

# **Marine Renewable Energy**

**26-27 June 2024**

**ONLINE**



## **ABOUT THE COURSE**

This course provides a comprehensive overview of the most relevant marine renewable energy sources, along with their respective harvesting technologies. The lectures encompass wave and tidal energy, as well as offshore wind energy, offering insights into both engineering and commercial aspects. Practical exercises are incorporated to enhance understanding of the subject matter. The course also examines the integration of marine energy devices into various coastal, nearshore, and offshore structures, and explores the synergies between marine renewable energy technologies and other marine activities. Key topics covered include resource estimation, different types of harvesting technologies and their design and applicability, the alignment of marine renewable energy with current EU and UK policies and strategies, and cost-benefit analyses. Furthermore, the course addresses design principles, installation procedures, commissioning requirements, and decommissioning protocols for these technologies, incorporating exercises specific to each technology.

## **WHO SHOULD ATTEND**

The target audience for this course includes engineers, researchers, and technical leaders working in companies or other entities who are interested in gaining a comprehensive understanding of Marine Renewable Energy (MRE) and its significance in the face of the emerging challenges within the energy market. The course helps them stay informed and well-prepared for the evolving energy landscape.

## **COST**

The registration fee of the workshop will be £695 +VAT (UK VAT ONLY) which includes course notes.

## **COURSE MATERIAL**

The lecture notes will be sent in advance.

## **PAYMENT**

Payments can be made by cheque (made payable to ASRANet Ltd.), cash or bank transfer. Please enquire for details.

### **CONTACT**

ASRANet  
Limited

W [www.ASRANet.co.uk/courses](http://www.ASRANet.co.uk/courses)

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# PROGRAMME

**Programme (Lecturer: Dr Tiago Fazerer Ferradosa)**

**Times in BST (GMT+1)**

**Day 1: Wednesday 26<sup>th</sup> June 2024**

**9:00 - 10:30 Lecture 1: Introduction to Marine Renewable Energy (MRE)**

- Overview of marine renewable energy sources (wave, tidal, offshore wind)
- Importance of marine renewable energy in the energy market
- Environmental and sustainability aspects of marine renewable energy
- Key variables for MRE design and resources assessment

10:30-11:00 Break

**11:00 - 12:30 Lecture 2: Wave Energy Conversion Technologies**

- Principles of wave energy conversion
- Different types of wave energy devices and their working principles
- Challenges and opportunities in wave energy conversion

12:30-13:30 Break

**13:30 - 15:00 Lecture 3: Tidal Energy Conversion Technologies**

- Fundamentals of tidal energy conversion
- Types of tidal energy devices and their operation
- Site selection considerations and resource assessment for tidal energy

15:00-15:30 Break

**15:30 - 17:00 Lecture 4: Offshore Wind Energy**

- Introduction to offshore wind energy and its advantages
- Offshore wind turbine technologies and design considerations
- Installation and maintenance of offshore wind farms

**Times in BST (GMT+1)**

**Day 2: Thursday 27<sup>th</sup> June 2024**

**9:00 - 10:30 Lecture 5: Integration of Marine Energy Devices, Applications and Modelling**

- Integration of marine energy devices into coastal, nearshore, and offshore structures
- Physical modelling of Marine Energy Devices
- Numerical modelling of Marine Energy Devices
- Synergies and challenges associated with integrating marine energy with other marine activities (e.g. aquaculture, tourism)

10:30-11:00 Break

**11:00 - 12:30 Lecture 6: Policy and Regulatory Frameworks for Marine Renewable Energy**

- Overview of current EU and national policies related to marine renewable energy
- Legal and regulatory considerations for deploying marine energy projects
- Support mechanisms and incentives for the development of marine renewable energy

12:30-13:30 Break

**13:30 - 15:00 Lecture 7: Resource Estimation and Assessment**

- Techniques for estimating marine energy resources (waves, tides, winds)
- Data collection and analysis methods for resource assessment
- Case studies of resource assessment studies for marine renewable energy projects

15:00- 15:30 Break

**15:30 - 17:00 Lecture 8: Economic Analysis and Project Development**

- Cost-benefit analysis of marine renewable energy projects
- Life-cycle and economic evaluation of MRE structures
- Project development stages and considerations
- Certification engagement

## Lecturer CV

### Dr Tiago Fazeres Ferradosa



Tiago Fazeres Ferradosa is an Assistant Professor at the Faculty of Engineering of the University of Porto and researcher of the Interdisciplinary Centre of Marine and Environmental Research (CIIMAR). Tiago is currently responsible for the R&D unit Offshore Structures & Foundations at the Research Group of Hydraulic Structures and Marine Energy. He was an MSc. researcher at University College London and developed his PhD in UPORTO on the topic of reliability analysis of optimised scour protections for offshore foundations. He is also involved as responsible, co-responsible and team member, in the several R&D and private company projects related to offshore engineering and marine renewable energy research, such as MARINET proposal 61; HYDRALAB+ (Proteus proposal); ORACLE; POSEIDON and i.nano.WEC, AquaBreak EEA Grants, among many others. Some of its latest clients are: EDP Portugal, Total Énergies, Jan de Nul, HAEDES B.V. and many more, including contracts for offshore marine energy projects, such as the Offshore Fenix Gas Project, Le Tréport Offshore Wind Farm, Saint-Nazaire Offshore Wind, just to name a few.

He performs supervision activities of doctoral and master degree students in civil engineering at the University of Porto and has been responsible for the organisation of more than 55 conferences, courses, symposia and other scientific and professional events.

He is the editor of the IAHR Newsflash Europe and co-Editor in Chief of Maritime Engineering (ICE). He acts as member of the editorial panel in 16 international peer-reviewed journals and was Guest Editor of SI in Renewable Energy (Elsevier) and Ocean Engineering (Elsevier) and reviewer in other 29 international peer-reviewed journals. Tiago is the author of more than 52 scientific journal peer-reviewed publications (indexed in Scopus and WoS) and founder and coorganiser of the International Offshore Structures Design course series, he has an H-Index of 15 and more than 550 citations. He was President of the IAHR Portugal Young Professionals Network, the Coordinator of the Young Professionals of the Portuguese Association of Water Resources and elected member of the Monitoring Committee of the Civil Engineering Doctoral Program between 2016 and 2018. He was also Marine Ambassador Portugal at HAEDES B.V. and he is currently the Secretary for International Cooperation of Hydraulics and Water Resources Institute (IHRH). He is the Portuguese appointed member of the Technical Committee 213 - Scour and Erosion of the ISSMGE. Dr Tiago is also the awarded researcher of the APRH best PhD thesis of 2018/2019 and the Best Young Researcher of 2021 by the JMSE, co-winner of the Halcrow Prize of the Institution of Civil Engineers in 2022 and the author of the Best JMSE article on marine engineering in 2023. He acts as an external evaluator at Stavanger University (Norway). Along with this track-record he has acted as consultant in several private projects, in Belgium, France, UK, Denmark and many other countries. He is also the President of the Specialized Commission Water and Energy of APRH and member at the Leadership Team of IAHR's Europe Division. He is also member of the Executive Committee of the Civil Engineering Department of Civil Engineering (FEUP).

