SYLLABUS

Web programming

University year 2025-2026

1. Information regarding the programme

1.1. Higher education institution	Babeş Bolyai University
1.2. Faculty	Faculty of Mathematics and Computer Science
1.3. Department	Department of Computer Science
1.4. Field of study	Computer Science
1.5. Study cycle	Bachelor
1.6. Study programme/Qualification	Information Engineering
1.7. Form of education	Full time

2. Information regarding the discipline

2.1. Name of the discipline	**Web programming**				Discipline code	**MLE5015**
2.2. Course coordinator			Lect. PhD. Bădărânză Ioan			
2.3. Seminar coordinator			Lect. PhD. Bădărânză Ioan			
2.4. Year of study	2	2.5. Semester	4	2.6. Type of evaluation	E	2.7. Discipline regime	Compulsory

3. Total estimated time (hours/semester of didactic activities)

3.1. Hours per week	**4**	of which: 3.2 course	**2**	3.3 seminar/laboratory/project	**2LP**
3.4. Total hours in the curriculum	56	of which: 3.5 course	24	3.6 seminar/laboratory/project	**24**

Time allotment for individual study (ID) and self-study activities (SA)	hours
Learning using manual, course support, bibliography, course notes (SA)	30
Additional documentation (in libraries, on electronic platforms, field documentation)	20
Preparation for seminars/labs, homework, papers, portfolios and essays	20
Tutorship	10
Evaluations	10
Other activities:	4

3.7. Total individual study hours	**94**
3.8. Total hours per semester	**150**
3.9. Number of ECTS credits	**6**

4. Prerequisites (if necessary)

4.1. curriculum	• Computer Networks, Distributed Systems, Databases, Data Structures and Algorithms, • Object-Oriented Programming
4.2. competencies	• Basic knowledge of operating with an SQL data server, basic understanding of the structure and functioning of the Internet, and foundational knowledge of data structures, algorithms, programming languages, and object-oriented programming.

5. Conditions (if necessary)

5.1. for the course	Classroom with video projector	
5.2. for the seminar /lab activities	Laboratory room with video projector and computers	

6.1. Specific competencies acquired [1]

Professional/essential competencies	• Design and integration of information systems using technologies and programming environments • Operating with the basics of mathematics, engineering and computer science
Transversal competencies	• Demonstrating initiative and pro-active behavior for updating professional, economical and organizational culture knowledge • Honorable, responsible, ethical behavior, in the spirit of the law, to ensure the professional reputation

6.2. Learning outcomes

Knowledge	The graduate has the necessary knowledge for the use of computers, the development of software programs and applications, the processing of information.
Skills	The graduate is able to apply architectural templates, design templates and best practices in the field to design highly complex software applications.
Responsibility and autonomy:	The graduate has adequate knowledge of the protocols on which the Internet operates and has the skills needed to design and test custom protocols.

7. Objectives of the discipline (outcome of the acquired competencies)

7.1 General objective of the discipline	• Introducing students to modern web programming techniques using both server-side and client-side technologies. • The course is designed as an introductory course in web technologies.
7.2 Specific objective of the discipline	• Understanding how the World Wide Web is built and functions • Familiarity with the main technologies/languages used in web development: HTML/XML, CSS, JavaScript/DOM, PHP

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[1] One can choose either competences or learning outcomes, or both. If only one option is chosen, the row related to the other option will be deleted, and the kept one will be numbered 6.

8. Content

8.1 Course	Teaching methods	Remarks
1. History and concepts of the WWW: Addressing mechanism on the Internet, name servers, URLs and URIs	Exposure:description, explanation,examples, discussion of case studies	
2. HTML – HyperText Markup Language. HTML5		
3. HTTP – HyperText Transfer Protocol		
4. CSS – Cascading Style Sheets.		
5. CSS3. Responsive design. Web fonts and icons. CSS preprocessors		
6. DOM – Document Object Model. JavaScript language: fundamental concepts, functions, objects, collections, asynchronous programming (setTimeout, promises). JavaScript browser API		
7. JavaScript		
8. JavaScript libraries: jQuery		
9. JavaScript frameworks: Angular		
10. JSON – JavaScript Object Notation		
11. Server-side technologies: CGI (Common Gateway Interface), AJAX		
12. Server-side technologies: PHP		
13. Server-side technologies: JSP and Java servlets		
14. Server-side technologies: JSP and Java servlets		

