
Ano Letivo 2022-23

Unidade Curricular FERRAMENTAS COMPUTACIONAIS APLICADAS À ENGENHARIA COSTEIRA

Cursos RISCOS COSTEIROS, IMPACTOS DAS ALTERAÇÕES CLIMÁTICAS E ADAPTAÇÃO - COASTHazar
(2º CICLO) ERASMUS MUNDUS

Unidade Orgânica Faculdade de Ciências e Tecnologia

Código da Unidade Curricular 19391003

Área Científica INFORMÁTICA

Sigla

Código CNAEF (3 dígitos) 480

**Contributo para os Objetivos de
Desenvolvimento Sustentável - 4
ODS (Indicar até 3 objetivos)**

Línguas de Aprendizagem English

Modalidade de ensino

Face to face

Docente Responsável

Óscar Manuel Fernandes Cerveira Ferreira

DOCENTE	TIPO DE AULA	TURMAS	TOTAL HORAS DE CONTACTO (*)
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* 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; 30TP	125	5

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

Precedências

Sem precedências

Conhecimentos Prévios recomendados

N/A

Objetivos de aprendizagem (conhecimentos, aptidões e competências)

SCOPE :

The main scope of this course is that the students would be able to know, implement and master the general aspects of technical programming offered by MATLAB® software, applied to the resolution of problems related to the field of coastal engineering.

LEARNING OBJECTIVES:

The student will be able to acquire, manage, modify, represent and export information associated with coastal processes.

The student will be able to handle the instrumental and numerical databases in order to characterize the wave climate variables.

The student will be able to apply mathematical, numerical and statistical techniques for the characterization of hydrodynamic variables in coastal zones.

Conteúdos programáticos

- Chapter 1. Introduction ? The MATLAB environment
- Chapter 1. Introduction ? Vectors and matrices
- Chapter 2. Matrices - Matrices functions
- Chapter 2. Matrices - Hypermatrices and cell arrays
- Chapter 3. Programming in Matlab ? Part 1
- Chapter 3. Programming in Matlab ? Part 2
- Chapter 4. Time domain
- Chapter 5. Statistics and Probability Distributions ? Part 1
- Chapter 5. Statistics and Probability Distributions ? Part 2
- Chapter 6. Importing, exporting and manipulating data ? Part 1
- Chapter 6. Importing, exporting and manipulating data ? Part 2
- Chapter 7. Graphical representation of data ? Part 1
- Chapter 7. Graphical representation of data ? Part 2
- Chapter 8. Solving equations and systems of equations ? Part 1
- Chapter 8. Solving equations and systems of equations ? Part 2

Metodologias de ensino (avaliação incluída)

ASSESSMENT METHODS AND CRITERIA

Practical Exercise 1: Type: Work 30,00%

Practical Exercise 2: Type: Work 30,00%

Practical Exercise 3: Type: Work 30,00%

Class attendance and participation: 10,00%

Observations -it is mandatory to attend the 80% of the classroom teaching.

Bibliografia principal

MATLAB® Manual (<http://www.mathworks.com>)

Getting Started with MATLAB: A Quick Introduction for Scientists and Engineers. [Oxford University Press](#) , 2017.Rudra Patrap.

An Elementary Introduction to Statistical Learning Theory. Wiley, 2011. Sanjeev Kulkarni and Gilbert Harman.

The analysis of time series. An introduction. Chapman & Hall/CRC., 2003. Chris Chatfield.

Academic Year 2022-23

Course unit

Courses Coastal Hazards - Risks, Climate Change Impacts and Adaption (COASTHazar)

Faculty / School FACULTY OF SCIENCES AND TECHNOLOGY

Main Scientific Area

Acronym

CNAEF code (3 digits) 480

Contribution to Sustainable Development Goals - SGD (Designate up to 3 objectives) 4

Language of instruction English

Teaching/Learning modality Face to face

Coordinating teacher Óscar Manuel Fernandes Cerveira Ferreira

Teaching staff	Type	Classes	Hours (*)
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* For classes taught jointly, it is only accounted the workload of one.

Contact hours	T	TP	PL	TC	S	E	OT	O	Total
	20	30	0	0	0	0	0	0	125
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

N/A

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

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LEARNING OBJECTIVES:

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Syllabus

- Chapter 1. Introduction ? The MATLAB environment
- Chapter 1. Introduction ? Vectors and matrices
- Chapter 2. Matrices - Matrices functions
- Chapter 2. Matrices - Hypermatrices and cell arrays
- Chapter 3. Programming in Matlab ? Part 1
- Chapter 3. Programming in Matlab ? Part 2
- Chapter 4. Time domain
- Chapter 5. Statistics and Probability Distributions ? Part 1
- Chapter 5. Statistics and Probability Distributions ? Part 2
- Chapter 6. Importing, exporting and manipulating data ? Part 1
- Chapter 6. Importing, exporting and manipulating data ? Part 2
- Chapter 7. Graphical representation of data ? Part 1
- Chapter 7. Graphical representation of data ? Part 2
- Chapter 8. Solving equations and systems of equations ? Part 1
- Chapter 8. Solving equations and systems of equations ? Part 2

Teaching methodologies (including evaluation)

ASSESSMENT METHODS AND CRITERIA

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Practical Exercise 2: Type: Work 30,00%

Practical Exercise 3: Type: Work 30,00%

Class attendance and participation: 10,00%

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Main Bibliography

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The analysis of time series. An introduction. Chapman & Hall/CRC., 2003. Chris Chatfield.