



## Teaching Guide

Teaching Guide				
Identifying Data				2023/24
Subject (*)	Oceanography		Code	730496208
Study programme	Mestrado Universitario en Enxeñaría Naval e Oceánica (plan 2018)			
Descriptors				
Cycle	Period	Year	Type	Credits
Official Master's Degree	1st four-month period	First	Obligatory	6
Language	SpanishEnglish			
Teaching method	Face-to-face			
Prerequisites				
Department	Enxeñaría Naval e IndustrialEnxeñaría Naval e Oceánica			
Coordinador	Santiago Caamaño, Lucía		E-mail	lucia.santiago.caamano@udc.es
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Web				
General description	Coñecemento dos elementos de oceanografía física (ondas, correntes, mareas, etc.) necesarios para a análise do comportamento das estruturas oceánicas, e dos elementos das oceanografías química e biolóxica que deben ser tidos en conta para a seguridade marítima e para o tratamento da contaminación, e do impacto ambiental producido polos buques e artefactos mariños.			

## Study programme competences

Code	Study programme competences
A9	A08 - Coñecemento dos elementos de oceanografía física (ondas, correntes, mareas, etc.) necesarios para a análise do comportamento das estruturas oceánicas, e dos elementos das oceanografías química e biolóxica que deben ser tidos en conta para a seguridade marítima e para o tratamento da contaminación, e do impacto ambiental producido polos buques e artefactos mariños.
B5	CB10 Que os estudantes posúan as habilidades de aprendizaxe que lles permitan continuar estudando dun modo que haberá de ser en boa medida autodirixido ou autónomo.
B7	G02 Capacidade para concibir e desenvolver solucións técnica, económica e ambientalmente adecuadas a necesidades de transporte marítimo ou integral de persoas e mercadorías, de aproveitamento de recursos oceánicos e do subsolo mariño (pesqueiros, enerxéticos, minerais, etc.), uso adecuado do hábitat mariño e medios de defensa e seguridade marítimas.
B19	G14 Capacidade para analizar, valorar e corrixir o impacto social e ambiental das solucións técnicas
C2	C1 Capacidade pra desenrolar a actividade profesional nun entorno multilingue
C7	ABET (e) An ability to identify, formulate, and solve engineering problems.
C12	ABET (j) A knowledge of contemporary issues.
C13	ABET (k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

## Learning outcomes

Learning outcomes	Study programme competences		
Coñecemento dos elementos de oceanografía física (ondas, correntes, mareas, etc.) necesarios para a análise do comportamento das estruturas oceánicas e dos seus compoñentes.	AJ8	BC5 BJ2 BJ14	CC2 CC7 CC12 CC13

## Contents

Topic	Sub-topic
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Physical oceanography	<ul style="list-style-type: none"> <li>- Physical properties of water.</li> <li>- Characterization of the waters of the two oceans.</li> <li>- Denomination and distribution of the masses of water.</li> <li>- Circulation.</li> <li>- Temperature-Salinity Diagram.</li> </ul>
Waves	<ul style="list-style-type: none"> <li>- Wave formation.</li> <li>- Sea state.</li> <li>- Depth influence.</li> <li>- Coastal approach phenomena.</li> <li>- Regular waves.</li> <li>- Irregular waves.</li> <li>- Wave forces.</li> </ul>
Dominant forces in oceanic dynamics	<ul style="list-style-type: none"> <li>- Gravity.</li> <li>- Coriolis.</li> <li>- Friction.</li> </ul>
Tide	<ul style="list-style-type: none"> <li>- The tide cycle.</li> <li>- Equilibrium theory.</li> <li>- Disturbances of lunar tides.</li> <li>- Solar tides.</li> <li>- Dynamic theory of tides.</li> <li>- Types of tides.</li> </ul>
Response of the oceanic surface or wind	<ul style="list-style-type: none"> <li>- Inertial movement.</li> <li>- Ekman's cape.</li> <li>- Ekman Transport.</li> <li>- Forced wind.</li> </ul>
Currents	<ul style="list-style-type: none"> <li>- Characteristics.</li> <li>- Dynamic topography and geostrophic currents.</li> <li>- Force currents.</li> </ul>
Application of conservation equations to oceanic flows	-
Shallow waters	-

