

Ano Letivo 2019-20

Unidade Curricular ECOLOGIA MARINHA

Cursos RECURSOS BIOLÓGICOS MARINHOS (2.º Ciclo) - ERASMUS MUNDUS
Tronco comum

Unidade Orgânica Faculdade de Ciências e Tecnologia

Código da Unidade Curricular 18361004

Área Científica

Sigla

Línguas de Aprendizagem Inglês

Modalidade de ensino presencial

Docente Responsável Karim Erzini

DOCENTE	TIPO DE AULA	TURMAS	TOTAL HORAS DE CONTACTO (*)
Karim Erzini	TC; PL; T; TP	T1; TP1; TP2; PL1; PL2; C1; C2	10,5T; 10TP; 6PL; 20TC
Maria Sofia Júdice Gamito Pires	TC; PL; T; TP	T1; TP1; TP2; PL1; PL2; C1; C2	7,5T; 15TP; 12PL; 20TC
Maria Ester Tavares Álvares Serrão	T	T1	6T

* 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	20T; 10TP; 15TC; 5S; 5OT	168	6

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

Precedências

Sem precedências

Conhecimentos Prévios recomendados

basic ecology

Objetivos de aprendizagem (conhecimentos, aptidões e competências)

Esta UC tem por objetivo a compreensão das principais questões, abordagens e hipóteses dominantes em ecologia marinha que são específicas dos organismos marinhos de diferentes grupos. Pretende abordar processos ecológicos, interações funcionais e a interpretação de padrões e processos em ecologia marinha.

Conteúdos programáticos

I- Biodiversidade marinha ? Ecologia Evolutiva

- Biodiversidade marinha e a Árvore da Vida.
- Variabilidade temporal em ecológicas e evolutivas. Variabilidade especial em escalas biogeográficas e locais.

II ? Ecologia Populacional Marinha

Biologia Populacional, demografia, estratégias reprodutivas

Conectividade marinha

III- Ecologia de Comunidades Marinhas

Variabilidade temporal e especial de comunidades e processos que as determinam.

Interações bióticas marinhas

Redes tróficas marinhas

Demonstração da coerência dos conteúdos programáticos com os objetivos de aprendizagem da unidade curricular

Os tópicos são abordados em níveis avançados e específicos do ambiente marinho, que desenvolvem as capacidades e conhecimentos para além dos conceitos básicos apreendidos nas licenciaturas.

Metodologias de ensino (avaliação incluída)

Aulas expositivas, seminários, discussões de temas, aulas de computador com exercícios relacionados com os trabalhos de campo, trabalho de campo.

Avaliação:

- Exame escrito

Exercícios práticos e apresentações orais

Demonstração da coerência das metodologias de ensino com os objetivos de aprendizagem da unidade curricular

As metodologias acima referidas treinam abordagens de delineamento de questões e de interpretação e compreensão de abordagens para compreender essas questões fundamentais em ecologia marinha.

Bibliografia principal

Livros básicos de Ecologia podem server de suporte a alguns temas. A UC é centrada em treino de análise avançada de publicações científicas e não em livros de texto básicos. Contudo para além destas publicações, serão usados os seguintes livros de conceitos básicos:

- Marine Ecology: processes, systems and impacts. Kaiser et al. (2011) Oxford University Press, 2nd edition.
- Marine Community Ecology and Conservation: Bertness, Bruno, Sillmann & Stachowicz (2014) Sinauer Associates Inc.
- Mann, K.H. & J.R.N. Lazier. 2006. Dynamics of marine ecosystems. Biological-physical interactions in the oceans. 3rd ed. Blackwell
- Measuring Biological Diversity, Magurran, A.E. (2008) 2nd Edition Blackwell Science 256pp.

