

## syllabus

### 1. Information regarding the programme

|                                     |  |
|-------------------------------------|--|
| 1.1 Higher education institution    | <b>Babeş-Bolyai University</b>                                 |
| 1.2 Faculty                         | <b>Faculty of Mathematics and Computer Science</b>             |
| 1.3 Department                      | <b>Department of Computer Science</b>                          |
| 1.4 Field of study                  | <b>Computer Science</b>  |
| 1.5 Study cycle                     | <b>Master</b>  |
| 1.6 Study programme / Qualification | <b>Sisteme informatice avansate - limba germană și engleză</b> |

### 2. Information regarding the discipline

|   |   |              |          |                         |          |                        |           |
|---|---|--------------|----------|-------------------------|----------|------------------------|-----------|
| 2.1 Name of the discipline (en)<br>(ro) | <b>Adaptive Web Design</b><br><b>Web design adaptiv</b> |              |          |                         |          |                        |           |
| 2.2 Course coordinator                  | <b>Assoc. Prof. PhD. Sanda-Maria Avram</b>              |              |          |                         |          |                        |           |
| 2.3 Seminar coordinator                 | <b>Assoc. Prof. PhD. Sanda-Maria Avram</b>              |              |          |                         |          |                        |           |
| 2.4. Year of study                      | <b>2</b>  | 2.5 Semester | <b>3</b> | 2.6. Type of evaluation | <b>E</b> | 2.7 Type of discipline | <b>DS</b> |
| 2.8 Code of the discipline              | <b>MME8120</b>  |              |          |                         |          |                        |           |

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

|   |           |                      |            |                            |           |
|---|-----------|----------------------|------------|----------------------------|-----------|
| 3.1 Hours per week  | <b>3</b>  | Of which: 3.2 course | <b>2</b>   | 3.3 seminar/<br>laboratory | <b>1</b>  |
| 3.4 Total hours in the curriculum   | <b>36</b> | Of which: 3.5 course | <b>24</b>  | 3.6 seminar/<br>laboratory | <b>12</b> |
| Time allotment:   |           |                      |            |                            | hours     |
| Learning using manual, course support, bibliography, course notes                     |           |                      |            |                            | <b>39</b> |
| Additional documentation (in libraries, on electronic platforms, field documentation) |           |                      |            |                            | <b>30</b> |
| Preparation for seminars/labs, homework, papers, portfolios and essays                |           |                      |            |                            | <b>50</b> |
| Tutorship   |           |                      |            |                            | <b>8</b>  |
| Evaluations   |           |                      |            |                            | <b>12</b> |
| Other activities: .....   |           |                      |            |                            |           |
| 3.7 Total individual study hours  |           |                      | <b>139</b> |                            |           |
| 3.8 Total hours per semester  |           |                      | <b>175</b> |                            |           |
| 3.9 Number of ECTS credits  |           |                      | <b>7</b>   |                            |           |

#### 4. Prerequisites (if necessary)

|                   |  |
|-------------------|--|
| 4.1. curriculum   |  |
| 4.2. competencies | <ul style="list-style-type: none"><li>• Basic programming skills in web client-side technologies (HTML, CSS, JavaScript)</li></ul> |

#### 5. Conditions (if necessary)

|                                      |  |
|--------------------------------------|--|
| 5.1. for the course                  | <ul style="list-style-type: none"><li>• A lecture class with video projector</li></ul>   |
| 5.2. for the seminar /lab activities | <ul style="list-style-type: none"><li>• Laboratory with computers connected to the Internet; web servers for hosting websites.</li></ul> |

#### 6. Specific competencies acquired

|                                  |  |
|----------------------------------|--|
| <b>Professional competencies</b> | <ul style="list-style-type: none"><li>• Knowledge, understanding and use of basic concepts of theoretical Computer Science</li><li>• Ability to work independently and/or in a team in order to solve problems in defined professional contexts.</li><li>• Abilities to develop and maintain software systems</li></ul>                                |
| <b>Transversal competencies</b>  | <ul style="list-style-type: none"><li>• Knowledge, understanding of web standards (HTML and CSS)</li><li>• Ability to design optimal websites.</li><li>• Developing website evaluation and validation skills so that the developed sites to comply with the standards, be responsive and perform better for search engines and accessibility</li></ul> |

