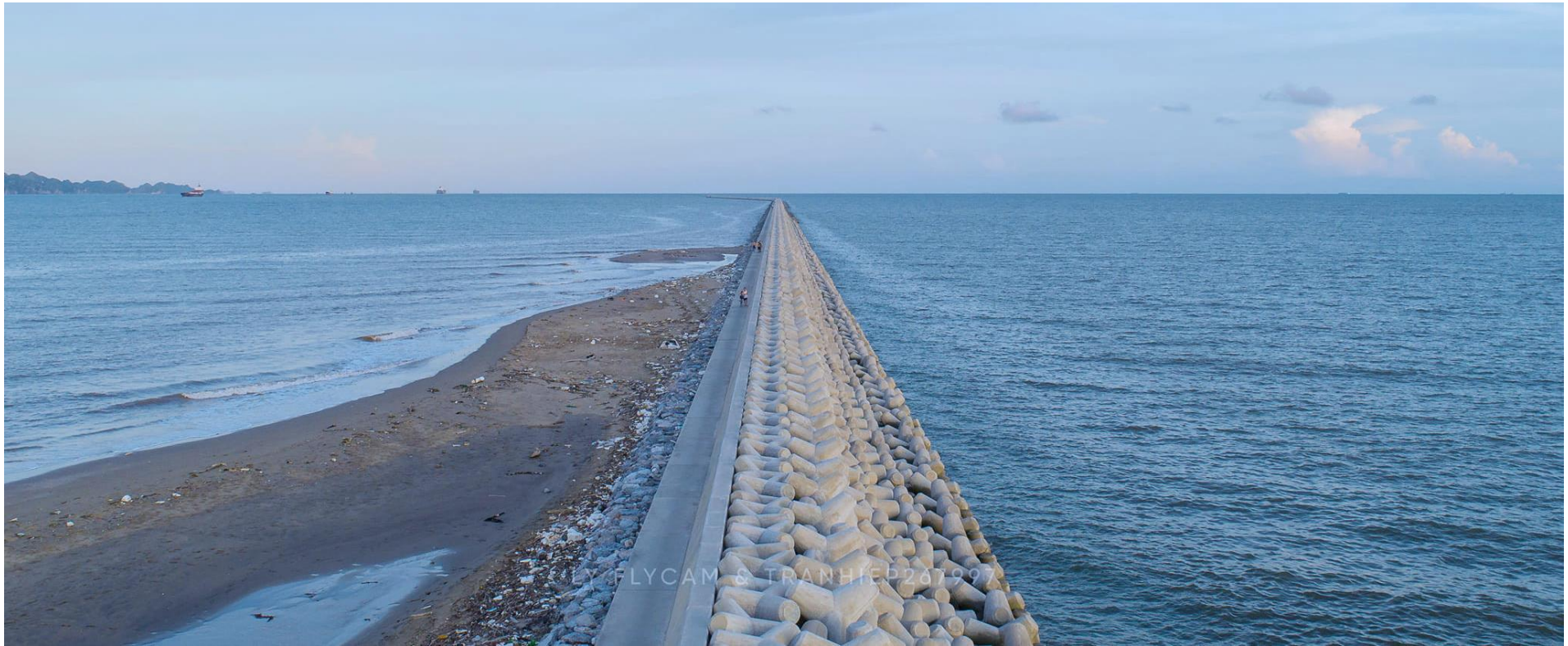
# HYDRO METEOROLOGY

Lecturers: Dr. TRAN DUC PHU



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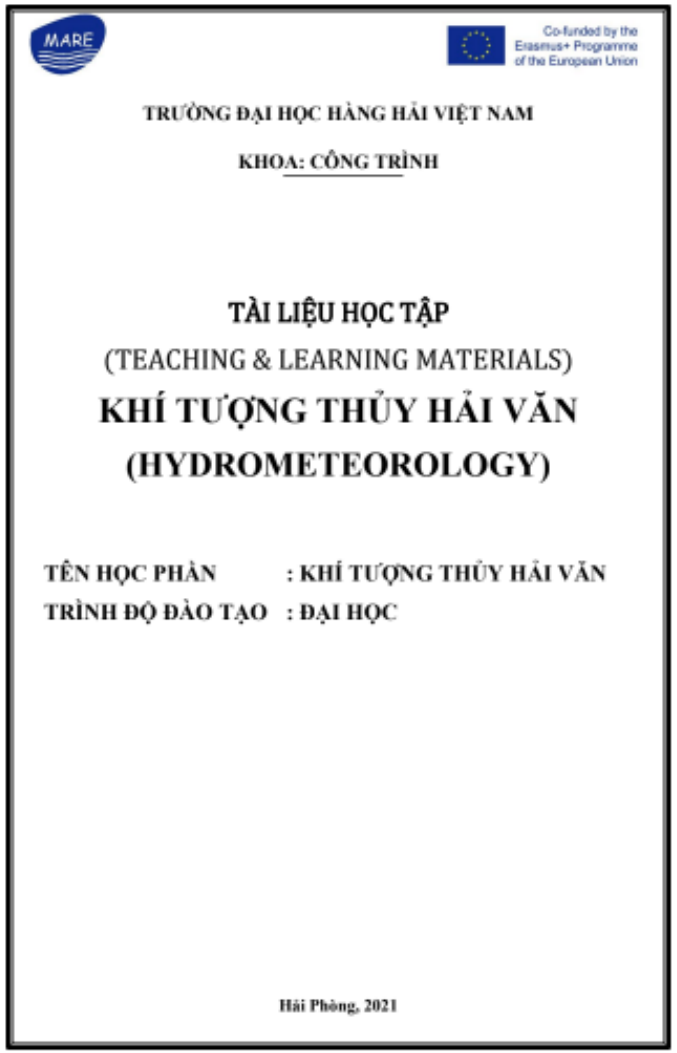
# LECTURE NOTES




- The main material used in the course of hydro Meteorology is the Lecture Notes which is created by Faculty of Hydraulic Engineering, Vietnam Maritime University.
- This document in available in Vietnamese.
- Target audience is students in Bachelors program.

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# PREFACE

Hydrometeorology studies the energy, chemistry, physics, and water fluxes in the atmosphere and the Earth's surface. This science measures and understands the hydrological phenomena that occur in the atmosphere and the ground; it puts particular emphasis on the interactions between the two. Nowadays, there are robust numerical models, remote sensing data, and high computational capabilities which support the prediction of meteorological and climatological events. However, fundamental insights of hydrometeorology is essential for engineering bachelor to further understand the impacts of flows on building structures by river or sea.

The lecture notes provides basic knowledge of meteorology and hydrogeology. Besides, it also equips learners with basic knowledge about rivers and river flow formation, main meteorological features, hydrological characteristics of basins and rivers, principles of surveying hydrological features hydrological calculation methods, calculating design hydrological features, knowing how to collect hydrological data, principles of tidal monitoring and forecasting.

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# LECTURE NOTE CONTENTS

**Chapter 1. Definition of Hydro Meteorology**

In this first chapter, students are provided with fundamental knowledge of concepts and characteristics of hydrological phenomena and hydrological research methods.

