

## WEB SOFTWARE DEVELOPMENT

Course Workload		Assessment form (examination/ graded test/ ungraded test)
ECTS	Hours	
3	108	Oral graded assessment

The course aims to:

- introduce the basic concepts of full-stack web application development;
- make students aware of modern security configuration principles and secure development;
- demonstrate and analyze the best practices of web application development including DevOps principles;
- provide students with deep understanding of web application architecture including databases, caches, containerization and CI/CD pipelines;
- make students are able to build web projects from scratch following basic principles of planning, development, testing and deployment.

This course:

- provides a good understanding of modern web application architectures;
- provides students with deep knowledge for the best web application development practices;
- gives students knowledge for secure development and environment setup;
- introduces state-of-the-art research in the field of modern development and deploy principles.

### Course structure:

#### 1. WEB APPLICATION DEVELOPMENT FUNDAMENTALS

- 1.1. Frontend fundamentals: HTML5. CSS. CSS Grid. JavaScript.
- 1.2. Git.
- 1.3. Backend fundamentals: HTTP. Python. Flask. Polling. Websockets.
- 1.4. Authentication: basic auth. Cookie. Session. JWT. HMAC.
- 1.5. Databases: NoSQL. MongoDB. JSON. BSON. Indexes. Integration: Python, Flask.

#### 2. WEB APPLICATION DEPLOYMENT

- 2.1. Web administration: SSH. Linux. Nginx. SSL. Systemd.
- 2.2. Docker. Docker-compose.
- 2.3. Redis.
- 2.4. Deployment process. CI/CD.

#### 3. WEB APPLICATION SECURITY

- 3.1. Secure deployment.
- 3.2. OWASP Top 10.
- 3.3. Code security and secure configuration.
- 3.4. Firewall.