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

|   |  |
|---|--|
| 7.1 General objective of the discipline | <ul style="list-style-type: none"><li>• Learning, understanding and applying the web standards (HTML and CSS).</li><li>• Developing website creation, evaluation and validation skills so that the developed sites to comply with the standards, be responsive (i.e., adapt to any device: telephone, tablet, netbook, laptop, desktop or TV) and perform better for search engines and accessibility.</li></ul> |
|---|--|

|  |  |
|--|--|
| 7.2 Specific objective of the discipline | <ul style="list-style-type: none"> <li>• Using HTML for structure and CSS for presentation</li> <li>• Acquire knowledge about the web site development process</li> <li>• Evaluating and Optimizing a website</li> <li>• Developing skills to use the most advanced web design skills such as: <ul style="list-style-type: none"> <li>◦ Using preprocessors like SASS or LESS</li> <li>◦ Using object oriented CSS (OOCSS)</li> <li>◦ Using the block-element-model (BEM)</li> <li>◦ Using web fonts and knowing the typography elements</li> <li>◦ Using the golden ratio and the color theory in web design</li> <li>◦ Create responsive web sites that can adapt to any device</li> <li>◦ Use the progressive enhancement process</li> <li>◦ Accessibility (create sites for everyone)</li> </ul> </li> </ul> |
|--|--|

## 8. Content

| 8.1 Course  | Teaching methods  | Remarks  |
|---|---|--|
| 1-3 Understanding the standards<br>• HTML from HTML 2.0 to HTML 5<br>• CSS from CSS 1.0 to CSS 3<br>• HTML Markup for structure<br>• CSS for presentation   | Interactive exposure<br>• Explanation<br>• Conversation<br>• Didactical demonstration | This lecture is held during the second semester of the final year of bachelor study and therefore there are only 12 weeks/lectures   |
| 4-9 The site development process;<br>• Planning and site definition<br>• Interface design<br>• Site design<br>• Page design<br>• Typography<br>• Graphics<br>• Multimedia<br>• Tracking, evaluation and maintenance | Interactive exposure<br>• Explanation<br>• Conversation<br>• Didactical demonstration | Here, students will learn about responsive design and progressive enhancement, accessibility and the most innovative web development techniques like OOCSS, SAMCS, BEM, pre-processors, minification and mixins. They also find out about useful existing instruments like resets, grids and frameworks. |
| 10-14 Web site optimization<br>• Speed optimization<br>• Search engine optimization<br>• Web analytics  | Interactive exposure<br>• Explanation<br>• Conversation<br>• Didactical demonstration | Here students will find out about code quality, best practices, validation and evaluation instruments used for optimization.   |

## Bibliography

1. **Duckett, J.**, HTML and CSS: Design and Build Websites, John Wiley & Sons, USA, 2011.
2. **Gardner, L.D.**, Jason Grigsby, Head First Mobile Web, O'Reilly Media, 2011
3. **Gustafson, A.**, Adaptive Web Design. Crafting Rich Experiences with Progressive Enhancement, Easy Readers, ISBN: 978-0-9835895-2-5, 2011, <http://kammerkunst.de/data/AdaptiveWeb-Design.pdf>
4. **Krug, S.**, Don't Make Me Think. A Common Sense Approach to Web Usability, New Riders, 2nd Edition, ISBN: 0-321-34475-8, 2006, <http://web-profile.com.ua/wp-content/uploads/stevekrug-dont-make-me-think-second-edition.pdf>
5. **Krug, S.**, Rocket Surgery Made Easy. The Do-It-Yourself Guide to Finding and Fixing Usability Problems, New Riders, ISBN:978-0321657299, 2010
6. **Lynch, P.J., Horton, S.**, Web Style Guide: Basic Design Principles for Creating Web Sites, Yale University Press, 3rd edition, ISBN-13: 978-0300137378, 2009, <http://www.webstyleguide.com>
7. **Marcotte, E.**, Responsive Web Design, A Book Apart, ISBN: 978-0984442577, 2011
8. **Purewal, S.**, Learning Web App Development, O'Reilly Media, USA, 2014.
9. **Robbins J.N.**, Learning Web Design: A Beginner's Guide to HTML, CSS JavaScript, and Web Graphics, 4<sup>th</sup> Edition, O'Reilly Media, USA, 2012.
10. **Sebesta, R.W.**, Programming the World Wide Web, 7<sup>th</sup> Edition, Pearson Education Limited, USA, 2014.
11. **Warren, T.**, ASP.NET For Beginners: The Simple Guide to Learning ASP.NET Web Programming FAST!, 2015.
12. **Watrall, E., Siarto, J.**, Head First Web Design, O'Reilly Media, ISBN: 978-0-596-52030- 4, 2008, <http://it-ebooks.info/book/378/>
13. <https://www.w3.org/standards/webdesign/>

