

POLI ESCOLA SUPERIOR TECNOLOGIA GESTÃO TÉCNICO GUARDA	SUBJECT DESCRIPTION	MODELO PED.013.03
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Course	Computer Science					
Subject	Internet Programming					
Academic year	2023/2024	Curricular year	3rd	Study period	1st semester	
Type of subject	Compulsory	Student workload (H)	Total: 168	Contact: 75	ECTS	6
Professor(s)	Prof. Dr. Noel Lopes					
<input checked="" type="checkbox"/> Area/Group Coordinator <input type="checkbox"/> Head of Department	(select)	Prof. Dr. José Fonseca				

PLANNED SUBJECT DESCRIPTION

1. LEARNING OBJECTIVES

Upon completion of this course, students should be able to:

- Develop dynamic web applications (on the server-side) with a coherent design.
- Integrate and manipulate databases in the web applications.
- Implement security mechanisms to maintain the integrity and confidentiality of web applications data.
- Implement automated tests for web applications.

2. PROGRAMME

1. Introduction to web development and ASP.NET Core MVC
2. Introduction to the Model-View-Controller (MVC) design pattern
3. Developing web applications using ASP.NET .NET Core MVC
4. Introduction to the C# Language, to the .NET Framework and to the Razor engine
5. The Entity Framework Core
6. Introduction to Linq
7. Layouts and navigation
8. Introduction to Razor pages
9. Introduction to Blazor
10. Validating data
11. Security
12. Authentication and authorization
13. Teamwork using version control systems (GIT).

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3. COHERENCE BETWEEN PROGRAMME AND OBJECTIVES

Topics 1, 2 and 3 explain the main differences (including the advantages and disadvantages) between traditional and web applications. To complement these aspects, students develop small web applications, which allow them to gain a deeper understanding of web applications. Topics 4, 5, 6, 7, 8, and 9 demonstrate how to create dynamic web applications, consisting of several interconnected web pages with a coherent design. Topics 5 and 6 demonstrate how to use web applications to manipulate databases' data with emphasis on its integrity. Topics 10 and 11 address validating the user's data to guarantee the security and integrity of the application information (avoiding attacks such as the well-known SQL injection). Topic 12 demonstrates how to preserve the security and confidentiality of the data by not allowing unauthorized users to access specific areas and contents. Topic 13 focuses on teamwork using version control systems. Learning is reinforced by the development of a medium size project that covers all the learning objectives.

4. MAIN BIBLIOGRAPHY

- Teacher notes
- Adam Freeman, "Pro ASP.NET Core MVC 2", 7th edition, Apress, 2017
- <https://www.asp.net/>

5. TEACHING METHODOLOGIES (INCLUDING EVALUATION)

Teaching methodologies: Lecture, interactive lesson, Project

Evaluation methodologies:

Continuous evaluation

80%: Activities, defined by the teacher, preferably performed during classes, involving individual/group work/development of a project together with the course of Software Engineering.

20%: Presentation and mandatory defense of the prototype and the group project report. The prototype has a weight of 2 values. Project report delivery date: January 6, 2024.

Date of presentation and defense (mandatory): January 9, 2024, or January 12, 2024.

Exam evaluation

100%: Exam

6. COHERENCE BETWEEN TEACHING METHODOLOGIES AND OBJECTIVES

The first two topics feature theoretical introductory aspects related with the development of web applications. Hence, the teacher will use lectures to minister these topics. On the other hand, the remainder topics have a practical nature, focusing the development of secure dynamic web applications, which integrate databases. Hence, the teacher will in most cases use interactive lessons to demonstrate the underlying concepts. Naturally, these will be complemented with lectures where appropriated, especially to convey theoretical concepts. Learning will be reinforced by the development of a project where students must apply all the concepts and knowledge learned.

7. ATTENDANCE

Students are required to attend at least 2/3 of the classes to be evaluated by continuous evaluation.

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8. CONTACTS AND OFFICE HOURS

Noel Lopes (noel@ipg.pt), office 27

Office days: Wednesday from 9:00 to 12:00

9. OTHERS

DATE

20 September 2023

SIGNATURES

Professor(s), Area/Group Coordinator or Head of Department signatures

Professor

(signature)

Area/Group Coordinator

(signature)