Planning				
Methodologies / tests	Competencies	Ordinary class hours	Student's personal work hours	Total hours
Mixed objective/subjective test	A9 B5 B7 B19 C2 C7 C12 C13	1	0	1
Guest lecture / keynote speech	A9 B5 B7 B19 C2 C7 C12 C13	29	41	70
Laboratory practice	A9 B5 B7 B19 C2 C7 C12 C13	10	15	25
Supervised projects	A9 B5 B7 B19 C2 C7 C12 C13	20	30	50
Personalized attention		4	0	4
(*)The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.				

Methodologies	
Methodologies	Description
Mixed objective/subjective test	Written exam of the content of the subject, theory and problems.



Guest lecture / keynote speech	Oral presentation complemented by the use of audiovisual media and the introduction of some questions aimed at students, in order to transmit knowledge and facilitate learning.
Laboratory practice	Carrying out laboratory practices on the concepts of the subject.
Supervised projects	<p>Throughout the course, a supervised project will be proposed, individually or in groups, related to the subject.</p> <p>This will be obligatory, and its realization and public presentation will be essential to pass the subject.</p> <p>The public presentation will take place in the hours of the subject, being able to agree with the students, in exceptional cases and always at the teacher's discretion, other defense schedules.</p> <p>The details of the dates / deadlines of the works, as well as its content and its individual or group nature, will be published on the subject's website (Moodle) and will be made public in the classroom.</p> <p>In addition, some exercises will be proposed, individually or in groups related to the subject.</p>

Personalized attention	
Methodologies	Description
Supervised projects	<p>Supervised projects: Individualized tutorials are proposed in which the student will be guided in the correct realization of the project, providing possible bibliography and sources of information and advice in the different phases of its development.</p> <p>Personalized attention will be totally analogous for students with attendance waivers and full-time students. The tutorials will be held at the times established for this purpose for the current academic year.</p>

Assessment			
Methodologies	Competencies	Description	Qualification
Mixed objective/subjective test	A9 B5 B7 B19 C2 C7 C12 C13	Written exam that covers the entire subject. Theoretical part and problems part.	60
Laboratory practice	A9 B5 B7 B19 C2 C7 C12 C13	Carrying out a practice report.	10
Supervised projects	A9 B5 B7 B19 C2 C7 C12 C13	Supervised works developed by the student in areas of interest related to the subject	30
Others			

Assessment comments
<p>On the second opportunity or in the extraordinary opportunity, students must again deliver all the works and orally present them.</p> <p>Since class attendance is not evaluated within the subject, the requirements that those students with a class attendance waiver will have to meet, both first and second time, will be the same requirements as those without this waiver, being necessary the delivery in time of the supervised works and realization of the oral presentation of the even.</p> <p>The delivery of the works carried out in this subject:</p> <p>It will be requested in virtual format and / or computer support. It will be done through Moodle, in digital format without the need to print them.</p>

Sources of information	
Basic	<ul style="list-style-type: none"><li>- Various (). Principles of Naval Architecture.. EPS Ferrol</li><li>- Charles I. Bretschneider. (1969). Topics in Ocean Engineering.. Gulf</li><li>- S.K. Chakrabarti (1987). Hydrodynamics of Offshore Structures. WIT Press (UK)</li><li>- Myers, Holm and McAllister. (1969). Handbook for ocean and underwater engineering. SNAME</li></ul>
Complementary	

Recommendations
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Subjects that it is recommended to have taken before
Subjects that are recommended to be taken simultaneously
Subjects that continue the syllabus
Dynamics of Offshore Units/730496009
Other comments

(\*)The teaching guide is the document in which the URV publishes the information about all its courses. It is a public document and cannot be modified. Only in exceptional cases can it be revised by the competent agent or duly revised so that it is in line with current legislation.