English version at the end of this document

Ano Letivo	2017-18
Unidade Curricular	DINÂMICA DE ECOSSISTEMAS AQUÁTICOS
Cursos	BIOLOGIA MARINHA (2.º ciclo) BIODIVERSIDADE E CONSERVAÇÃO MARINHA - Erasmus Mundus (2.º Ciclo) (*) (*) Curso onde a unidade curricular é opcional
Unidade Orgânica	Faculdade de Ciências e Tecnologia
Código da Unidade Curricular	14331053
Área Científica	CIÊNCIAS DO AMBIENTE
Sigla	
Línguas de Aprendizagem	Ingles
Modalidade de ensino	Aulas Teoricas, teórico-Praticas, Saidas de Campo e tutoriais
Docente Responsável	Luís Manuel Zambujal Chícharo

DOCENTE	TIPO DE AULA	TURMAS	TOTAL HORAS DE CONTACTO (*)
Luís Manuel Zambujal Chícharo	TC; OT; PL; S; T	T1; PL1; PL2; C1; S1; OT1; OT2	10T; 20PL; 10TC; 2.5S; 7OT
Ana Maria Branco Barbosa	OT; PL; S; T	T1; PL1; PL2; ;S1; OT1; OT2	5T; 10PL; 2.5S; 3OT

* 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	15T; 15PL; 10TC; 5S; 5OT	168	6

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

Precedências

Sem precedências

Conhecimentos Prévios recomendados

ecologia

Objetivos de aprendizagem (conhecimentos, aptidões e competências)

Compreender os principais padrões da dinâmica dos principais ecossistemas aquáticos;

Descrever os processos que regulam essa dinâmica (produção primaria, produção heterotrofica, redes alimentares aquaticas)

Descrever de que forma a hidrologia controla o biota e de que forma o biota controla a hidrologia. Aplicar os métodos mais convenientes ao estudo dos indicadores de processos e alterações em ecossistemas aquáticos.

Integrar conceitos de Dinâmica dos Ecossistemas de forma a fundamentar a gestão dos recursos naturais dos ambientes aquáticos

Conteúdos programáticos

Global changes: sustaining aquatic ecosystems functions and services. Human use of aquatic ecosystems. The Anthropocen river continuum concept, spiralizing nutrients, Primary production . Sources of energy.. Global distribution of primary production. Categories and sources of organic matter. Ecosystem dynamics and appropriation of NPP by humans. Global carbon flows and HANPP. Intermediate Disturbance Hypothesis. Wetlands dynamics and services. Climate change: SLR impact on wetlands. SLR and wetlands productivity. Effects of ocean acidification on marine organisms. Groundwater impacts to coastal ecosystem dynamics. Groundwater discharge to coastal systems. Climate change influence on coastal fisheries dynamics. Integrated management of river basins and coastal zones.

Metodologias de ensino (avaliação incluída)

Theoretical classes are based on power point presenatations and sicussion of contents witht the students. Some of the topics presented in classes wil be developoed by the studnets, in groups and a report and presentation to the class will take place. Practical classes will use data from field sampling classes and also from projects. Course assessment comprises a compulsory written final exam, which includes theoretical and practical components counting for 60% and 40% of the final grade, respectively. Examination periods include regular and retake periods, and exam dates will be scheduled by the Faculty Pedagogic Council.The exams will include short reply questions, multiple-answer questions, and interpretation questions. Practical questions will consider aspects analyzed during practical classes. Students having grades equal or higher than 10 points (out in 20) are considered approved. Students with grades between 8 and 10, may ask for additional oral exam.

Bibliografia principal

Chicharo, L, Muller, F; and Fohrer, N. . 2015 .Ecosystem services and river basin ecohydrology, Springer, 341 p .

Chicharo, L and M. Zalewski. (2012) Introduction to Ecohydrology and restoration of estuaries and coastal ecosystems, In: Treatise on Estuarine and Coastal Science Volume 10, Ecohydrology and Restoration, Eds.: L. Chícharo and M. Zalewski, Elsevier.

