

---

**Ano Letivo** 2021-22

---

**Unidade Curricular** GEOLOGIA MARINHA

---

**Cursos** BIOLOGIA MARINHA (1.º ciclo)

---

**Unidade Orgânica** Faculdade de Ciências e Tecnologia

---

**Código da Unidade Curricular** 14121158

---

**Área Científica** CIÊNCIAS DA TERRA

---

**Sigla**

---

**Código CNAEF (3 dígitos)** 443

---

**Contributo para os Objetivos de Desenvolvimento Sustentável - ODS (Indicar até 3 objetivos)** 4;13;14

---

**Línguas de Aprendizagem** Portugues / Portuguese

**Modalidade de ensino**

Presencial. Sob proibicao de aulas presenciais a UC sera lecionada com recurso ao Zoom complementada por conteudos pedagogicos/didaticos na tutoria electronica.

**Docente Responsável**

Duarte Nuno Ramos Duarte

DOCENTE	TIPO DE AULA	TURMAS	TOTAL HORAS DE CONTACTO (*)
Duarte Nuno Ramos Duarte	T	T1	21T
Amélia Maria Mello de Carvalho	TC; PL	PL1; PL2; PL3; PL4; C1	84PL; 16TC

\* 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	S2	21T; 21PL; 16TC	156	6

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

**Precedências**

Sem precedências

**Conhecimentos Prévios recomendados**

Conhecimentos básicos de Geologia e dos ambientes marinhos.

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

Tracar a evolucao cronologica das varias sub-bacias oceanicas justificando as suas peculiaridades em funcao dos processos geologicos. Compreender a origem e a distribuicao dos sedimentos terrigenos, biogenicos e quimiogenicos. Conhecer os principais aspetos da morfologia submarina e os processos associados. Conhecer as provincias fisiograficas das bacias oceanicas e os respetivos processos hidrodinamicos e bio-sedimentares. Desenvolver capacidade de trabalho individual e em equipa. Desenvolver o raciocinio logico e capacidades para analisar e relacionar dados no contexto da Geologia Marinha. Fomentar o aluno para se integrar em trabalhos de investigacao, de disseminacao, de divulgacao cientíçfica e de apoio a comunidade.

### **Conteúdos programáticos**

Genese e evolucao das bacias marinhas e processos geologicos associados. Genese das bacias oceanicas. Caracteristicas fisiograficas das cinco principais sub-bacias do oceano global. Hipsometria global. Principais aspetos da morfologia submarina. Margens passivas e margens ativas: morfologia e processos. Particularidades da margem iberica. Processos sedimentares atuantes nas bacias marinhas. Continuo da materia: transferencia de materia entre o oceano e as areas continentais adjacentes. Origem, distribuicao e mobilizacao dos sedimentos marinhos. Contributo biologico para os sedimentos das margens continentais e das bacias profundas e variaveis associadas. Plataformas carbonatadas com particular enfase para as plataformas recifais e sua importancia no estudo das variacoes do nivel medio relativo do mar. Papel dos organismos na modificacao dos sedimentos. Atividade hidrotermal submarina: localizacao e requisitos para a sua genese.

---

### **Metodologias de ensino (avaliação incluída)**

As aulas teoricas (T) sao principalmente exploradas atraves de apresentacao formal de conteudos, videos e site web, mas igualmente atraves da discussao de estudos de casos e exemplos, sendo lancados aos estudantes temas complementares para desenvolvimento de trabalho autonomo, sendo depois abordados nas aulas T seguintes. As aulas praticas (P) basear-se-ao em exercicios e trabalhos de aplicacao dos conhecimentos adquiridos, com periodo de discussao critica. Os conteudos T e TP seraço complementados por saidas de TC. Num quadro de proibicao de aulas presenciais, todas as aulas serao complementadas com conteudos didaticos/pedagogicos na Tutoria.

Duas frequencias com uma ponderacao relativa de 50% cada na nota final. A parte T representa 50% da nota. Avaliacao P com uma frequencia e trabalhos. Apenas admitido a exame T com aprovacao na parte P (sup 9.5v). Nao sao permitidos telemoveis ou maquinas de calcular com memoria nos momentos de avaliacao.

---

### **Bibliografia principal**

Berner, E.K. & Berner, R.A. 1996. Global Environment. Prentice-Hall, Upper Saddle River, 2nd Edition, 365 p.

Duxbury & Duxbury.1989. AN INTRODUCTION TO THE WORLD'S OCEANS, 3rd Ed.,Brown publishers, 446 p.

Fowler C.M.R., 1997. THE SOLID EARTH. Cambridge University Press, 472 p. ?Gulbenkian, Lisboa, 457p.

