# SYLLABUS

## 1. Information regarding the programme

| 1.1 Higher education institution | Babe -Bolyai University |
|---|---|
| 1.2 Faculty | Faculty of Mathematics and Computer Science |
| 1.3 Department | Department of Computer Science |
| 1.4 Field of study | Computers and Information Technology |
| 1.5 Study cycle | Bachelor |
| 1.6 Study programme / Qualification | Information Engineering |

## 2. Information regarding the discipline

| 2.1 Name of the discipline | Web Programming | | | | | |
|---|---|---|---|---|---|---|
| 2.2 Course coordinator | | Lect. PhD. Sterca Adrian | | | | |
| 2.3 Seminar coordinator | | Lect. PhD. Sterca Adrian | | | | |
| 2.4. Year of study | **4** | 2.5 Semester | **7** | 2.6. Type of evaluation | **E** | 2.7 Type of discipline | **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 | 2 |
|---|---|---|---|---|---|
| 3.4 Total hours in the curriculum | 56 | Of which: 3.5 course | 28 | 3.6 seminar/laboratory | 28 |

| Time allotment: | hours |
|---|---|
| Learning using manual, course support, bibliography, course notes | 18 |
| Additional documentation (in libraries, on electronic platforms, field documentation) | 18 |
| Preparation for seminars/labs, homework, papers, portfolios and essays | 18 |
| Tutorship | 6 |
| Evaluations | 9 |
| Other activities: .................. | 0 |

| 3.7 Total individual study hours | 69 |
|---|---|
| 3.8 Total hours per semester | 125 |
| 3.9 Number of ECTS credits | 5 |

## 4. Prerequisites (if necessary)

| 4.1. curriculum | • Computer Networks, Distributed Operating Systems, Databases, Data Structures and Algorithms, Object Oriented Programming |
|---|---|
| 4.2. competencies | • Elementary knowledge on working with an SQL database server, fundamental knowledge about the structure of the Internet and the way the Internet functions, basic knowledge on data structures and algorithms, programming languages, object-oriented programming. |

## 5. Conditions (if necessary)

| 5.1. for the course | • Class room with a video projector device |
|---|---|
| 5.2. for the seminar /lab activities | • Laboratory room with computers connected to the Internet and web servers (e.g. Apache, Tomcat, IIS) available. |

## 6. Specific competencies acquired

| Professional competencies | ▪ Good programming skills in high-level languages<br><br>▪ Ability to work independently and/or in a team in order to solve problems in defined professional contexts.<br><br>▪ Ability to permanently learn, understand and apply the most recent scientific results in the field of Computer Science. |
|---|---|
| Transversal competencies | ▪ Knowledge of the main client-side and server-side web technologies.<br><br>▪ Understanding the basic functioning mechanisms of the World Wide Web and the HTTP.<br><br>▪ Ability to design and develop a complex web site.<br><br>▪ Knowledge and understanding of security mechanisms that need to be implemented in a web site or web application. |

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

| 7.1 General objective of the discipline | • To introduce students to modern techniques for web programming using both server-side and client-side technologies. The course is meant as an introductory course in web technologies. |
|---|---|
| 7.2 Specific objective of the discipline | • Understanding how the World Wide Web is built and functions<br>• Knowing the main technologies/languages used in web development: HTML/XML, CSS, Javascript/DOM, PHP, JSP/Servlet, ASP.NET |

## 8. Content

| 8.1 Course | Teaching methods | Remarks |
|---|---|---|
| 1. WWW history and concepts: The Internet addressing mechanism, name servers, URLs and URIs | Exposure:description, explanation,examples, discussion of case studies | |
| 2. HTML – HyperText Markup Language | Exposure:description, explanation,examples, discussion of case studies | |
| 3. HTTP – HyperText Transfer Protocol | Exposure:description, explanation,examples, discussion of case studies | |
| 4. CSS – Cascading Style Sheets | Exposure:description, explanation,examples, discussion of case studies | |
| 5. XML languages | Exposure:description, explanation,examples, discussion of case studies | |
| 6. DOM – Document Object Model, Javascript and jQuery | Exposure:description, explanation,examples, | |

| | discussion of case studies | |
|---|---|---|
| 7. HTML 5 | Exposure:description, explanation,examples, discussion of case studies | |
| 8. Server-side technologies: CGI (Common Gateway Interface | Exposure:description, explanation,examples, discussion of case studies | |
| 9. AJAX | Exposure:description, explanation,examples, discussion of case studies | |
| 10. Server-side technologies: PHP | Exposure:description, explanation,examples, discussion of case studies | |
| 11. Server-side technologies: JSP and Java servlets | Exposure:description, explanation,examples, discussion of case studies | |
| 12. Server-side technologies: ASP .NET | Exposure:description, explanation,examples, discussion of case studies | |
| 13. Animated web content: WebGL, Silverlight and Adobe Flash | Exposure:description, explanation,examples, discussion of case studies | |
| 14. SEO – Search Engine Optimization. Web security: cross site scripting and SQL injection. | Exposure:description, explanation,examples, discussion of case studies | |

