
Ano Letivo 2022-23

Unidade Curricular PROCESSOS DE SEDIMENTAÇÃO E EROSÃO COSTEIRA

Cursos RISCOS COSTEIROS, IMPACTOS DAS ALTERAÇÕES CLIMÁTICAS E ADAPTAÇÃO - COASTHazar
(2º CICLO) ERASMUS MUNDUS

Unidade Orgânica Faculdade de Ciências e Tecnologia

Código da Unidade Curricular 19391005

Área Científica CIÊNCIAS DA TERRA

Sigla

Código CNAEF (3 dígitos) 443

**Contributo para os Objetivos de
Desenvolvimento Sustentável - 13**
ODS (Indicar até 3 objetivos)

Línguas de Aprendizagem English

Modalidade de ensino

Face to face

Docente Responsável

Óscar Manuel Fernandes Cerveira Ferreira

DOCENTE	TIPO DE AULA	TURMAS	TOTAL HORAS DE CONTACTO (*)
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* Para turmas lecionadas conjuntamente, apenas é contabilizada a carga horária de uma delas.

ANO	PERÍODO DE FUNCIONAMENTO*	HORAS DE CONTACTO	HORAS TOTAIS DE TRABALHO	ECTS
1º	S1	30T; 20TP	125	5

* A-Anual;S-Semestral;Q-Quadrimestral;T-Trimestral

Precedências

Sem precedências

Conhecimentos Prévios recomendados

N/A

Objetivos de aprendizagem (conhecimentos, aptidões e competências)

SCOPE :

The main scope of this course is that the students would be able to quantify the volume of sand and sediment transport rates in coastal areas and basins.

LEARNING OUTCOMES:

The student will be able to select a sediment transport model and to apply it in studies related with basins, transitional waters (estuarine areas) and coastal areas

The Student will be able to understand the sediment transport processes under a fluid action and its application in littoral areas

The student will be able to know the hypothesis, application range and limitations for different sediment transport models , and to understand and to evaluate model results

Conteúdos programáticos

?Introduction (overall introduction to coastal sedimentation and erosion processes: drivers, time and spatial scales)

?Properties of water and sand (density, viscosity, permeability, bed materials, settling velocity)

?Current dynamics in the vicinity of the sea bottom

?Wave dynamics in the vicinity of the sea bottom

?Combined waves and currents in the vicinity of the sea bottom

?Threshold of motion

?Bed features

?Suspended sediment

?Bedload transport

?Total load transport

?Handling the wave-current climate (design wave and tide approach, probabilistic approach, sequential approach)

?Sedimentation and erosion processes in beaches (beach morpho-dynamics, crossshore processes, longshore processes, equilibrium profile, equilibrium planform)

?Sedimentation and erosion processes in tidal inlets (tidal inlets morpho-dynamics and processes)

?Sediment balance for a coastal physiographic unit (littoral cells, sediment budget)

?Case studies

Metodologias de ensino (avaliação incluída)

ASSESSMENT METHODS AND CRITERIA

Exercise 1:	Type: Work	15,00%
Exercise 2:	Type: Work	15,00%
Exercise 3:	Type: Work	15,00%
Test:	Type: Written exam	15,00%
Final exam:	Type: Written exam	40,00%

Observations -it is obligatory to attend the 80% of the classroom teaching -Only for duly justified causes (eg sanitary restrictions), the evaluations may be organized remotely.

Bibliografia principal

Coastal Engineering Manual, CEM. (2002-2006). Part III. CHL-Coastal and Hydraulics Laboratory. USA.

Van Rijn, L. C. (1993). Principles of Sediment Transport in Rivers, Estuaries and Coastal Seas. Aqua Publications, Amsterdam.

Soulsby, R. (1997). Dynamics of Marine Sands. Ed. Thomas Telford LTD

Academic Year 2022-23

Course unit

Courses Coastal Hazards - Risks, Climate Change Impacts and Adaption (COASTHazar)

Faculty / School FACULTY OF SCIENCES AND TECHNOLOGY

Main Scientific Area

Acronym

CNAEF code (3 digits) 443

Contribution to Sustainable Development Goals - SGD (Designate up to 3 objectives) 13

Language of instruction English

Teaching/Learning modality Face to face

Coordinating teacher Óscar Manuel Fernandes Cerveira Ferreira

Teaching staff	Type	Classes	Hours (*)
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* For classes taught jointly, it is only accounted the workload of one.

Contact hours	T	TP	PL	TC	S	E	OT	O	Total
	30	20	0	0	0	0	0	0	125
T - Theoretical; TP - Theoretical and practical ; PL - Practical and laboratorial; TC - Field Work; S - Seminar; E - Training; OT - Tutorial; O - Other									

Pre-requisites

no pre-requisites

Prior knowledge and skills

N/A

The students intended learning outcomes (knowledge, skills and competences)

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Syllabus

- ?Introduction (overall introduction to coastal sedimentation and erosion processes: drivers, time and spatial scales)
- ?Properties of water and sand (density, viscosity, permeability, bed materials, settling velocity)
- ?Current dynamics in the vicinity of the sea bottom
- ?Wave dynamics in the vicinity of the sea bottom
- ?Combined waves and currents in the vicinity of the sea bottom
- ?Threshold of motion
- ?Bed features
- ?Suspended sediment
- ?Bedload transport
- ?Total load transport
- ?Handling the wave-current climate (design wave and tide approach, probabilistic approach, sequential approach)
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- ?Sedimentation and erosion processes in tidal inlets (tidal inlets morpho-dynamics and processes)
- ?Sediment balance for a coastal physiographic unit (littoral cells, sediment budget)
- ?Case studies

Teaching methodologies (including evaluation)

ASSESSMENT METHODS AND CRITERIA

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Exercise 3:	Type: Work	15,00%
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Main Bibliography

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Van Rijn, L. C. (1993). Principles of Sediment Transport in Rivers, Estuaries and Coastal Seas. Aqua Publications, Amsterdam.

Soulsby, R. (1997). Dynamics of Marine Sands. Ed. Thomas Telford LTD