



## COURSE DESCRIPTION

### 1. Information about the programme

1.1 Institution of higher education	Alexandru Ioan Cuza University of Iasi
1.2 Faculty	Faculty of Economics and Business Administration
1.3 Department	
1.4 Field of study	Computer Science
1.5 Level	Post-graduate
1.6 Study programme/ Qualification	

### 2. Information about the course

2.1 Course name	Web Systems Development				
2.2 Course coordinator	Sabin Buraga				
2.3 Seminar coordinator	Sabin Buraga				
2.4 Year of study	2	2.5 Semester	1	2.6 Type of assessment	VP
				2.7 Course status	

\* C – Compulsory / E - Elective

### 3. Total estimated time (hours allotted to teaching activities per semester)

3.1 Number of hours per week	3	of which: 3.2 lecture	2	3.3 seminar/lab	1
3.4 Number of hours in the curriculum	42	of which: 3.5 lecture	28	3.6 seminar/lab	14
Time distribution					
Study of the textbook, coursebook, bibliography and lecture notes					
Additional research in the library, online and on the field					
Preparation of seminars/labs, homework, projects, portfolios and essays					
Tutorials					
Assessment					
Other activities.....					
3.7 Total number of self-study hours					
3.8 Total number of hours per semester					
3.9 Number of credits					

### 4. Prerequisites (if applicable)

4.1 Curriculum-based	Algorithms and Programming, Databases, Information Systems Design
4.2 Competence-based	Basic knowledge of computer programming, software engineering, Internet technologies and data-bases

### 5. Conditions (if applicable)

5.1 For lectures	n/a
5.2 For seminars / labs	n/a





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ALEXANDRU IOAN CUZA UNIVERSITY OF IASI  
FACULTY OF ECONOMICS AND BUSINESS ADMINISTRATION  
DEPARTMENT OF FINANCE, MONEY AND PUBLIC ADMINISTRATION





## 6. Specific competencies

<b>Professional competencies</b>	<p>C1 A proper understanding and usage of basic concepts, theories and methods of the field and area of specialization.</p> <p>C2 The pragmatic use of learned knowledge in order to explain and interpret various types of concepts, situations, processes, projects, etc.</p>
<b>Transversal competencies</b>	<p>CT1 Responsible execution of professional tasks.</p> <p>CT2 Being accustomed to the roles and activities specific to teamwork and distribution of tasks for subordinate levels.</p> <p>CT3 Awareness of the need for continuous training; efficient use of learning resources and techniques for personal and professional development.</p>

## 7. Course objectives (provided by the specific competencies grid)

<b>7.1. Main objective</b>	<p>The main topics will focus on server-side Web application development at all three levels: modeling, processing, and presentation.</p> <p>The enrolled students will study the actual methodologies, specifications and techniques of Web development and to offer the necessary skills for designing, implementing and deploying complex Web systems.</p>
<b>7.2. Specific objectives</b>	<p>The post-graduate students will achieve both theoretical and practical understanding about the development of complex Web systems, including N-tier applications and (micro-)services, with the help of actual concepts, models, methodologies, paradigms, standards, practices, and tools focused on Web technologies.</p>

## 8. Content

8.1	Lectures	Teaching methods	Observations (hours & readings)
1.	General architecture of the WWW space. Architectural Aspects	Exposition. Practical demonstration. Online access to additional educational resources	*
2.	Web Programming: HTTP, Cookies, Web Sessions	Exposition. Practical demonstration. Online access to additional educational resources	4 hours *





93.	Web Programming: Web Application Architecture. Web Systems Engineering	Exposition. Practical demonstration. Online access to additional educational resources	4 hours
<b>Corroboration of the course content with the expectations of community representatives, professional associations and representative employers from the programme's related field</b>			
100%	XML. Entity Syntax & XML Namespaces. XML Validation via DTD	Exposition. Practical demonstration. Online access to additional educational resources	*
5.	Web Services. SOA. SOAP. WSDL. UDDI	Exposition. Practical demonstration. Online access to additional educational resources	*
6.	Web Services. REST Paradigm	Exposition. Practical demonstration. Online access to additional educational resources	*
7.	Web Services. Microservices. Serverless. Specifying & Authorizing Web APIs. GraphQL	Exposition. Practical demonstration. Online access to additional educational resources	4 hours *
8.	Web System Security	Exposition. Practical demonstration. Online access to additional educational resources	4 hours *
9.	Web Search Engines. SEO. HTML5 Microdata	Exposition. Practical demonstration. Online access to additional educational resources	*
10.	Retrospective & perspectives	Exposition. Practical demonstration. Online access to additional educational resources	*

\* For details, visit the discipline Website:

<https://profs.info.uaic.ro/~busaco/teach/courses/websys/web-film.html>

### Bibliography

M. Richards, N. Ford, Fundamentals of Software Architecture, O'Reilly, 2020  
 S. Buraga, Tehnologii XML, Polirom, 2006  
 L. Alboaie, S. Buraga, Servicii Web, Polirom, Iași, 2006  
 T. Erl et al., Service-Oriented Architecture. Analysis and Design for Services and Microservices, Prentice Hall, 2017  
 M. Richards, Software Architecture Patterns, O'Reilly, 2015  
 A. Bucchiarone et al., Microservices. Science and Engineering, Springer, 2020  
 M. Kleppmann, Designing Data-Intensive Applications, O'Reilly, 2017

8.2	Seminars / Labs	Teaching methods	Observations (hours & readings)
1.	Discussions about WebSysDev project proposals & requirements	Interactive presentations. Direct interaction. Online access to additional educational resources	*
2.	An Introduction to PHP. Important concepts. PHP as Programming Language. Best practices	Interactive presentations. Direct interaction. Online access to additional educational resources	*
3.	An Introduction to PHP. MVC. Web interaction. Access to databases. Web engineering	Interactive presentations. Direct interaction. Online access to additional educational resources	*
4.	Midterm project evaluation	Project evaluation	*





5.	An Introduction to Node.js	Interactive presentations. Direct interaction. Online access to additional educational resources	*
6.	Real-life case studies of Web systems	Interactive presentations. Direct interaction. Online access to additional educational resources	*
7.	Final project evaluation	Project evaluation	*

\* For details, visit the discipline Website:

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#### Bibliography

P. Sturgeon, J. Lockhart, PHP The Right Way, Leanpub, 2021

W3C Standards: <https://www.w3.org/standards/>

Web Development Case Studies: [http://www.infoq.com/case\\_study/](http://www.infoq.com/case_study/)

Free Programming Books: <https://ebookfoundation.github.io/free-programming-books/>

### 10. Assessment

Type of activity	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in final grade (%)
10.4 Lectures	<a href="https://profs.info.uaic.ro/~busaco/teach/courses/websys/web-exam.html">https://profs.info.uaic.ro/~busaco/teach/courses/websys/web-exam.html</a>	Q: a question-based test to be answered by each student	Q: 20%
10.5 Seminars/ Labs	<a href="https://profs.info.uaic.ro/~busaco/teach/courses/websys/web-projects.html">https://profs.info.uaic.ro/~busaco/teach/courses/websys/web-projects.html</a>	P: a team-oriented practical project assessed in 2 stages: A – midterm software architecture: from Web application's requirements to general software architecture, plus data model S – completed solution: a prototype implementation, plus a public presentation including deliverables + software solution + demo.	A: 30% S: 60%
10.6 Minimum performance standard			
Minimum 5 points for each A, S, and Q components, with A, S, Q ∈ [0, 10].			

Date

Course Coordinator

Seminar Coordinator

Date of approval

Head of Department

