SYLLABUS

1. Information about the program

1.1 Higher education institution	Politehnica University Timișoara
1.2 Faculty[1] / Department[2]	Faculty of Automation and Computer Science
1.3 Field of study (name/code[3])	Computer and Information Technology
1.4 Study cycle	Master
1.5 Study program (name/code/qualification)	Digital Media and Web Development

2. Information about discipline

2.1 Name of discipline/The educational classe[4]			Digital Media and Web Development Technologies				
2.2 Coordinator (holder) of course activities			Lect.Dr.Eng. Mădălin-Dorin POP				
2.3 Coordinator (holder) of applied activities[5]			Lect.Dr.Eng. Mădălin-Dorin POP				
2.4 Year of study[6]	1	**2.5** Semester	2	**2.6** Type of evaluation	E	**2.7** Regime of discipline[7]	DO

3. Total estimated time (direct activities (fully assisted), partially assisted activities and unassisted activities[8])

3.1 Number of hours fully assisted/week	4 ,of which:	course	2	seminar/laboratory/project			2
3.1* Total number of hours fully assisted/sem.	56 ,of which:	course	28	seminar/laboratory/project			28
3.2 Number of on-line hours fully assisted/sem	10 ,of which:	course	6	seminar/laboratory/project			4
3.3 Number of hours partially assisted/week	,of which:	project, research		training		hours designing M.A. dissertation	
3.3* Number of hours partially assisted/ semester	,of which:	project of research		training		hours designing M.A. dissertation	
3.4 Number of hours of unassisted activities/ week	3.5 ,of which:	Additional documentation in the library, on specialized electronic platforms, and on the field					1
		Study using a manual, course materials, bibliography and lecture notes					1
		Preparation of seminars/ laboratories, homework, assignments, portfolios, and essays					1.5
3.4* Total number of hours of unasssited asctivities/ semester	49 ,of which:	Additional documentation in the library, on specialized electronic platforms, and on the field					14
		Study using a manual, course materials, bibliography and lecture notes					14
		Preparation of seminars/ laboratories, homework, assignments, portfolios, and essays					21
3.5 Total hrs./week[9]	7.5						
3.5* Total hrs./semester	105						
3.6 No. of credits	7						

4. Prerequisites (where applicable)

4.1 Curriculum	• Software engineering
4.2 Competencies	•

5. Conditions (where applicable)

[1] The name of the faculty which manages the educational curriculum to which the discipline belongs
[2] The name of the department entrusted with the discipline, and to which the course coordinator/holder belongs.
[3] The code provided in HG - on the approval of the Nomenclature of fields and specializations / study programs, annually updated.
[4] The educational classes of disciplines are: thoroughgoing study discipline (DA), advanced knowledge discipline (DCAV), synthesis discipline (DS) or complementary discipline (DC).
[5] The applied activities refer to: seminar (S) / laboratory (L) / project (P) / practice/training (Pr).
[6] The year of study to which the discipline is provided in the curriculum .
[7] Discipline may have one of the following regimes: imposed discipline (DI) or compulsory discipline (DOb)-for the other fundamental fields of studies offered by UPT or optional discipline (DO).
[8] Within UPT, the number of hours from 3.1*, 3.2*,…,3.9* are obtained by multipling by 14 (weeks) the number of hours from 3.1, 3.2,…, 3.9.
[9] The total number of hours/week is obtained by summing up the number of hours from 3.1, 3.4 şi 3.8.

5.1 of the course	• Video projector, whiteboard.
5.2 to conduct practical activities	• Laboratory with 18 PCs, access to the internet, video projector, whiteboard.