Bibliography
1. Anghel T. Dezvoltarea aplicatiilor web folosind XHTML, PHP si MySQL. Editura Polirom, Iasi, 2005
2. Boian F. M. Programare distribuita în Internet; metode si aplicatii. Editura Albastra, MicroInformatica, Cluj, 2005
3. Boian F.M., Boian R.F. Tehnologii fundamentale Java pentru aplicatii Web. Editura Albastra, MicroInformatica, Cluj, 2005
4. Buraga S. Tehnologii web. Editura Matrix Rom, Bucuresti, 2001
5. Buraga S. Proiectarea siturilor web. Editura Polirom, Iasi, 2002
6. Castro E. HTML for the World Wide Web with XHTML and CSS. 5'th edition, Visual QuickStart Guide, 2004
7. Hall M., Brown L. Core web programming. 2nd edition. Prentice Hall, 2001
8. Negrino T., Smith D. JavaScript for the World Wide Web. 4th edition, Visual QuickStart Guide, 2001
9. Varlan C. Macromedia FLASH; concepte, exemple, studii de caz. Editura Polirom, Iasi, 2004
10. W3Schools Online Web Tutorials, http://www.w3schools.com
11. http://www.php.net

| 8.2 Seminar / laboratory | Teaching methods | Remarks |
|---|---|---|
| 1. Presentation of the HTML language and HTML main tags | Dialogue, debate, case studies, examples | |
| 2. Laboratory work: Clonning a well-known web site (using only HTML, without CSS) | Dialogue, debate, case studies, examples | |
| 3. Laboratory work: CSS | Dialogue, debate, case studies, examples | |
| 4. Laboratory work: Javascript and DOM (DHTML) | Dialogue, debate, case studies, examples | |
| 5. Laboratory work: HTML 5 | Dialogue, debate, case studies, examples | |
| 6. Laboratory work: XML and XSLT | Dialogue, debate, case studies, examples | |
| 7. Laboratory work: CGI | Dialogue, debate, case studies, examples | |

| 8. Laboratory work: AJAX and PHP | Dialogue, debate, case studies, examples | |
|---|---|---|
| 9. Laboratory work: Java servlets and JSP | Dialogue, debate, case studies, examples | |
| 10. Laboratory work: Asp .Net | Dialogue, debate, case studies, examples | |
| 11. Laboratory work: jQuery | Dialogue, debate, case studies, examples | |
| 12. Laboratory work: WebGL | Dialogue, debate, case studies, examples | |
| 13. Students deliver the last laboratory tasks. Preparing the final exam. | Dialogue, debate, case studies, examples | |
| 14. Students deliver the last laboratory tasks. Preparing the final exam. | Dialogue, debate, case studies, examples | |

Bibliography
1. W3Schools Online Web Tutorials, http://www.w3schools.com
2. Jennifer Niederst, Web Design in a Nutshell, O'Reilly, 2001;
3. Chuck Musciano, Bill Kennedy, HTML & XHTML: The Definitive Guide, O'Reilly, 2002;
4. Colin Moock, ActionScript: The Definitive Guide - Mastering Flash Programming, O'Reilly, 2001;
5. Varlan C, Macromedia FLASH; concepte, exemple, studii de caz. Editura Polirom, Iași, 2004;
6. Negrino T., Smith D, JavaScript for the World Wide Web. 4th edition, Visual QuickStart Guide, 2001.


## 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 respects the IEEE and ACM Curriculla Recommendations for Computer Science studies;
- The course exists in the studying programs of all major universities in Romania and abroad;
- The content of the course is considered by software companies as important for average programming skills


## 10. Evaluation

| Type of activity | 10.1 Evaluation criteria | 10.2 Evaluation methods | 10.3 Share in the grade (%) |
|---|---|---|---|
| 10.4 Course | Knowing the theoretical issues discussed during the course. Being able to solve small practical problems similar to the ones students get during the laboratory activity. | Examination | 60% |
| 10.5 Seminar/lab activities | Applying the knowledge received from the course. Students get in each laboratory class a task they need to solve in maximum two weeks. | The lab mark is the average of the marks the student gets on the laboratory work performed by him/her during the semester. | 40% |
| 10.6 Minimum performance standards | | | |
| In order to successfully pass this class, the practical exam mark and the laboratory mark must be at least 5. The course requirements are described at: http://www.cs.ubbcluj.ro/~forest/wp | | | |

Date                    Signature of course coordinator        Signature of seminar coordinator

.........................        Lect.PhD. Adrian Sterca                Lect.PhD. Adrian Sterca


Date of approval                                Signature of the head of department

..........................................                        Prof. PhD. Bazil Parv