| 8.2 Seminar / laboratory   | Teaching methods                                 | Remarks   |
|--|--|---|
| 1. Analyzing a website   | Explanation, dialogue, case studies              | The seminar is structured as 2 hours classes every second week. |
| 1. Develop a simple site   | Dialogue, debate, case studies, examples, proofs |   |
| 1. Complying with the standards; HTML and CSS validation   | Dialogue, debate, case studies, examples, proofs |   |
| 1. Building the optimal structure for a specified type of site; building the optimal layout                    | Dialogue, debate, case studies, examples, proofs |   |
| 1. Typography, graphics and multimedia   | Dialogue, debate, case studies, examples, proofs |   |
| 1. Evaluating the site; structure, elements, speed and accessibility; improve site as result of the evaluation | Dialogue, debate, case studies, examples, proofs |   |

## Bibliography

1. **Gustafson, A.**, Adaptive Web Design. Crafting Rich Experiences with Progressive Enhancement, Easy Readers, ISBN: 978-0-9835895-2-5, 2011, <http://kammerkunst.de/data/AdaptiveWeb-Design.pdf>
2. **Krug, S.**, Don't Make Me Think. A Common Sense Approach to Web Usability, New Riders, 2nd Edition, ISBN: 0-321-34475-8, 2006, <http://web-profile.com.ua/wp-content/uploads/stevekrug-dont-make-me-think-second-edition.pdf>
3. **Lynch, P.J., Horton, S.**, Web Style Guide: Basic Design Principles for Creating Web Sites, Yale University Press, 3rd edition, ISBN-13: 978-0300137378, 2009, <http://www.webstyleguide.com>
4. **Watrall, E., Siarto, J.**, Head First Web Design, O'Reilly Media, ISBN: 978-0-596-52030-4, 2008, <http://it-ebooks.info/book/378/>
5. <https://www.w3.org/standards/webdesign/>

## 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 addresses a relatively new domain that is rising in recent years (from 2008) and enjoys increasing interest from the scientific community and industry.
- The course is reflected in the curricula of other universities, with similar syllabus. At the same time the content presented in the course is discussed in the literature.
- The content of the course is considered by the 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                 | - know the basic principle of the domain; - apply the course concepts - problem solving            | Project presentation   | 60 %                        |
| 10.5 Seminar/lab activities | - be able to implement with the standards; a small project that proves HTML and CSS correct usage. | Practical examination<br>-documentation -portfolio<br>-continuous observations | 20 %                        |

|   |  |                                   |      |
|---|--|-----------------------------------|------|
|   | Developing a personal project: creating a website or a web page structure on a certain theme that complies with the HTML and CSS standards and applies the concepts presented during the course. | Early stages of the final project | 20 % |
| 10.6 Minimum performance standards  |  |                                   |      |
| <ul style="list-style-type: none"> <li>• In order to successfully pass this class, the project presentation and the final mark must be at least 5.</li> </ul> |  |                                   |      |

|            |                                   |                                   |
|------------|-----------------------------------|-----------------------------------|
| Date       | Signature of course coordinator   | Signature of seminar coordinator  |
| 04.05.2020 | Assoc.Prof.PhD. Sanda-Maria Avram | Assoc.Prof.PhD. Sanda-Maria Avram |

|                  |                                     |
|------------------|-------------------------------------|
| Date of approval | Signature of the head of department |
| .....            | Lecturer. PhD. Adrian STERCA        |