PROGRAMME

Day 1 – 14th April 2020	
Hour	**Description**
08:30 – 10:45	Introduction to the course
	Introduction to the wind dynamics
10:45 – 11:00	Coffee Break
11:00 – 13:00	Wind climate
13:00 – 14:00	Lunch break
14:00 – 17:00	Met-ocean information required for the OWT
	Wind databases

Day 2 – 15th April 2020	
Hour	**Description**
08:30 – 10:45	Wind numerical simulations
10:45 – 11:00	Coffee break
11:00 – 13:00	WRF practice
13:00 – 14:00	Lunch break
14:00 – 17:00	Wind quality evaluation

Day 3 – 16th April 2020	
Hour	**Description**
08:30 – 10:45	Introduction to OWT
	OWT components
10:45 – 11:00	Coffee break
11:00 – 13:00	Fundamentals of design of OWT
13:00 – 14:00	Lunch break
14:00 – 17:00	Fundamentals of design of OWT
	Offshore Wind farm systems

PRICING AND BOOKING:

Course venue: IHCantabria headquarters

The course will be delivered in English

The course is free of charge

(Coffees and lunches are included. Accommodation is not included)

Registration at info@ihcantabria.com (limited to 25 attendees)

A PROJECT CO-FUNDED BY:

This course is supported by the PORTOS project co-financed by the Interreg Atlantic Area Programme through the European Regional Development Fund [grant number EAPA_784/2018].

Interreg Atlantic Area
European Regional Development Fund
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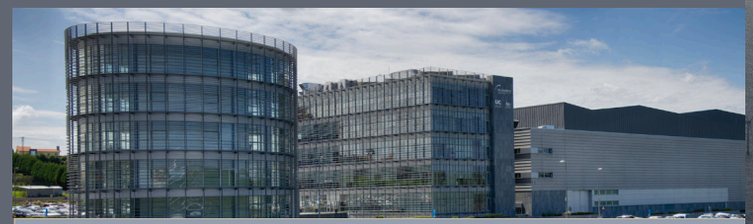

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PORTOS PROJECT

OFFSHORE WIND: RESOURCE ASSESSMENT AND TECHNOLOGIES

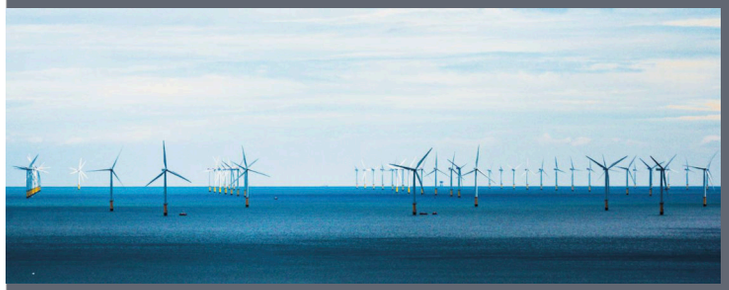
April 14th to 16th 2020

IH cantabria
INSTITUTO DE HIDRÁULICA AMBIENTAL
UNIVERSIDAD DE CANTABRIA

Interreg Atlantic Area
European Regional Development Fund
EUROPEAN UNION

ABOUT THE COURSE

Wind conditions can considerably affect the navigation of ships and the development of port activities, such us the loading and unloading tasks. The persistent wind conditions over the marine and coastal environment, however, can also be used to produce energy within the port framework. Indeed, coasts and oceans represent a vast and largely untapped source of low carbon energy. Coastal and marine wind energy resource is the main and most incipient source of the full range of marine renewable energies, although of an atmospheric and non-oceanic genesis.