Academic Year 2019-20

Course unit MARINE ECOLOGY

Courses MARINE BIOLOGICAL RESOURCES (2nd Cycle) - ERASMUS MUNDUS
Tronco comum

Faculty / School FACULTY OF SCIENCES AND TECHNOLOGY

Main Scientific Area

Acronym

Language of instruction English

Teaching/Learning modality Diurnal

Coordinating teacher Karim Erzini

Teaching staff	Type	Classes	Hours (*)
Karim Erzini	TC; PL; T; TP	T1; TP1; TP2; PL1; PL2; C1; C2	10,5T; 10TP; 6PL; 20TC
Maria Sofia Júdice Gamito Pires	TC; PL; T; TP	T1; TP1; TP2; PL1; PL2; C1; C2	7,5T; 15TP; 12PL; 20TC
Maria Ester Tavares Álvares Serrão	T	T1	6T

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

Contact hours

T	TP	PL	TC	S	E	OT	O	Total
20	10	0	15	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

basic ecology

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

This course will provide students with an understanding of the main questions, approaches and leading hypotheses in marine ecology that are specific to marine organisms, with their distinct variety of functional and taxonomic groups, life histories, colonization modes and functional interactions. Interpreting patterns and processes in marine ecology.

Syllabus

I- MARINE BIODIVERSITY ? EVOLUTIONARY ECOLOGY:

- Marine biodiversity: from DNA to the global Tree of Life.
- Temporal variability ? from evolutionary to ecological time scales
- Spatial variability: geographical biodiversity variability and biodiversity hotspots

II ? MARINE POPULATION ECOLOGY

- Population variability in size and demography
- Marine reproductive modes- Clonal versus sexual reproduction. Inbreeding, outbreeding.
- Intraspecific competition within and between populations, recruitment density barriers
- Marine connectivity
- Dispersal in space and time
- Marine barriers to connectivity.
- Dispersal of marine invasive species. Tracking sources and paths.

III- MARINE COMMUNITY ECOLOGY

- Temporal dynamics of communities

Marine biotic interactions

- Marine food webs, energy and matter fluxes
- Primary Production
- Secondary Production and the Degradation of Organic Matter

Specific Topics in Food Web ecology

Demonstration of the syllabus coherence with the curricular unit's learning objectives

The course on marine ecology presents advanced topics on the ecology of marine biodiversity and ecosystems, focusing on processes and patterns that are specific to the marine environment, beyond basic ecology concepts taught at undergraduate level. It provides the student with a general overview on the ecology and evolution of biodiversity of marine organisms throughout the tree of life.

Teaching methodologies (including evaluation)

Metodologia de Ensino (avaliação incluída)
Teaching methods will include lectures, computer classes, field work, seminars and tutorial discussions. Assessment will be by: - written exam - practical exercises and oral presentations

Demonstration of the coherence between the teaching methodologies and the learning outcomes

Students will learn the many unique and distinct components of marine biodiversity, their life histories and evolutionary context. The course will highlight the constraints that are particular to life in a marine environment, with their consequences in the pelagic/benthic oceanic domain and on the seashore. In marine population ecology students will train the applications and interpretation of concepts and tools to understand population variability in marine systems, persistence, dispersal and connectivity between populations. In marine community ecology students will study how relationships between species can regulate populations and shape communities, from pathogen/host to predator/prey, competitive and symbiotic interactions between different components of marine biodiversity. The study of processes mediating marine species interactions will comprise habitat engineering, resource-dependent effects, chemical interactions. The diversity of food web structures in the oceans and the challenges that are specific to marine systems will be presented and discussed. The students will be trained in how to measure biodiversity aiming to compare communities in various habitats, and they will be introduced into population dynamics. Students will acquire skills in designing and interpreting approaches to understand questions in the diversity of topics within marine ecology and their implications for marine biodiversity management and conservation.

Main Bibliography

Bibliografia principal
Basic ecology books can be helpful as background support. However, the course focuses on advanced analysis of marine ecology research and is therefore based on research papers ? these will be available as pdfs in the tutorial websites. The independent reading assignments for independent study will be chapters taken from the following books: - Marine Ecology: processes, systems and impacts. Kaiser et al. (2011) Oxford University Press, 2nd edition. - Marine Community Ecology and Conservation: Bertness, Bruno, Sillmann & Stachowicz (2014) Sinauer Associates Inc. - Mann, K.H. & J.R.N. Lazier. 2006. Dynamics of marine ecosystems. Biological-physical interactions in the oceans. 3rd ed. Blackwell - Measuring Biological Diversity, Magurran, A.E. (2008) 2nd Edition Blackwell Science 256pp.