

Basics of Cloud Computing	
<i>Title of curricular unit:</i>	Basics of Cloud Computing
Duração ¹ / Duration:	2nd Semester
Horas de trabalho ² / Work hours:	125
Horas de contacto ³ / Contact hours:	60 = 20T + 20TP + 20PL
ECTS	6
Teacher	Artur Manuel Sancho Marques

Learning outcomes of the curricular unit	
<p>The approved student is expected to:</p> <ul style="list-style-type: none"> - Understand the concept of "Cloud Computing", its service models (IaaS, PaaS, SaaS), deployment models (public, private, hybrid), infrastructure technologies, storage technologies, and selected development approaches (Serverless, MicroServices, Cloud Native, DevOps); - Knowledge about business and technology factors which support choosing between different Cloud offerings, including case-studies; - be able to apply his/her Cloud skills to the development and/or deployment of (parts of) cloud solutions, depending on criteria such as the public/private nature of the cloud, data and traffic needs, computational needs, interoperability and openness requirements, materializing distributed applications in some selected architecture. 	

Syllabus	
<p>"Cloud Computing" concepts</p> <ul style="list-style-type: none"> - What is the "Cloud"? - Service Models (IaaS, PaaS, SaaS) - Deployment Models (public, private, hybrid) - Infrastructure technologies (bare-metal, VMs, containers) - Cloud-storage technologies (File, Block, Object, CDNs) <p>"Cloud Native" development</p> <ul style="list-style-type: none"> - Development layer, provisioning, runtime, orchestration <p>Hands-on Cloud applications development</p> <ul style="list-style-type: none"> - Using some programming language (e.g.: Python) - Exploring some provider's Cloud solutions (e.g.: AWS, GCP) 	

¹ Anual, semestral, trimestral, ...

² Número total de horas de trabalho.

³ Discriminadas por tipo de metodologia adotado (T - Ensino teórico; TP - Ensino teórico-prático; PL - Ensino prático e laboratorial; TC - Trabalho de campo; S - Seminário; E - Estágio; OT - Orientação tutorial; O - Outro).

	Demonstration of the syllabus coherence with the curricular unit's learning objectives
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The contents introduce, elaborate and exemplify concepts. Case studies of Cloud-based businesses and activities, are to be presented. This should establish the concepts and an ability to understand how and what problems the Cloud can solve (and create).

The processes of software development, deployment and running, are heavily dependent on specific data and computing needs, so practicing them is important.

The skills to develop and make available (parts of) solutions, emerges from the hands-on development and deployment in concrete languages, which explore techniques and technologies effectively available.

	Teaching methodologies (including evaluation)
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Presentations, examples and case studies.

Hands-on development and deployment, using the selected technologies.

Assessment:

Project proposed by the student and agreed with the teacher (P)

Written test (T)

Final grade = $0.4 * P + 0.6 * T$

	Demonstration of the coherence between the teaching methodologies and the learning outcomes
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The presentations, examples and case studies, introduce, illustrate and then render the concepts concrete, respectively, helping in their understanding.

The hands-on development and deployment, using the adopted technologies, should translate to skills to create and deploy (parts of) cloud apps/solutions.

	Bibliografia de consulta/ existência obrigatória (formato APA)
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Bibliography (Mandatory resources)

Lachance, D. (2020). CompTIA Cloud Essentials+ Certification Study Guide, McGraw-Hill Education.

Fraser, S. and T. Ziadé (2021). Python Microservices Development: Build efficient and lightweight microservices using the Python tooling ecosystem, 2nd Edition.

AWS. (2022). Amazon Web Services. from <https://aws.amazon.com/>

Google. (2022). Google Cloud Platform. from <https://cloud.google.com/>