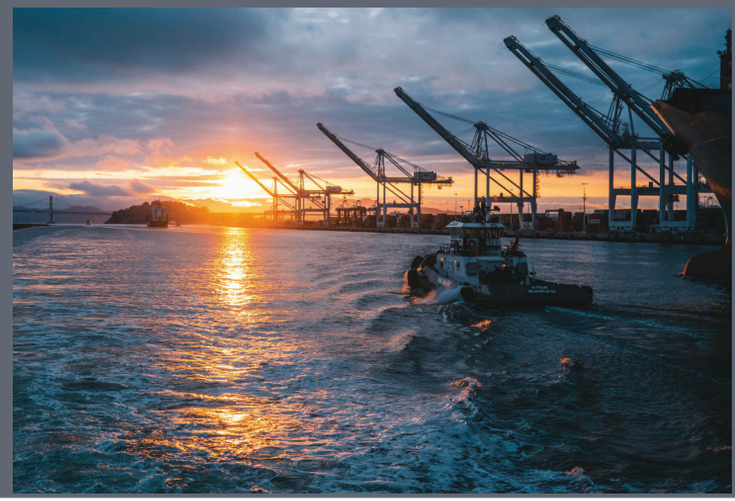
The offshore wind industry, based on the experience acquired and technologies developed for harvesting energy from onshore locations, has been extended to the coastal and marine environment for more than 10 years. The adaptation of wind energy extraction technologies on the coast and the marine environment must nevertheless consider the peculiarities of this locations. The study and design of wind energy farms associated to a specific port require firstly a rigorous assessment the wind energy resource over the marine surface and the coastal areas, since marine wind characteristics show a different climate behaviour than onshore wind. Wind speed optimal conditions for energy production are in general more persistent on the coast than onshore, even over high altitude conditions generally used for the implementation of onshore wind farms. Extreme wind, however, used to be more severe than inland.

The course includes basic training on wind dynamics, the development and modeling of the wind resource characterisation in coastal areas, a description of the available wind database resources, the characterisation of the main wind environmental conditions and technological considerations for the exploitation of this resource in the ports. In addition, case studies are included, such as a numerical simulation of wind fields and wind resource assessment on coastal areas.

COURSE CONTENTS

The course will be organized within three intensive days, and will include the following topics:

- Introduction to Wind dynamics.
- The Wind climate.
- Met-ocean information required for the OWT (waves and currents).
- Wind databases.
- Atmospheric modeling to simulate wind climate and evaluate wind energy resource.
- Wind quality evaluation.
- Developments and standards for design of Offshore wind technologies.
- Components of the offshore wind technologies.
- Aspects involved in the design of OWT.
- Offshore wind farm systems.



TEACHING STAFF

César Vidal

Full Professor at University of Cantabria (since 2007) and senior researcher in the Marine Energy and Offshore Engineering Group at IHCantabria. His main research fields are stability of rubble-mound breakwaters, beach morphodynamics, coastal laboratory techniques, wave-structure interaction, wave energy resource assessment and wave energy conversion systems analysis. César has been the main researcher in several projects funded by the Spanish Government, the European Union as well as by several Spanish public administrations (State Ports Authority, Directorate General for Coasts, etc.). He has publicated 20 book chapters, 38 papers in scientific journals and 94 conference proceedings.

Melisa Menéndez

Melisa Menéndez is a Research Scientist in the group Marine Climate and Climate Change of IHCantabria. She has a Masters in 'Science and Technology for Managing the Coast' (2003) and her doctoral thesis was titled "Methodology for statistical analysis of extreme values nonstationary geophysical variables "(2008), directed by Fernando J. Méndez and Iñigo J. Losada. Melisa Menéndez has been awarded the Extraordinary Doctorate from the Universidad de Cantabria in the area of Technical Education (2010).

Adrián Acevedo

Adrian is Civil Environmental Engineer (2014) by the University of Cantabria (Santander, Spain) and MsC in "Integrated Coastal Zone Management" by the same University (2015). Currently, he is a project engineer in the Marine Climate and Climate Change Group of the Environmental Hydraulics Institute (IHCantabria). His main field of research covers the development of climate databases; the characterization of marine and atmospheric climate by developing hindcast and prediction systems with numerical and statistical models; and the analysis of the impact and effect of the Climate Change over the coast.