COURSE UNIT (MODULE) DESCRIPTION

Course unit (module) title	Code
TECHNOLOGIES FOR INFORMATION DELIVERY ONLINE	

Academic staff	Core academic unit(s)
Assoc. prof. dr. Ilona Veitaitė	Kaunas Faculty Institute of Language, Literature and Translation Studies ☐ Institute of Social Sciences and Applied Informatics ☒

Study cycle	Type of the course unit
First ☒ Second ☐	Compulsory Course ☒ Optional Couse ☐ Course Unit (Module) of the General University Studies ☐ Course Unit (Module) of Individual Studies ☒ Interdisciplinary Studies Course Unit (Module) ☐

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		
To develop the ability to understand, analyze, model, and explain information systems (IS) and databases (DB), as well as to understand, analyze, and apply the main technologies for developing web-based information systems and their practical application methods.		
Learning outcomes of the course unit	**Teaching and learning methods**	**Assessment methods**
Will know the structure and classification of modern information systems, data organization models, the characteristics of the relational data model, principles of data normalization, and methods of conceptual modeling, as well as how to create a logical database structure based on a developed conceptual model. 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**
Introductory lecture, criteria, concepts, and terminology. Information systems concept and significance, IS types, examples.	2			4			**6**	**10**	Literature analysis; practical work; individual work on assigned tasks; practical exercises
Introduction to databases, structure, types. Database management systems. Database design, development, and testing. Practical tasks.	2			4			**6**	**12**	Literature analysis; practical work; individual work on assigned tasks; practical exercises
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.	2			6			**8**	**12**	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. Practical tasks	4			6			**10**	**12**	Literature analysis; practical work; individual work on assigned tasks; practical exercises
Backend Development and Databases. This section focuses on server-side programming.	4			6			**10**	**12**	Literature analysis; practical work; individual work on assigned tasks; practical exercises
Web Security and Practical Applications. Practical tasks.	2			6			**8**	**12**	Literature analysis; practical work; individual work on assigned tasks; practical exercises
Exam								**12**	
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	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: 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. The blog must be prepared according to the requirements and delivered on the date specified.
Practical Work I	20%	During semester	Each student must develop a small fully functional database. Prepare a report on the database development process. The created database must meet the requirements specified in the practical assignment description.
Practical Work II	20%	During semester	A pair of students must develop their own website/system that processes specific data (using a database). Its content, theme, structure, and design may vary. They must prepare to present the developed website/system, demonstrate its functionality, and produce a report (documentation) of the completed work. The created website must meet the requirements specified in the practical assignment 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

Mark ☒					**If permitted, please provide the conditions**
Not permitted	☐	**Permitted**	☒		**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

Mark ☒				**If permitted, please provide the conditions**
Not permitted	☐	**Permitted**	☒	*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.*

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/				
Darwen H., 2012, An introduction to relational database theory. https://dvikan.no/ntnu-studentserver/kompendier/an-introduction-to-relational-database-theory.pdf				

Watt, A., Eng, N., 2021. Database Design - 2nd Edition, http://solr.bccampus.ca:8001/bcc/file/5b6f010a-0563-44d4-94c5-67caa515d2c5/1/Database-Design-2nd-Edition-1549306327._print.pdf
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
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*