Chicharo, M. A., Chicharo, L. (2008). RNA:DNA Ratio and Other Nucleic Acid Derived Indices in Marine Ecology. Int. J. Mol. Sci., 9, 1453-1471; Review.

Kaiser, M.J., Atrrill, M.J., Jennings, S., Thomas, D.N., Barnes, D.K.A., Brierley, A.S., Polunin, N.V.C., Raffaelli, D.G. & Williams, P.J. le B., 2005. Marine Ecology: processes, systems, and impacts, Oxford University Press, 557 p.

Vörösmarty, C.J., M. Meybeck, B. Fekete, K. Sharma, P. Green, J. P.M. Syvitski, 2003: Anthropogenic sediment retention: major global impact from registered river impoundments. Global and Planetary Change 39 (2003) 169?190

Academic Year	2017-18
Course unit	AQUATIC ECOSYSTEM DYNAMICS
Courses	MARINE BIOLOGY MARINE BIODIVERSITY AND CONSERVATION - Erasmus Mundus (*) (*) Optional course unit for this course
Faculty / School	Faculdade de Ciências e Tecnologia
Main Scientific Area	CIÊNCIAS DO AMBIENTE
Acronym	
Language of instruction	english
Teaching/Learning modality	Theoretical, Practical, Field work and tutorial classes
Coordinating teacher	Luís Manuel Zambujal Chícharo

Teaching staff	Type	Classes	Hours (*)
Luís Manuel Zambujal Chícharo	TC; OT; PL; S; T	T1; PL1; PL2; C1; S1; OT1; OT2	10T; 20PL; 10TC; 2.5S; 7OT
Ana Maria Branco Barbosa	OT; PL; S; T	T1; PL1; PL2; ;S1; OT1; OT2	5T; 10PL; 2.5S; 3OT

* For classes taught jointly, it is only accounted the workload of one.

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Contact hours

T	TP	PL	TC	S	E	OT	O	Total
15	0	15	10	5	0	5	0	168

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

Ecology and computer skills

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

1 ? Looking into aquatic ecosystem ?internal? functioning : understand the most important factors and processes responsible for aquatic ecosystems dynamics at different temporal and spatial scales

2 ? Looking into ?external? variables affecting ecosystems dynamics (what are the external drivers)

3 ? Looking for solutions to revert changes and degradation in aquatic ecosystems (restoring dynamics)

4 ? develop practical skills in field and lab methodologies for aquatic ecosystems sampling and processing

Syllabus

Global changes: sustaining aquatic ecosystems functions and services. Human use of aquatic ecosystems. The Anthropocen river continuum concept, spiralizing nutrients, Primary production . Sources of energy.. Global distribution of primary production. Categories and sources of organic matter. Ecosystem dynamics and appropriation of NPP by humans. Global carbon flows and HANPP. Intermediate Disturbance Hypothesis. Wetlands dynamics and services. Climate change: SLR impact on wetlands. SLR and wetlands productivity. Effects of ocean acidification on marine organisms. Groundwater impacts to coastal ecosystem dynamics. Groundwater discharge to coastal systems. Climate change influence on coastal fisheries dynamics. Integrated management of river basins and coastal zones

Teaching methodologies (including evaluation)

Theoretical classes are based on power point presenatations and sicussion of contents witht the students. Some of the topics presented in classes wil be developoed by the studnets, in groups and a report and presentation to the class will take place. Practical classes will use data from field sampling classes and also from projects. Course assessment comprises a compulsory written final exam, which includes theoretical and practical components counting for 60% and 40% of the final grade, respectively. Examination periods include regular and retake periods, and exam dates will be scheduled by the Faculty Pedagogic Council.The exams will include short reply questions, multiple-answer questions, and interpretation questions. Practical questions will consider aspects analyzed during practical classes. Students having grades equal or higher than 10 points (out in 20) are considered approved. Students with grades between 8 and 10, may ask for additional oral exam

Main Bibliography

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