

**Marine -port Strategic Sciences
A.A. 2023-2024
Safeguarding of coastal areas
(ICAR/01) - 6 CFU**

General information	
Year of the course	1nd year
Academic calendar (starting and ending date)	1nd Semester (09/13/2023 to 12/06/2023)
Credits (CFU/ETCS):	6
SSD	ICAR 01
Language	Italian
Mode of attendance	optional

Professor/ Lecturer	
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Department and address	DICATEch (Dipartimento di Ingegneria Civile, Ambientale, del Territorio, Edile e di Chimica)
Virtual room	https://teams.microsoft.com/l/team/19%3aN28MOGM3sgnnH29Bmp7tQMvIip9oKDDwuWkdMBAPrFI1%40thread.tacv2/conversations?groupId=176dc583-9211-4da3-a0a5-0df1549e4552&tenantId=5b406aab-a1f1-4f13-a7aa-dd573da3d332
Office Hours (and modalities: e.g., by appointment, on line, etc.)	Wednesday

Work schedule			
Hours			
Total	Lectures	Hands-on (laboratory, workshops, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
150	48		102
CFU/ETCS			
6	6		

Learning Objectives	Basic knowledge for environmental management of coastal areas 1. Environmental management of dredging activities; 2. Dredged sediments characterization and legislation; 3. treatment technologies; 4. wastewater discharge legislation; 5. dispersion and mixing processes of flows discharged in natural water bodies; 6. guidelines for drawing up a monitoring system (parameters, instruments, analysis data) and numerical modelling; 7. management of coastal area to mitigate human impact and climate change effects: numerical modelling and monitoring activity.
Course prerequisites	-

Teaching strategie	Lectures, exercises lessons
Expected learning outcomes in terms of	
Knowledge and understanding on:	<ul style="list-style-type: none"> ○ The course will provide the technical and procedural expertise for environmental management of coastal areas.

Applying knowledge and understanding on:	<ul style="list-style-type: none"> ○ Management of dredging activities or dispersion of pollutants discharged in natural water bodies (technical legal aspects). Production of the monitoring plan.
Soft skills	<ul style="list-style-type: none"> ● <i>Making informed judgments and choices</i> <ul style="list-style-type: none"> ○ Ability to orient correctly the appropriate skills involved in the Coastal Environmental Management. ● <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ Ability to communicate the use of methodologies involved in the Coastal Environmental Management. ● <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ Ability to learn the operational tools needed in Coastal Environmental Management.
Syllabus	
Content knowledge	<p>Topic 1 (4 hours – 0.5 CFU): Introductory notes on coastal environment.</p> <p>Topic 2 (16 hours – 2.0 CFU): Management of dredging activities; Dredging legislation; treatment technologies.</p> <p>Topic 3 (16 hours – 2.0 CFU): Dispersion and mixing processes of flows discharged in natural water bodies; Near field and far field; Jets and plumes; wastewater discharge legislation.</p> <p>Topic 4 (8 hours – 1 CFU): Monitoring system (parameters, instruments, analysis data) and numerical modelling.</p> <p>Topic 5 (4 ORE – 0.5 CFU): Monitoring activity and numerical modelling of coastal hydrodynamics. Case studies about planning and management to mitigate human impact and climate change effects. Targeted maps.</p>
Texts and readings	<ul style="list-style-type: none"> - Dispense fornite dal docente e appunti di lezione - Testo: Mossa M., Petrillo AF., <i>Idraulica</i>, CEA, 2013. - Shore Protection Manual, US Army Corps of Engineers - Testo: Herbich, John B. <i>Handbook of Dredging Engineering</i> McGraw-Hill, New York, 1992. <p>Testo: Fischer HB., Koh J., List J., Imberger J., Brooks H., <i>Mixing in Inland and Coastal Waters</i>, Academic Press, 1988.</p>
Notes, additional materials	
Repository	https://teams.microsoft.com/l/team/19%3aN28MOGM3sgnnH29Bmp7tQMvlip9oKDDwuWkdMBAPrF1%40thread.tacv2/conversations?groupId=176dc583-9211-4da3-a0a5-0df1549e4552&tenantId=5b406aab-a1f1-4f13-a7aa-dd573da3d332

Assessment	
Assessment methods	Oral examination with discussion of a case study.
Assessment criteria	<ul style="list-style-type: none"> ● <i>Knowledge and understanding</i> Basic knowledge for environmental management of coastal areas: dredging activities and waste water diffusion. ● <i>Applying knowledge and understanding</i> Coastal Environmental Management: Production of the monitoring plan. ● <i>Autonomy of judgment.</i> Ability to orient correctly the appropriate skills involved in the Coastal Environmental Management. ● <i>Communication skills</i> Ability to communicate the use of methodologies involved in the Coastal Environmental Management. ● <i>Capacities to continue learning</i> Ability to learn the operational tools needed in Coastal Environmental Management.

Final exam and grading criteria	The final grade is on a scale of 30. The minimum learning requirements for passing the exam consist in the discussion of the case study.
Further information	
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