

## Syllabus

### 1. Data about the program of study

1.1 Institution	Technical University of Cluj-Napoca
1.2 Faculty	Automation and Computer Science
1.3 Department	Automation
1.4 Field of study	Systems Engineering
1.5 Cycle of study	Bachelor of Science
1.6 Program of study/Qualification	Automation and Applied Informatics (English)
1.7 Form of education	Full time
1.8 Discipline code	55.20

### 2. Data about the subject

2.1 Subject name	<b>Web technologies</b>				
2.2 Course responsible/lecturer	Assoc. prof. dipl. eng. Enyedi Szilárd, PhD - Szilard.Enyedi@aut.utcluj.ro				
2.3 Teachers in charge of applications	Lect. dipl. eng. Ștefan Iulia, PhD - Iulia.Stefan@aut.utcluj.ro				
2.4 Year of study	4	2.5 Semester	1	2.6 Assessment (E/C/V)	E
2.7 Type of subject	DF – fundamental, DID – in the field, DS – specialty, DC – complementary				DID
	DOB – compulsory, DOP – elective, FAC – optional				DOB

### 3. Estimated total time

3.1 Number of hours per week	4	of which:	Course	2	Seminar	0	Laboratory	2	Project	0
3.2 Number of hours per semester	56	of which:	course	28	Seminar	0	Laboratory	28	Project	0
3.3 Individual study										
(a) Manual, lecture material and notes, bibliography										30
(b) Supplementary study in the library, online and in the field										10
(c) Preparation for seminars/laboratory works, homework, reports, portfolios, essays										23
(d) Tutoring										3
(e) Exams and tests										3
(f) Other activities:										0
3.4 Total hours of individual study (sum of (3.3(a))...3.3(f))					69					
3.5 Total hours per semester (3.2+3.4)					125					
3.6 Number of credit points					5					

### 4. Pre-requisites (where appropriate)

4.1 Curriculum	Software systems engineering; Software design.
4.2 Competence	Software engineering, programming basics.

### 5. Requirements (where appropriate)

5.1. For the course	Course attendance is compulsory.
5.2. For the applications	Laboratory attendance is compulsory.

### 6. Specific competences

6.1 Professional competences	<p><b>C2</b> – Operating with basic concepts of computer science, information technology and communication</p> <p><b>Theoretical knowledge:</b> Metalanguage basics; Client and server scripting techniques; Remote database access and related applications; Web applications; Mobile platform basics.</p> <p><b>Acquired skills and abilities:</b> Knowledge of technologies for creating web applications; Usage of software and hardware protocols and solutions for a web server; Knowledge of server and client suites, as well as methods for remotely accessing databases; Knowledge of mobile computing platforms and web application development solutions for them.</p>
6.2 Cross competences	N/A

## 7. Course objectives

7.1 General objective	Preparation for the combined use of knowledge about client and server scripting technologies, web application programming and remotely accessing databases, for creating and optimizing web applications, including for mobile platforms.
7.2 Specific objectives	<ul style="list-style-type: none"> <li>• Development of the capacity for identifying web application design and development methods and techniques.</li> <li>• Creation of abilities in using technologies for transmitting data through the web and storing them in remote databases.</li> <li>• Transferring knowledge regarding mobile platforms, development and management of web applications for these platforms.</li> </ul>

