FACULTY OF COMPUTER SCIENCE AND ENGINEERING

CURRICULUM

Confirmed:
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CS315

WWW PROGRAMMING

Updated: protocol № 7/30.01.2019

Lecturer: Assoc.Prof. Veselina Zhecheva, PhD

ANNOTATION

The course presents the basic concepts of programming in a web environment. Basic browser- and server-side WWW programming technologies are covered, with an emphasis on creating dynamic web pages using the Javascript and PHP languages. The couse finishes with a course assignment defense and an exam.

BASIC PURPOSES

The main goal of the course is to create students' knowledge and skills for Web applications development.

After finishing the course, the student will:

• know the basics of Web programming;

• create client-side and server-side scripts;

• design and develop dynamic pages and Web-based applications;

• connect an Web application to a database and generate dynamic content.

PREREQUISITES

Students should have previous knowledge from the following courses: Programming, Object Oriented Programming, Web Technologies and Applications, Databases, Computer Networks and Communications.

STATUS AND STRUCTURE

PROGRAMME	status	ECTS	Full time				Part time			
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Computer Science	Mandatory	7	30	40		70	15	20		35
Software Engineering	Mandatory	7	30	40		70	15	20		35

COURSE CONTENT

Topic 1. Introduction to the Web programming. HTTP protocol. Web application architecture. Development of scripts executed on the server and on the client - features, advantages and disadvantages. Basic languages and technologies used in WWW programming.

Topic 2. Fundamentals of Javascript programming. Placing the scripts in the pages. Data types, variables and expressions. Operators and functions. Objects, attributes and methods. Working with the jQuery library.

Topic 3. Introduction to PHP. General information about the language. php.ini configuration file. Syntax. Data types. Variables and constants. Expressions and operations. Basic constructions of the language.

Topic 4. Functions in PHP. Function declaration and scope. Types of parameters. Return value. Variable functions.

Topic 5. Classes and objects in PHP. Constructors, destructors, inheritance and access to class members. Automatic loading of classes. Polymorphism, overloading, iterators and class interfaces. Comparing objects.

Topic 6. Working with databases in PHP. Connecting to a MySQL database, searching, retrieving, entering and modifying data. Error Handling and Data Security. Create a database backup.

Topic 7. PHP applications development. Working with cookies. Sessions in PHP - registering session variables, passing the session id. Session handling functions. Uploading files to the server.

Topic 8. AJAX technology. An XMLHttpRequest object. Methods and properties. AJAX and XML. JSON technology. Syntax and Application.

Topic 9. Security of PHP applications. File system and database security. Validation of data supplied to the script by the user.

SEMINARS

Topic 1. JavaScript programs development basics. Include the scripts in the HTML document. Browser and HTML document objects. Handle events through a JavaScript script. HTML forms data validation.
Topic 2. Working with the jQuery library. Selectors and Events. Effects. Event processing. Generate HTML code.
Topic 3. Getting to know the PHP interpreter. Setup and simple scripts. Generate output in the browser. Processing data sent to a PHP script from HTML forms. GET and POST methods.
Topic 4. Creating a MySQL database. Access the database via a PHP script. Insert, modify and delete data in MySQL using a PHP script.
Topic 5. Searching and retrieving data in MySQL using a PHP script. Display and format the results.
Topic 6. Working with sessions in PHP. Start a session. Registering session variables. Passing the session ID.
Topic 7. Adding interactivity to pages. Implementation of AJAX technology. Refresh page elements.

PLANNED LEARNING ACTIVITIES AND TEACHING METHODS

Training methods:

Face-to-face lectures and seminars
Visual learning
Practical Education
Interactive learning
E-learning through the Moodle platform

Teaching tools:

Self-paced work
Educational video materials incl. video presentations

Practical tasks

Programming tasks using application software
Use of electronic resources in the Moodle platform: theoretical materials, presentations, sample programs, tests and tasks for self-paced work on each topic

COURSEWORK

The coursework is assigned to each student and contains the creation of a dynamic web site on a topic chosen by the student and consulted by the lecturer. Each student defends his course work and receives a grade evaluating the level of mastery of the material and the presented project.

ASSESSMENT METHODS

- Each student develops an independent course assignment, representing the design and development of a specific Web application. The task involves creating a simple information system with a MySQL database using PHP scripts. The implementation of the task and the protection of the development are evaluated - up to 30 points. The criteria for evaluating the

development are: originality of the solution, description of the task, operation of the implemented program, presentation of the development.

- For the development of a complete application using sessions - up to 10 points.
- Up to 6 points are awarded for attendance and participation in the exercises.
- The final exam is a test with open-end questions, which is evaluated with a maximum of 54 points. The final evaluation includes ongoing control of the seminar exercises, an evaluation of the course work and an evaluation of the final exam. To form the grade, the student collects points, the maximum value of which is 100. The final grade is formed by distributing the points on the scale:

• from 54 to 60 points - Medium (3);
• from 61 to 70 points - Good (4);
• from 71 to 80 points - Very good (5);
• from 81 to 100 points - Excellent (6).