

I060	Elective 1 st Year	Web Programming and Applications	L	P	S	ECTS 6
			2	2	1	

Course objectives. Independent managing of basic web programming concepts on the client and the server side using the standard and modern web technologies proposed by the World Wide Web Consortium (W3C).

Prerequisites. Undergraduate mathematical or computer science study program.

Syllabus.

1. World Wide Web. Client-side programming. HTML (Hypertext Markup Language) and CSS (Cascading Style Sheets) standards with emphasis on HTML5 and CSS3. Bootstrap. Responsive web design.
2. JavaScript. DOM (Document Object Model). Events. Dynamic content on web. JavaScript libraries (jQuery, Angular, React, Vue.js). SPA (Single Page Application). JSON (JavaScript Object Notation). ES6, TypeScript.
3. Web application databases. Design and architecture. MySQL system of privileges. More advanced MySQL programming. System security. Administration of MySQL server. Non-relational databases (NoSQL).
4. Server-side programming. Object PHP basics (incorporating PHP in HTML, adding dynamic content). Accessing the MySQL database from PHP. Managing sessions and cookies. AJAX. REST APIs. Other programming languages for server-side programming. (Node.js, ASP.NET).
5. Developing simple SPA (Single Page Application) using previously mentioned web technologies.

LEARNING OUTCOMES

No.	LEARNING OUTCOMES
1.	Describe client-server communication architecture and adequate communication protocols.
2.	Distinguish between client and server-side programming concepts.
3.	Independently use classical and modern WEB technologies taught in lectures and exercises.
4.	Formulate queries using SQL language for creating relational schemes and create and update relational databases in Web programming context.
5.	Formulate queries using relational algebra operations.

RELATING THE LEARNING OUTCOMES, ORGANIZATION OF THE EDUCATIONAL PROCESS AND ASSESSMENT OF THE LEARNING OUTCOMES

TEACHING ACTIVITY	ECTS	LEARNING OUTCOME **	STUDENT ACTIVITY*	EVALUATION METHOD	POINTS	
					min	max
Attending lectures and exercises	1	1-5	Lecture attendance, discussion, team work and independent work on given tasks	Attendance lists, tracking activities	3	10
Seminar	2	1-5	Software project development	Assessment of project requirements realization	17	30
Written exam (Mid-terms)	2	1-5	Preparing for written exams	Verification of correct answers (evaluation)	30	60
TOTAL	5				50	100

Teaching methods and knowledge assessment. The purpose of lectures is teaching technologies and basic Web programming concepts. As part of the exercises, students create web-based programs. Every student must do seminar in form of software project. Mid-term exams assess adoption of web technology concepts.

Can the course be taught in English: Yes

Basic literature:

1. J. Ducket, Web Design with HTML, CSS, JavaScript and jQuery Set, John Wiley & Sons, 2014.
2. R. Nixon, Learning PHP, MySQL & JavaScript (5th Ed.), O'Reilly, 2018.

Recommended literature:

1. R. W. Sebesta, Programming the World Wide Web (7th Ed), Addison-Wesley, Boston, 2013.
2. A. Hussain, Angular 5: From Theory To Practice: Build the web applications of tomorrow using the new Angular web framework from Google (1st Ed.), CodeCraft, 2017.
3. M. Kleppmann, Designing Data-Intensive Applications: The Big Ideas Behind Reliable, Scalable, and Maintainable Systems (1st Ed.), O'Reilly Media, 2017.