6. Specific competencies acquired through this discipline

Specific competencies	• Acquiring the abilities for approaching, planning, organizing, designing and implementing Web applications using the latest technologies and compliant with the existing standards. • Ability to critically analyze and synthesize the scientific contributions existing in the domain of digital media and web technologies. • Ability to innovate and bring the research outputs to the industry to optimize the Web applications.
Professional competencies ascribed to the specific competencies	• [x] 1. Develop software prototype • [x] 2. Analyse software specifications • [x] 3. Enhance website visibility • [x] 4. Apply social media marketing • [x] 5. Provide technical documentation • [x] 6. Create flowchart diagram • [x] 7. Use software libraries • [x] 8. Utilise computer-aided software engineering tools • [x] 9. Manage online content • [x] 10. Provide multimedia content • [x] 11. Use content management system software • [x] 12. Enhance website visibility • [x] 13. Manage content development projects • [x] 14. Conduct search engine optimisation • [x] 15. Assess users' interaction with ICT applications • [x] 16. Compile content
Transversal competencies ascribed to the specific competencies	• Apply knowledge of science, technology and engineering • Organize information, objects and resources • Work in teams • Solve problems.

7. Objectives of the discipline (based on the grid of specific competemcies acquired)

7.1 The general objective of the discipline	• Providing the background for developing Web application using existing standards and technologies for the industry while maintaining a constant track of the latest research contributions.
7.2 Specific objectives	• Understand the existing technologies and standards for digital media and web application development. Perform research on the scientific databases such as IEEE Xplore, Scopus, and Clarivate Analytics and identify possible scientific contributions. Design and implementation of Web applications for the industry. Developing project management skills for Web applications development, team working, and communication skills.

8. Content

8.1 Course	Number of hours	Of which online	Teaching methods
1.Introduction to Digital Media. Design Principles. User-centric design.	2	2	Lecture, open discussions based

2.Web Development Standards. Design and Architecture of Web Applications. Frontend Development Languages and Frameworks. Backend Development Technologies.	6		on student experience in industry.
3.Multimedia in Web Applications. Integration of Multimedia Content in Web Applications. Augmented and Virtual Reality Technologies.	6		
4.Interactions in Web Aplications. Integration of Animations, Interactive Maps and AI Generative Services.	6		
5.Testing, Validation and Optimization of Web Applications.	4		
6.Administration of Web Applications. Content Management Systems. Tools for Analytics.	2		
7.Ethics in Digital Media and Web Development.	2	2	
8.Project Management Methodologies for Web Applications Development.	2	2	

Bibliography[10]

[1] M.-D. Pop, *Digital Media and Web Development Technologies*, electronic support course, Virtual Campus UPT.

[2] J. Duckett, *HTML & CSS: design and build websites*. Indianapolis, IN: Wiley, 2014.

[3] A. Osmani, *Learning JavaScript design patterns: a JavaScript and React developer's guide*, Second edition. Beijing Boston Farnham Sebastopol Tokyo: O'Reilly, 2023.

[4] H. Subramanian and P. Raj, *Hands-on RESTful API design patterns and best practices: design, develop, and deploy highly adaptable, scalable, and secure RESTful web APIs*, 1st ed. Upper Saddle River, NJ: Packt Publishing, 2019.

[5] D. Herron, *Node.js Web Development: Build secure and high performance web applications with Node.js 10*, 4th ed. Birmingham: Packt Publishing Limited, 2018.

[6] L. Richardson and M. Amundsen, *RESTful Web APIs*, First edition, Second release. Beijing Cambridge Farnham Köln Sebastopol Tokyo: O'Reilly, 2015.

[7] C. Love, *Progressive web application development by example: develop fast, reliable, and engaging user experiences for the web*, 1st ed. Birmingham, UK: Packt Publishing, 2018.

[8] R. Derks, *React Projects: Build advanced cross-platform projects with React and React Native to become a professional developer*, 2nd ed. Birmingham: Packt Publishing Limited, 2022.

[9] J. Whittaker and J. Whittaker, *Producing for Web 2.0: a student guide*, 3rd ed. in Media Skills. Abingdon, Oxon New York: Routledge, 2009.

