4. WEB APPLICATIONS AND SERVICES

SCHOOL	ENGINEERING
DEPARTMENT	INFORMATICS AND COMPUTER ENGINEERING
LEVEL OF STUDIES	POSTGRADUATE
COURSE CODE		**SEMESTER**	1º
COURSE TITLE	Web Applications and Services

INDEPENDENT TEACHING ACTIVITIES *(In case credits are allocated to distinct parts of the course, e.g., Lectures, Laboratory Exercises, etc. If credits are allocated uniformly to the entire course, state the weekly teaching hours and total credits.)*	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	3	6

COURSE CONTENT

The course content consists of the following units:

Unit 1: The Technological Environment, Applications, and Internet Protocols

- The technological infrastructure for providing Internet services
- Communication protocols (TCP, UDP, IP), the DNS service
- Presentation of the HTTP protocol and the types of information contained in a client request and a server response
- Demonstration of the operation and modification of an HTTP Server's configurations

Unit 2: HTML Language and Creating Graphical Interfaces

- HTML language tags
- Web page creation using HTML
- Creating data submission forms
- Formatting web pages with CSS

Unit 3: Client-Side Programming with JavaScript

- Introduction to JavaScript
- Variables, Control Statements, Loops, Functions, DOM Management
- Example applications:
    - Use of events and graphical interfaces
    - Data validation
    - Dynamic content addition
    - Window management
    - Cookies
    - Browser detection

Unit 4: Server-Side Programming with PHP

- Variables, Control Structures, Loops, Arrays
- Data submission using HTTP protocol methods
- Object-Oriented Programming
- User session management
- Cookies and email handling

Unit 5: Developing Web Applications Using Databases

- Introduction to Databases (MySQL)
- Connecting PHP with Databases (MySQLi and PDO)
- CRUD operations in Databases using PHP
- Using Prepared Statements and Stored Procedures

Unit 6: Designing and Developing Internet Services

- Data representation in JSON and XML formats
- Presentation of SOAP and REST protocols used in modern web applications and services
- Designing and developing programmable interfaces (APIs)
- Using CRUD methods with JavaScript in a Node.js environment

Unit 7: Threats and Risks for Web Applications

- Web server security
- Public Key Infrastructure (PKI)
- Certificate issuance and management
- Protection against SQL Injection attacks
- Protection against XSS Scripting attacks
- Protection against Session Hijacking attacks

Unit 8: Content Management Systems

- Installation and demonstration of a Content Management System (CMS)
- Management of Plugins and Templates