Bibliography

1. http://www.cs.ubbcluj.ro/~ionutb/PW
2. Anghel T. Dezvoltarea aplicatiilor web folosind XHTML, PHP si MySQL. Editura Polirom, Iasi, 2005 3. Boian F. M. Programare distribuita în Internet; metode si aplicatii. Editura Albastra, MicroInformatica, Cluj, 2005
4. Boian F.M., Boian R.F. Tehnologii fundamentale Java pentru aplicatii Web. Editura Albastra, MicroInformatica, Cluj, 2005
5. Buraga S. Tehnologii web. Editura Matrix Rom, Bucuresti, 2001
6. Buraga S. Proiectarea siturilor web. Editura Polirom, Iasi, 2002
7. Castro E. HTML for the World Wide Web with XHTML and CSS. 5'th edition, Visual QuickStart Guide, 2004
8. Hall M., Brown L. Core web programming. 2nd edition. Prentice Hall, 2001
9. Negrino T., Smith D. JavaScript for the World Wide Web. 4th edition, Visual QuickStart Guide, 2001
10. Varlan C. Macromedia FLASH; concepte, exemple, studii de caz. Editura Polirom, Iasi, 2004
11. W3Schools Online Web Tutorials, http://www.w3schools.com
12. http://www.php.net
13. Flanagan David, Javascript: The Definitive Guide: Master the World's Most-Used Programming Language, Oreilly Media, 2020
14. Vivek Gupta, Java for Web Development, BPB Publications, 2022

8.2 Seminar / laboratory	Teaching methods	Remarks
1 – 2: HTML	Dialogue, debate, case studies, examples	
3– 4: CSS		
5– 6: CSS Layouts		
7– 8: Javascript		
9– 10: jQuery		
11 – 12: AJAX + PHP		
13 – 14: Java Servlets and JSP		
Bibliography		

1. http://www.cs.ubbcluj.ro/~ionutb/PW
2. W3Schools Online Web Tutorials, http://www.w3schools.com
3. Jennifer Niederst, Web Design in a Nutshell, O'Reilly, 2001;
4. Chuck Musciano, Bill Kennedy, HTML & XHTML: The Definitive Guide, O'Reilly, 2002;
5. Colin Moock, ActionScript: The Definitive Guide - Mastering Flash Programming, O'Reilly, 2001;
6. Varlan C, Macromedia FLASH; concepte, exemple, studii de caz. Editura Polirom, Iași, 2004;
7. Negrino T., Smith D, JavaScript for the World Wide Web. 4th edition, Visual QuickStart Guide, 2001. 8. https://jsfiddle.net/ 9. https://codepen.io/
8. Flanagan David, Javascript: The Definitive Guide: Master the World's Most-Used Programming Language, Oreilly Media, 2020
9. Vivek Gupta, Java for Web Development, BPB Publications, 2022

9. Corroborating the content of the discipline with the expectations of the epistemic community, professional associations and representative employers within the field of the program

- The course follows the IEEE and ACM recommendations for computer science degree programs
- The course is included in the curricula of all major universities in Romania and abroad
- The course content is considered by software companies to be important for intermediate programming skills

10. Evaluation

Activity type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percentage of final grade
10.4 Course	Understanding the theoretical issues discussed throughout the course. Being able to solve small practical problems similar to those encountered by students during laboratory activities.	Practical Exam	60%
10.5 Seminar/laboratory	Applying the knowledge received from the course. Students are given an assignment in each laboratory class, which they must complete within a maximum of two weeks.	The laboratory grade is the average of the grades the student receives for the laboratory work completed throughout the semester.	40%
10.6 Minimum standard of performance			

- In order to successfully pass this course, both the practical exam grade and the laboratory grade must be at least 5. The course requirements are described at: http://www.cs.ubbcluj.ro/~ionutb/

11. Labels ODD (Sustainable Development Goals)[2]

Not applicable.

Date:
…

Signature of course coordinator

Lect. PhD. Ioan Bădărînză

Signature of seminar coordinator

Lect. PhD. Ioan Bădărînză

Date of approval:
…

Signature of the head of department

Assoc.prof.phd. Adrian STERCA

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[2] Keep only the labels that, according to the *Procedure for applying ODD labels in the academic process*, suit the discipline and delete the others, including the general one for *Sustainable Development* – if not applicable. If no label describes the discipline, delete them all and write „*Not applicable.*".