**Chapter 2. Fundamentals of rivers and the formation of river flow**

This chapter introduces river systems and river flow formation; the longitudinal and cross-sections of the river and calculate the hydraulic characteristics on the river cross-section.

**Chapter 3. Hydrological characteristics of basins and rivers**

The hydrological features of the basins and rivers are discussed. Students are instructed to monitor the water level, flow velocity, to calculate the main hydrological features in the river.

**Chapter 4. Hydrological calculation method**

The chapter introduces the methods of hydrological calculation of the main meteorological features, the calculation of basic features on the plan and cross-section of the river.

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# LECTURE NOTE CONTENTS

**Chapter 5. Features of the Earth's atmosphere**

This chapter introduces the characteristics of the earth's atmosphere.

**Chapter 6. Main meteorological features**

Main meteorological features will be addressed in this chapter. Learners are equipped with the methods of hydrological calculation of the main meteorological features and calculation of basic features on the plan and cross-section of the river.

**Chapter 7. Basics concepts of tides and waves**

The chapter introduces main meteorological features; basic tidal concepts and classify tides according to tidal waves.

**Chapter 8. Tidal observing and forecasting**

The method to observe and predict tides is introduced in this part.

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# LECTURE NOTE CONTENTS

**Chapter 9. Estimate harmonic constants from 30-day observed water level data**

This chapter introduces the method to calculate harmonic constant from water level monitoring data for 30 days; the hydrological regime of the river affected by tides and calculate the design hydrological features.

**Chapter 10. Calculating the theoretical maximum and minimum water level**

The hydrological regime of the river affected by tides and the calculation method for the hydrological features are introduced.

# Thank you

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