## 8. Contents

8.1 Lecture	No.hours	Teaching methods	Notes
Metalanguage basics. SGML.	2	Presentation and reading from course notes and references, questions and answers face-to-face and online, case studies.	
The basics of the HTML language.	2		
HTML elements. Presentation and structure.	2		
Graphical user interface design for the Web.	2		
Client scripting techniques. The Document Object Model.	2		
Server scripting techniques.	2		
Web application design principles.	2		
Database access through the Internet. Data definition. Data manipulation.	2		
Server scripting for database connections.	2		
Controlling client access to data.	2		
Client applications, interactivity and graphical interfaces on the Web. Features brought by HTML 5.	2		
Web applications for mobile platforms.	2		
Network application servers in current operating systems (BSD, Linux, Windows, cloud services).	2		
Web communication mechanisms: WebSockets and WebTransport versus TCP/IP sockets. IPv6.	2		
<b>Bibliography</b> 1. Szilárd Enyedi, Liviu Miclea, Istvan Hoka, Iulia Adina Popa, Adrian Gut, <i>Dezvoltarea aplicațiilor Web cu unele open-source</i> , EIKON, Cluj-Napoca, 2007, ISBN 978-973-757-054-3, 167p., (Biblioteca UTCN – 10 exemplare; online la <a href="http://users.utcluj.ro/~szilard/">http://users.utcluj.ro/~szilard/</a> , datele de acces se comunică la orele de curs și laborator). 2. Sebastien Dubois et al, <i>Learn TypeScript 3 by Building Web Applications: Gain a solid understanding of TypeScript, Angular, Vue, React, and NestJS</i> , Packt Publishing, 2019. 3. Saroj Pandey et al, <i>Web Technology: XML, PHP, MySQL, Semantic Web</i> , Amazon, 2022. 3. Radu Crețulescu, Daniel Morariu, <i>Dezvoltarea aplicațiilor Web</i> , Editura Universității Lucian Blaga din Sibiu, 2015 (Biblioteca UTCN – 1 exemplar).			
8.2 Applications (seminar/laboratory/project)	No.hours	Teaching methods	Notes
Presenting information.	2	Documentation reading, presentation and exemplification, individual exercises on paper and on the computer, problem solving within a team.	
HTML elements (I).	2		
HTML elements (II).	2		
Cascading Style Sheets.	2		
Client scripting (JavaScript, DOM).	2		
Server scripting.	2		
Accessing the data: from client to application server to the data source and back.	2		
SQL elements. Database servers.	2		
Server scripts for database connections.	2		
Client authentication.	2		
Client applications, interactivity and graphical interfaces on the Web. SVG, CSS, HTML 5.	2		

Developing and optimizing web applications for mobile platforms.	2		
Network application servers (Linux, Windows, cloud).	2		
Developing network communication applications (using sockets, web services).	2		
<b>Bibliography</b> 1. Szilárd Enyedi, Liviu Miclea, Istvan Hoka, Iulia Adina Popa, Adrian Gut, <i>Dezvoltarea aplicațiilor Web cu unelte open-source</i> , EIKON, Cluj-Napoca, 2007, ISBN 978-973-757-054-3, 167p., (Biblioteca UTCN – 10 exemplare; online la <a href="http://users.utcluj.ro/~szilard/">http://users.utcluj.ro/~szilard/</a> , datele de acces se comunică la orele de curs și laborator). 2. Sebastien Dubois et al, <i>Learn TypeScript 3 by Building Web Applications: Gain a solid understanding of TypeScript, Angular, Vue, React, and NestJS</i> , Packt Publishing, 2019. 3. Saroj Pandey et al, <i>Web Technology: XML, PHP, MySQL, Semantic Web</i> , Amazon, 2022. 3. Radu Crețulescu, Daniel Morariu, <i>Dezvoltarea aplicațiilor Web</i> , Editura Universității Lucian Blaga din Sibiu, 2015 (Biblioteca UTCN – 1 exemplar).			

### 9. Bridging course contents with the expectations of the representatives of the community, professional associations and employers in the field

<ul style="list-style-type: none"> <li>• Bridging with corresponding COR qualifications: Web and multimedia developers; Web page designer; Computer system programmer; Computer network administrator.</li> <li>• Continual adaptation of the material to the requirements of potential employers and to the feedback from hired graduates.</li> </ul>
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### 10. Evaluation

Activity type	Assessment criteria	Assessment methods	Weight in the final grade
Course	Questions from the material presented at the course.	Written exam / online exam using Teams/Moodle	60%
Laboratory	Theoretical and practical questions from the material presented at the applications.	Written/online laboratory project / colloquium using Teams	40%
Minimum standard of performance: Grade $G \geq 5$ , $G = 0,6 * E + 0,4 * C$ , where E=exam (minimum mark 5), C=colloquium (minimum mark 5).			

Date of filling in:		Title First name NAME	Signature
20.03.2023	Course	Assoc. prof. dipl. eng. Szilárd ENYEDI, PhD	
	Applications	Lect. dipl. eng. Iulia ȘTEFAN, PhD	

Date of approval by the Department Board	Head of Department Prof.dr.ing. Honoriu VĂLEAN
Date of approval by the Faculty Council	Dean Prof.dr.ing. Liviu Cristian MICLEA