8.2 Applied activities[11]	Number of hours	Of which online	Teaching methods
L1.Tools for Graphic Design.	2		PowerPoint slides, discussions on the presentations, examples, development and documentation step by step of a Web application.
L2.Frontend Development with HTML5, CSS3 and Javascript. Frameworks for Frontend Development: React, Angular, Vue.js.	6		
L3.Backend Development with Node.js. Database Integration. REST APIs.	4		
L4.Integration of Multimedia Elements in Web Applications. Interactive Technologies for Web Applications.	2		

[10] At least one title must belong to the department staff teaching the discipline, and at least one title must refer to a relevant work for the discipline, a national and international work that can be found in the UPT Library.

[11] The types of applied activities are those mentioned in 5. If the discipline containes more types of applied activities then they are marked, consecutively, in the table below. The type of activity will be marked distinctively under the form: „Seminar:", „Laboratory:", „Project:" and/or „Practice/Training:".

L5.Testing, Validation and Optimization of Web Applications.	4		
L6.Research and Development of a Web Application. Documention and Presentation of the Developed Solution.	10	4	

Bibliography[12]

[1] M.-D. Pop, *Digital Media and Web Development Technologies*, electronic support course, Virtual Campus UPT.

[2] J. Duckett, *HTML & CSS: design and build websites*. Indianapolis, IN: Wiley, 2014.

[3] H. Subramanian and P. Raj, *Hands-on RESTful API design patterns and best practices: design, develop, and deploy highly adaptable, scalable, and secure RESTful web APIs*, 1st ed. Upper Saddle River, NJ: Packt Publishing, 2019.

[4] D. Herron, *Node.js Web Development: Build secure and high performance web applications with Node.js 10*, 4th ed. Birmingham: Packt Publishing Limited, 2018.

[5] J. Whittaker and J. Whittaker, *Producing for Web 2.0: a student guide*, 3rd ed. in Media Skills. Abingdon, Oxon New York: Routledge, 2009.

9. Coroboration of the content of the discipline with the expectations of the main representatives of the epistemic community, professional associations and employers in the field afferent to the program

- It corroborates very well. The discipline was introduced as response of the SW development companies demand and it's fully compliant with the actual requirements of the domain.

10. Evaluation

Type of activity	**10.1** Evaluation criteria[13]	**10.2** Evaluation methods	**10.3** Share of the final grade
10.4 Course	Knowledge on the main topics of the course. The ability to solve specific theoretical and practical subjects in the domain.	Written exam at the end of the semester.	50%
10.5 Applied activities	**S:**		
	L: Implementation and documentation of project done in a team of 2-3 students based on the concepts learned during laboratory meetings.	The level of practical knowlege related to the presented concepts, the capacity of implementation and documentation of the projects, the manner of emphasizing the (scientific) contribution of each team member to the project, the answers to the questions.	(37.50%) Project content - documentation (12.50%) Project presentation
	P:		
	Pr:		
	Tc-R[14]:		
10.6 Minimum performance standard (minimum amount of knowledge necessary to pass the discipline and the way in which this knowledge is verified[15]			
• Demonstrate theoretical knowledge level of course topics and research skills (existing of a fair level of scientific contribution to the project + Q&A session – min 50% good answers). Demonstrate ability to understand the field by implementing a project using Web technologies. Face-to-face oral presentation and Q&A session.			

Date of completion | **Course coordinator (signature)** | **Coordinator of applied activities (signature)**

[12] At least one title must belong to the staff teaching the discipline.

[13] The Syllabus must contain the evaluation method of the discipline, specifying the criteria, the metods and the forms of evaluation, as well as mentioning the share attached to these within the final mark. The evaluation criteria must correspond to all activities stipulated in the curriculum (course, seminar, laboratory, project), as well as to the methods of continuous assessment (homework, essays etc.)

[14] Tc-R= Homework-Reports

[15] For this point turn to "Ghid de completare a Fișei disciplinei" found at: http://www.upt.ro/img/files/2018-2019/calitate/Ghid_de_completare_fisa_disciplinei.pdf

13.12.2024	Lect.Dr.Eng. Mădălin-Dorin POP	Lect.Dr.Eng. Mădălin-Dorin POP
Head of Department (signature)	**Date of approval in the Faculty Council [16]**	**Dean (signature)**

[16] The approval is preceeded by discussing the study program's board's point of view with redgards to the syllabus.