



COURSE UNIT (MODULE) DESCRIPTION

| Course unit (module) title | Code |
|------------------------------|------|
| WWW DEVELOPMENT TECHNOLOGIES | |

| Academic staff | Core academic unit(s) |
|---------------------------------|--|
| Assoc. prof. dr. Ilona Veitaitė | Kaunas Faculty Institute of Language, Literature and Translation Studies <input type="checkbox"/> Institute of Social Sciences and Applied Informatics <input checked="" type="checkbox"/> |

| Study cycle | Type of the course unit |
|--|---|
| First <input checked="" type="checkbox"/> Second <input type="checkbox"/> | Compulsory Course <input checked="" type="checkbox"/> Optional Course <input type="checkbox"/> Course Unit (Module) of the General University Studies <input type="checkbox"/> Course Unit (Module) of Individual Studies <input checked="" type="checkbox"/> Interdisciplinary Studies Course Unit (Module) <input type="checkbox"/> |

| Mode of delivery | Semester or period when it is delivered | Language of instruction |
|--------------------------|---|-------------------------|
| Auditorium and self-work | Autumn semester | English |

| Requisites | |
|--|---|
| Prerequisites: Introduction to Programming; Algorithm Theory and Data Structures | Co-requisites (if relevant): Information Systems and Databases; Programming Languages and Object-Oriented Programming |

| Number of ECTS credits allocated | Student's workload (total) | Contact hours | Individual work |
|----------------------------------|----------------------------|---------------|-----------------|
| 5 | 130 | 48 | 82 |

| Purpose of the course unit | | |
|--|---|---|
| After the course, student will be able to understand, analyze, and apply the leading technologies of Internet information systems development and their practical application methods. | | |
| Learning outcomes of the course unit | Teaching and learning methods | Assessment methods |
| Will be able to prepare and configure the environment necessary for the development of Web information systems. Will be able to apply necessary Web application development tools and technologies in practice. Will be able to apply essential tools and technologies for developing static and dynamic Web applications in practice, as well as to use database management system capabilities in web solutions. | Lectures, practical tasks, practical works, independent work, literature analysis | Independent work presentation, practical works defense, exam. |

| Content | Contact hours | Individual work: time and assignments |
|---------|---------------|---------------------------------------|
| | | |

| | Lectures | Tutorials | Seminars | Workshops | Laboratory work | Internship | Contact hours, total | Individual work | Tasks for individual work |
|--|-----------|-----------|----------|-----------|-----------------|------------|----------------------|-----------------|---|
| Foundations of the World Wide Web and Web Technologies. This topic introduces the World Wide Web, its core principles, and the basics of web page development. Students will learn fundamental technologies such as HTML, CSS, HTML5, and DHTML that form the building blocks of modern websites. | 4 | | | 6 | | | 10 | 10 | Literature analysis; practical work; individual work on assigned tasks; practical exercises |
| Modern Web Engineering and Frontend Development. Students explore methods and principles of modern web application engineering with an emphasis on usability and responsive design. The topic covers frontend development tools and frameworks including JavaScript, jQuery, AngularJS, React, and Bootstrap. | 4 | | | 6 | | | 10 | 10 | Literature analysis; practical work; individual work on assigned tasks; practical exercises |
| Backend Development and Databases. This section focuses on server-side programming through PHP basics, advanced PHP techniques, and the use of modern frameworks such as Laravel. It also covers relational databases like MySQL and MariaDB, alongside SQL for storing, managing, and retrieving data. | 4 | | | 20 | | | 24 | 20 | Literature analysis; practical work; individual work on assigned tasks; practical exercises |
| Web Security and Practical Applications. Students gain insight into web-based hacking techniques and web application security challenges. Practical assignments – ranging from blog creation to full-stack development projects – complement the theoretical knowledge and encourage hands-on learning. | 4 | | | | | | 4 | 22 | Literature analysis; practical work; individual work on assigned tasks; practical exercises |
| Exam | | | | | | | | 20 | |
| Total | 16 | | | 32 | | | 48 | 82 | |
| Note: No more than 4 contact hours may be replaced by guest lectures from social partners or educational visits to social partner organizations. | | | | | | | | | |

| Assessment strategy | Weight % | Deadline | Assessment criteria |
|---------------------|----------|-----------------|--|
| Independent work | 20% | During semester | <p>Each student creates a blog based on a topic chosen from the given list (topics cannot be repeated). The blog must be informative, well-visited, feedback-oriented, free in style and design, but must include the following structural elements:</p> <ol style="list-style-type: none"> 1. Introduction to the chosen topic. 2. Description of the technology. 3. Description of technical principles. 4. Description of possible security methods. 5. Presentation of real-world examples. 6. Demonstration/simulation using a virtual machine (video)/ or detailed technology management guide. 7. Global statistics on technology use/damage. 8. A section on the rationale for the choice of blogging tool. 9. Conclusions/trends/next steps. |

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|---|-----|-----------------|--|
| | | | The blog must be prepared according to the requirements and delivered on the date specified. |
| Practical Work I | 20% | During semester | Each student has to create his personal webpage, its contents must be related with frontend programming theory and implementation; to prepare to present personal webpage and work report. A created personal page must meet the following requirements defined in the practical work description. |
| Practical Work II | 20% | During semester | Pair of students must create own page/system to process specific data (use DB), its contents, thematic, and structure and design may vary; prepare to present created page/system and work report (documentation). The developed system must meet the following requirements defined in the practical work description. |
| Exam | 40% | Exam Session | Exam can be taken only if all works are completed. The exam covers the whole theoretical and practical material. The assessment on the 10-point scale according to the assessment criteria of the VU. During the examination, the examinee must answer written questions by providing theoretical explanations and supporting them with practical examples relevant to the topic. |
| Final Grade = IW*0,2+PW1*0,2+PW2*0,2+E*0,4 | | | Exam grade must be ≥ 5 |

Based on the highest interim results, the lecturer may award a high final grade instead of requiring an exam.

