English version at the end of this document

Ano Letivo	2021-22
Unidade Curricular	APPLIED PRACTICAL FIELD AND LABORATORY TRAINING IN ECOHYDROLOGY
Cursos	ECOHIDROLOGIA APLICADA (2.º Ciclo)
Unidade Orgânica	Faculdade de Ciências e Tecnologia
Código da Unidade Curricular	19311000
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	inglês

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; PL; S; T; TP	T1; TP1; PL1; C1; S1; OT1	1T; 4TP; 4PL; 30TC; 4S; 4OT

* 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	4T; 8TP; 22PL; 30TC; 12S; 8OT	286	11

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

Precedências

Sem precedências

Conhecimentos Prévios recomendados

biologia, ecologia

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

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.

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

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

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

Academic Year	2021-22
Course unit	
Courses	
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	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	1T; 4TP; 4PL; 30TC; 4S; 4OT

* 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

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)

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.

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

Main Bibliography

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: Elseier.

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