
Ano Letivo 2022-23

Unidade Curricular ECOHYDROLOGY AND DYNAMICS OF AQUATIC ECOSYSTEMS

Cursos ECOHIDROLOGIA APLICADA - Erasmus Mundus (2.º Ciclo)

Unidade Orgânica Faculdade de Ciências e Tecnologia

Código da Unidade Curricular 19311001

Área Científica CIÊNCIAS DO AMBIENTE

Sigla

Código CNAEF (3 dígitos) 420

Contributo para os Objetivos de Desenvolvimento Sustentável - ODS (Indicar até 3 objetivos) 6,13,14,

Línguas de Aprendizagem ingles

Modalidade de ensino

presencial/ remoto

Docente Responsável

Luís Manuel Zambujal Chícharo

| DOCENTE | TIPO DE AULA | TURMAS | TOTAL HORAS DE CONTACTO (*) |
|-------------------------------|------------------|----------------------|-----------------------------|
| Luís Manuel Zambujal Chícharo | TC; OT; S; T; TP | T1; TP1; C1; S1; OT1 | 7.5T; 9TP; 18TC; 5S; 3OT |
| Ana Maria Branco Barbosa | T | T1 | 4.5T |

* 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 | 12T; 9TP; 18TC; 5S; 3OT | 156 | 6 |

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

Precedências

Sem precedências

Conhecimentos Prévios recomendados

biologia, ecologia

Objetivos de aprendizagem (conhecimentos, aptidões e competências)

students are expected to learn

- 1 ∩ Water resources and aquatic ecosystems. Global perspectives and evolution of global water resources status, pressures and impacts.
 - 2 ∩ The Ecohydrology concept. The dual regulation between hydrology and biota as the core of the concept.
 - 3 ∩ Lake, river and coastal dynamics
 - 4 - Restoring aquatic dynamics and biogeochemical cycles to increase ecosystem resilience
 - 5 - Biota to regulate hydrology: applied ecohydrology examples
 - 6 ∩ Hydrology to regulate biota: applied ecohydrology examples
 - 7 ∩ Urban ecohydrology and dry areas ecohydrology
 - 8 - Ecosystem services and ecohydrology
 - 9 ∩ Global UNESCO Ecohydrology demonstration sites
-

Conteúdos programáticos

- 1 ∩ Water resources and aquatic ecosystems. Global perspectives and evolution of global water resources status, pressures and impacts.
- 2 ∩ The Ecohydrology concept. The dual regulation between hydrology and biota as the core of the concept.
- 3 ∩ Lake, river and coastal dynamics
- 4 - Restoring aquatic dynamics and biogeochemical cycles to increase ecosystem resilience
- 5 - Biota to regulate hydrology: applied ecohydrology examples
- 6 ∩ Hydrology to regulate biota: applied ecohydrology examples
- 7 ∩ Urban ecohydrology and dry areas ecohydrology
- 8 - Ecosystem services and ecohydrology
- 9 ∩ Global UNESCO Ecohydrology demonstration sites

Metodologias de ensino (avaliação incluída)

The conceptual method will be used, aiming to develop the ability of the students to analyze and relate the concepts provided in theoretical classes. In practical classes laboratory experiments will allow to test some of the concepts developed during the theoretical classes. In the theoretical & practical classes students analyse and discuss the results from the practical experiments.

The UC is based on components of:

A - classroom:

In this case, three types of classes are considered:

1 - lectures: where will be given the fundamental knowledge on ecosystem services

2 - seminars: for which national and international colleagues will be invited (in this case to videoconference seminars) 3 - tutorial classes to carry out work on a case study during which the knowledge provided will be applied and trained. B - autonomous study.

Evaluation: 1. A final written exam 2. A group work written with individual presentation on practical project

Bibliografia principal

Chicharo, L. Wagner, I., Chicharo, M. A Lapsinka, M. Zalewski, M. (2009) Practical experiments guide for Ecohydrology (Eds.Chicharo et al.). UNESCO Manual ISBN: 978-989-20-1702-0. Faro, 121 pp

Zalewski M, Wagner-Lotkowska I. & Robarts D. R. (eds). 2004. Integrated Watershed Management & Ecohydrology and Phytotechnology-Manual. UNESCO IHP, UNEP IETC.246pp.;http://www.unep.or.jp/ietc/Publications/Water_Sanitation/integrated_watershed_mgmt_manual

Wolanski, E., L. Chicharo, M.A. Chicharo (2008) Estuarine Ecohydrology. In Sven Erik Jørgensen and Brian D. Fath (Editor-in-Chief), Ecological Engineering. Vol. [2] of Encyclopedia of Ecology, 5 vols. pp. [1413-1422] Oxford: Elsevier.