REGARDING THE EXTERNAL EXAMINATION OF THE COURSE UNIT

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|--|--------------------------|---|--|
| Mark <input checked="" type="checkbox"/> | | If permitted, please provide the conditions | |
| Not permitted | <input type="checkbox"/> | Permitted | <input checked="" type="checkbox"/> |
| | | | Final Grade = IW*0,2+PW2*0,4+ E*0,4 |

REGARDING THE USE OF GENERATIVE ARTIFICIAL INTELLIGENCE (GenAI) TOOLS (SUCH AS "CHATGPT", ETC.) WHEN STUDYING THE COURSE UNIT

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|--|--------------------------|---|---|
| Mark <input checked="" type="checkbox"/> | | If permitted, please provide the conditions | |
| Not permitted | <input type="checkbox"/> | Permitted | <input checked="" type="checkbox"/> |
| | | | <i>The use of an Artificial Intelligence (AI) generative model must be disclosed, so if an AI generative model has been used in a text, paper, report or other work, this must be clearly stated (with appropriate citations and/or a declaration of the use of an AI generative model). Failure to disclose the use of an AI generative model in an academic work is considered academic dishonesty. In order to ensure that generative AI tools (ChatGPT, etc.) have not been used in the preparation of the essay (i.e. the content of the essay has not been generated by the AI tools), if not disclosed, the lecturer has the right to ask follow-up questions, to use the AI detection tools and, if necessary, to modify or cancel the grade of the assignment.</i> |

REGARDING ACADEMIC PROGRESS

A student who (1) **throughout the semester consistently** fails to demonstrate **progress in achieving the expected learning outcomes of a subject (module)** during the practical classes (seminars, exercises, laboratory work, etc.) and (2) fails to complete all interim assessment requirements and tasks within the time specified in the course description, is not allowed to participate in the examination session.

| Author (-s) | Publishing year | Title | Issue of a periodical or volume of a publication | Publishing house or web link |
|--|-----------------|-------|--|------------------------------|
| Required reading | | | | |
| Learning PHP, MySQL, & JavaScript 5th Edition By Robin Nixon (O'Reilly 2018); http://lpmj.net/5thedition/ | | | | |
| PHP Cookbook, 3rd Edition Solutions & Examples for PHP Programmers; By Adam Trachtenberg, David Sklar; Publisher: O'Reilly Media; Release Date: July 2014 Pages: 818 | | | | |
| Web Engineering: The Discipline of Systematic Development of Web Applications; Gerti Kappel, Birgit Proll, Siegfried Reich, Werner Retschitzegger // ISBN: 3-89864-234-8; 2006 by John Wiley & Sons Ltd. All | | | | |

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| Pressman, Roger S. Web engineering: a practitioner's approach / Roger S. Pressman, David Lowe. — 1st ed.; ISBN 978-0-07-352329-3 — ISBN 0-07-352329-1; 2009 by The McGraw-Hill Companies |
| Hacking Exposed Web Applications, Third Edition 3rd Edition by Joel Scambray, Vincent Liu, Caleb Sima // 2010 McGraw-Hill Education; ISBN-10: 0071740643; https://www.safaribooksonline.com/library/view/hacking-exposed-web/9780071740647/ |
| Pro PHP Security From Application Security Principles to the Implementation of XSS Defenses Second Edition; Snyder, Chris, Myer, Thomas, Southwell, Michael; 2010; eBook ISBN 978-1-4302-3319-0 |
| Security for Web Developers: USING JAVASCRIPT, HTML, AND CSS; By John Mueller; 2016 O'Reilly Media; http://shop.oreilly.com/product/0636920041429.do |
| WEB SECURITY A White Hat Perspective; Hanqing Wu and Liz Zhao; 2015 by Taylor & Francis Group, LLC; International Standard Book Number-13: 978-1-4665-9262-9 (eBook - PDF) https://www.crcpress.com/Web-Security-A-WhiteHat-Perspective/Wu-Zhao/p/book/9781466592612 |
| Recommended reading |
| PHP - http://php.net/manual/en/ |
| Bootstrap 4.1 - https://getbootstrap.com/docs/4.1/getting-started/introduction/ |
| MariaDB - https://mariadb.org/learn/ |
| React - https://reactjs.org/tutorial/tutorial.html |
| AngularJS - https://docs.angularjs.org/tutorial/step_02 |
| jQuery - https://api.jquery.com/ |
| Laravel - https://laravel.com/docs/5.7 |
| PHP - https://www.w3schools.com/php/default.asp |
| JS - https://www.w3schools.com/js/ |
| Bootstrap - https://www.w3schools.com/bootstrap/default.asp |
| jQuery - https://www.w3schools.com/jquery/default.asp |
| AngularJS - https://www.w3schools.com/angular/default.asp |
| PHP - http://php.net/manual/en/ |

NOTE: Including Open Educational Resources in the reading list is recommended