Komar, P. D.1998. BEACHES AND SEDIMENTATION, 2nd ed, Prentice-Hall, 1998, 544p. ?Kump, L.R, Kasting, J.F. & Crane R.G., 1999. The Earth System. Prentice Hall, Upper Saddle River, New Jersey, 351 p.

Libes, S. M., 1992. An Introduction to Marine Biogeochemistry. John Wiley & Sons, 734 p. ?

Mackenzie, F.T., 1998. Our Changing Planet - An introduction to Earth Science and global environmental change. Prentice-Hall, Upper Saddle River, 2nd Edition, 486 p. ?

Milsom, J., 2002. Field Geophysics, 3rd Edition, Ed. Wiley, 246 p.. ?

Siever R., 1998. UNDERSTANDING EARTH. 2nd edition. W.H. Freeman & Co, New York, 682 p.

---

**Academic Year** 2021-22

---

**Course unit** MARINE GEOLOGY

---

**Courses** MARINE BIOLOGY (1st Cycle)

---

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

---

**Main Scientific Area**

---

**Acronym**

---

**CNAEF code (3 digits)** 443

---

**Contribution to Sustainable Development Goals - SGD (Designate up to 3 objectives)** 4;13;14

---

**Language of instruction** Portuguese.

---

**Teaching/Learning modality** Face to face learning

**Coordinating teacher** Duarte Nuno Ramos Duarte

Teaching staff	Type	Classes	Hours (*)
Duarte Nuno Ramos Duarte	T	T1	21T
Amélia Maria Mello de Carvalho	TC; PL	PL1; PL2; PL3; PL4; C1	84PL; 16TC

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

Contact hours	T	TP	PL	TC	S	E	OT	O	Total
	21	0	21	16	0	0	0	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

Basic knowledge in Geology and in marine environments.

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

The students should be able to trace the chronological evolution of the ocean sub-basins, justifying their peculiarities in function of the geological processes. They should understand the origin and distribution of terrigenous, biogenic and quimiogenic sediments. They should understand the processes and the underwater morphological aspects. Describe the physiographic provinces of the ocean basins and the respective hydrodynamic and bio-sedimentary processes. Develop individual and team work capacity. Develop logical reasoning and capabilities to analyze and relate data in the context of Marine Geology.

#### Syllabus

Genesis and evolution of marine basins and associated geological processes. Genesis of ocean basins. Physiographic features of the five major sub-basins of the global ocean. Global hypsometry. Main aspects of underwater morphology. Passive margins and active margins: morphology and processes. Particularities of the Iberian margin. Sedimentary processes in the sea basins. Continuous of matter: transfer of matter between the ocean and adjacent continental areas. Origin, distribution and mobilization of marine sediments. Biological contribution to the sediments of the continental margins and the deep basins and associated variables. Carbonated platforms with particular emphasis on reef platforms and their importance in the study of variations in relative mean sea level. Role of organisms in sediment modification. Underwater hydrothermal activity: location and requirements for its genesis.

### Teaching methodologies (including evaluation)

In the theoretical (T) classes are mainly explored through a formal presentation of contents, based on the discussion of case studies and examples, using videos and web site. Are also through complementary subjects for the development of autonomous work, that will be discussed in the tutorials classes. The practical (PL) classes will be based on exercises and application of the acquired T knowledge, with period of critical discussion. In the TC classes will intend to develop the skills of the theoretical and practical classes.

Two frequencies with 50% in each one to the final grade. The T part represents 50% of the grade. P evaluation with a frequency and works. Only admitted to the exams with P approval (upper 9.5v). No cellphones or memory computing machines are allowed at the evaluation moments.

---

### Main Bibliography

Berner, E.K. & Berner, R.A. 1996. Global Environment. Prentice-Hall, Upper Saddle River, 2nd Edition, 365 p.

Duxbury & Duxbury.1989. AN INTRODUCTION TO THE WORLD'S OCEANS, 3rd Ed.,Brown publishers, 446 p.

Fowler C.M.R, 1997. THE SOLID EARTH. Cambridge University Press, 472 p.?Gulbenkian, Lisboa, 457p.

Komar, P. D.1998. BEACHES AND SEDIMENTATION, 2nd ed, Prentice-Hall, 1998, 544p.?Kump, L.R, Kasting, J.F. & Crane R.G., 1999. The Earth System. Prentice Hall, Upper Saddle River, New Jersey, 351 p.

Libes, S. M., 1992. An Introduction to Marine Biogeochemistry. John Wiley & Sons, 734 p.?

Mackenzie, F.T., 1998. Our Changing Planet - An introduction to Earth?Science and global environmental change. Prentice-Hall, Upper Saddle River, 2nd Edition, 486 p.?

Milsom, J., 2002. Field Geophysics, 3rd Edition, Ed. Wiley, 246 p..?

Siever R., 1998. UNDERSTANDING EARTH. 2nd edition. W.H. Freeman & Co, New York, 682 p.