Academic Year 2022-23

Course unit

Courses Applied Ecohydrology - Erasmus Mundus (2.º Cycle)

Faculty / School FACULTY OF SCIENCES AND TECHNOLOGY

Main Scientific Area

Acronym

CNAEF code (3 digits) 420

Contribution to Sustainable Development Goals - SGD (Designate up to 3 objectives) 6,13,14

Language of instruction english

Teaching/Learning modality presencial/ remote

Coordinating teacher Luís Manuel Zambujal Chícharo

| Teaching staff | Type | Classes | Hours (*) |
|-------------------------------|------------------|----------------------|--------------------------|
| Luís Manuel Zambujal Chícharo | TC; OT; S; T; TP | T1; TP1; C1; S1; OT1 | 7.5T; 9TP; 18TC; 5S; 3OT |
| Ana Maria Branco Barbosa | T | T1 | 4.5T |

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

Contact hours

| T | TP | PL | TC | S | E | OT | O | Total |
|----|----|----|----|---|---|----|---|-------|
| 12 | 9 | 0 | 18 | 5 | 0 | 3 | 0 | 156 |

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

biology, ecology

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

students are expected to learn

- 1 ¿ Water resources and aquatic ecosystems. Global perspectives and evolution of global water resources status, pressures and impacts.
- 2 ¿ The Ecohydrology concept. The dual regulation between hydrology and biota as the core of the concept.
- 3 ¿ Lake, river and coastal dynamics
- 4 - Restoring aquatic dynamics and biogeochemical cycles to increase ecosystem resilience
- 5 - Biota to regulate hydrology: applied ecohydrology examples
- 6 ¿ Hydrology to regulate biota: applied ecohydrology examples
- 7 ¿ Urban ecohydrology and dry areas ecohydrology
- 8 - Ecosystem services and ecohydrology
- 9 ¿ Global UNESCO Ecohydrology demonstration sites

Syllabus

- 1 ¿ Water resources and aquatic ecosystems. Global perspectives and evolution of global water resources status, pressures and impacts.
 - 2 ¿ The Ecohydrology concept. The dual regulation between hydrology and biota as the core of the concept.
 - 3 ¿ Lake, river and coastal dynamics
 - 4 - Restoring aquatic dynamics and biogeochemical cycles to increase ecosystem resilience
 - 5 - Biota to regulate hydrology: applied ecohydrology examples
 - 6 ¿ Hydrology to regulate biota: applied ecohydrology examples
 - 7 ¿ Urban ecohydrology and dry areas ecohydrology
 - 8 - Ecosystem services and ecohydrology
 - 9 ¿ Global UNESCO Ecohydrology demonstration sites
-

Teaching methodologies (including evaluation)

The conceptual method will be used, aiming to develop the ability of the students to analyze and relate the concepts provided in theoretical classes. In practical classes laboratory experiments will allow to test some of the concepts developed during the theoretical classes. In the theoretical ¿ practical classes students analyse and discuss the results from the practical experiments.

The UC is based on components of:

A - classroom:

In this case, three types of classes are considered:

- 1 - lectures: where will be given the fundamental knowledge on ecosystem services
 - 2 - seminars: for which national and international colleagues will be invited (in this case to videoconference seminars)
 - 3 - tutorial classes to carry out work on a case study during which the knowledge provided will be applied and trained.
- B - autonomous study.

Evaluation: 1. A final written exam 2. A group work written with individual presentation on practical project

Main Bibliography

Chicharo, L. Wagner, I., Chicharo, M. A Lapsinka, M. Zalewski, M. (2009) Practical experiments guide for Ecohydrology (Eds. Chicharo et al.). UNESCO Manual ISBN: 978-989-20-1702-0. Faro, 121 pp

Zalewski M, Wagner-Lotkowska I. & Robarts D. R. (eds). 2004. Integrated Watershed Management ¿ Ecohydrology and Phytotechnology-Manual. UNESCO IHP, UNEP IETC. 246pp.; http://www.unep.or.jp/ietc/Publications/Water_Sanitation/integrated_watershed_mgmt_manual

Wolanski, E., L. Chicharo, M.A. Chicharo (2008) Estuarine Ecohydrology. In Sven Erik Jørgensen and Brian D. Fath (Editor-in-Chief), Ecological Engineering. Vol. [2] of Encyclopedia of Ecology, 5 vols. pp. [1413-1422] Oxford: Elsevier