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**Ano Letivo** 2023-24

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**Unidade Curricular** APPLIED PRACTICAL FIELD AND LABORATORY TRAINING IN ECOHYDROLOGY

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

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**Unidade Orgânica** Faculdade de Ciências e Tecnologia

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**Código da Unidade Curricular** 19311000

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**Área Científica** CIÊNCIAS DO AMBIENTE

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**Sigla**

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**Código CNAEF (3 dígitos)** 420

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

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**Línguas de Aprendizagem** inglês

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**Modalidade de ensino**

presencial / remoto

**Docente Responsável**

Luís Manuel Zambujal Chícharo

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DOCENTE	TIPO DE AULA	TURMAS	TOTAL HORAS DE CONTACTO (*)
Luís Manuel Zambujal Chícharo	TC; OT; PL; S; T; TP	T1; TP1; PL1; C1; S1; OT1	4T; 8TP; 22PL; 30TC; 12S; 8OT

\* Para turmas lecionadas conjuntamente, apenas é contabilizada a carga horária de uma delas.

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ANO	PERÍODO DE FUNCIONAMENTO*	HORAS DE CONTACTO	HORAS TOTAIS DE TRABALHO	ECTS
1º	S1	4T; 8TP; 22PL; 30TC; 12S; 8OT	286	11

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

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**Precedências**

Sem precedências

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**Conhecimentos Prévios recomendados**

biologia, ecologia

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**Objetivos de aprendizagem (conhecimentos, aptidões e competências)**

Students will learn:

To select and apply field sampling techniques

To apply field solutions for degraded ecosystems

To process and analyse samples in laboratory

To treat and analyse data

To develop ecohydrologic practical solutions for lakes, rivers and estuaries

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### Conteúdos programáticos

The course will consist of three parts:

PART 1.1: COASTAL ECOHYDROLOGY training course with techniques of marine and environmental intervention.

PART 1.2: FRESHWATER ECOHYDROLOGY & URBAN and RURAL DEMOSITES: training with key aspects of remediation technologies using for urban and rural ecosystem restoration (Phytotechnologies and phytoremediation course) and novel methods of bioassessment and river restoration (Fish-based assessment and River restoration course). Urban EH demosites: Lodz-Sokolowka River-POLAND (UNESCO demosite)

PART 2:

Rural EH demosites: Sulejow reservoir-Pilica River-POLAND (UNESCO demosite; LIFE EKOROB - best of the 2016 LIFE projects).

coastal ecohydrology - field trip to the Baltic coast and field work at the mouth of the Vistula river.

PART 3:: Student's individual work on reports, essays and preparation for exams for PART 1 & 2.

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### Metodologias de ensino (avaliação incluída)

The course will be based on practical laboratory classes and field work. Seminars and tutorial classes will be taught to support the practical projects and experiments. Students will be asked to develop a practical project they will present and will serve for evaluation of the course.

Evaluation:

1. A group work written with individual presentation on practical project
2. A final written exam if group work evaluation is below 10/20 points

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### Bibliografia principal

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](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: Elseier.

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

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**Academic Year** 2023-24

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**Course unit**

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

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**Faculty / School** FACULTY OF SCIENCES AND TECHNOLOGY

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**Main Scientific Area**

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**Acronym**

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**CNAEF code (3 digits)** 420

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

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**Language of instruction** english

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**Teaching/Learning modality** presential/remote

**Coordinating teacher** Luís Manuel Zambujal Chícharo

Teaching staff	Type	Classes	Hours (*)
Luís Manuel Zambujal Chícharo	TC; OT; PL; S; T; TP	T1; TP1; PL1; C1; S1; OT1	4T; 8TP; 22PL; 30TC; 12S; 8OT

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

**Contact hours**

T	TP	PL	TC	S	E	OT	O	Total
4	8	22	30	12	0	8	0	286

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 will learn:

To select and apply field sampling techniques

To apply field solutions for degraded ecosystems

To process and analyse samples in laboratory

To treat and analyse data

To develop ecohydrologic practical solutions for lakes, rivers and estuaries

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## Syllabus

The course will consist of three parts:

PART 1.1: COASTAL ECOHYDROLOGY training course with techniques of marine and environmental intervention.

PART 1.2: FRESHWATER ECOHYDROLOGY & URBAN and RURAL DEMOSITES: training with key aspects of remediation technologies using for urban and rural ecosystem restoration (Phytotechnologies and phytoremediation course) and novel methods of bioassessment and river restoration (Fish-based assessment and River restoration course). Urban EH demosites: Lodz-Sokolowka River-POLAND (UNESCO demosite)

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coastal ecohydrology - field trip to the Baltic coast and field work at the mouth of the Vistula river.

PART 3:: Student's individual work on reports, essays and preparation for exams for PART 1 & 2.

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## Teaching methodologies (including evaluation)

The course will be based on practical laboratory classes and field work. Seminars and tutorial classes will be taught to support the practical projects and experiments. Students will be asked to develop a practical project they will present and will serve for evaluation of the course.

Evaluation:

1. A group work written with individual presentation on practical project
2. A final written exam if group work evaluation is below 10/20 points

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## Main Bibliography

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