STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Advanced Internet Applications**		Code **1010514351010510143**

Field of study **Computing**	Profile of study (general academic, practical) **general academic**	Year /Semester **3 / 5**

Elective path/specialty **-**	Subject offered in: **English**	Course (compulsory, elective) **elective**

Cycle of study: **First-cycle studies**	Form of study (full-time, part-time) **part-time**

No. of hours				No. of credits **4**
Lecture: **16**	Classes: **-**	Laboratory: **16**	Project/seminars: **-**	

Status of the course in the study program (Basic, major, other) **major**	(university-wide, from another field) **from field**

Education areas and fields of science and art **technical sciences** **Technical sciences**	ECTS distribution (number and %**)** **4 100%** **4 100%**

Responsible for subject / lecturer:	Responsible for subject / lecturer:
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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Students taking this course should possess basic knowledge about network protocols, database systems and object oriented programming.
2	**Skills**	They should also have basic application programming skills using integrated development environments.
3	**Social competencies**	They should also understand the necessity to broaden their kompetences and be ready to cooperate with others as a part of a team.

Assumptions and objectives of the course:

1. Gaining knowledge about www document and application development necessary to distinguish between basic internet application architectures and methods for implementing their modules.

2. Enhancing knowledge about network architectures, protocols, and distributed systems security.

3. Gaining skills in web application development using advanced user interface development technologies, such as CSS, JavaScript, presentation logic development, such as Java servlets, Java Server Pages, PHP, ASP.NET, Single Page Application Frameworks, business logic development, e.g., JavaBeans, JSF tag library.

4. Gaining social competences concerning working as a part of a team, including organising team work, in particular leadership and comunication in the process of group problem solving.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. has a structured knowledge about www application architectures - [K1st_W4]

2. knows basic methods, techniques, and tools used in solcing simple computer science tasks concerning designing, implementing, and deploying web applications - [K1st_W7]

3. has a systematized knowledge about network protocols and distributed systems security - [K1st_W4]

Skills:

1. is capable of designing and developing an internet application using appropriate tools, methods and techniques - [K1st_U10]

2. can design algorithms and implement them using at least one of popular tools available - [K1st_U11]

3. is capable of designing web applications based on database systems with interactive user interfaces - [K1st_U12]

4. can desingn an appropriate user interface for various classes of web systems - [K1st_U14]

5. can choose a web technology appropriate for a given domain of application - [K1st_U18]

Social competencies:
1. can work as a part of a team and plan the work for each team member - [K1st_K1]
2. realizes the importance of engineering knowledge in solving problems and knows examples and causes of failed systems - [K1st_K2]
3. has good enterpreneurial skills and thinks about results commercialization - [K1st_K3]

Assessment methods of study outcomes

The above described study outcomes are verified in the following ways:

Continuous grading:

a) lectures:

- based on answers to questions posed during lectures,

b) laboratories:

- based on monitoring the progress of completing the exercises.

Final grading:

- grading and defence of a project created during the semester,

- assesment of knowledge and skills in a test.

Course description

1. Different approaches to the problem of presentation logic on various platforms, such as ASP.NET and Java EE.

2. How to design a reusable business logic capable of serving multiple types of applications and different interfaces on the most common platforms.

3. How to design a data driven application. How to organize a data access layer such that it is reusable, scalable, efficient, and secure. Examples on various platforms.

4. Web application infrastructure. The most popular web development architectures.

5. Http servers

6. Advanced user interface: CSS preprocessors, responsive design, front-end frameworks (e.g., Bootstrap).

7. Single Page Application development using popular JavaScript frameworks, advanced JavaScript concepts, asynchronous processing, designing and developing RESTful Web Services.

8. Authentication and authorization in web applications. The most important attacks and how to defend against them.

9. Testing web application functionality and efficiency.

Teaching methods:

1. Lecture: presentation, examples on a blackboard, live demonstrations, live exercises.

2. Laboratory: completing exercises, working in teams, presentations, live demonstrations.

Basic bibliography:

1. J. Duckett, Web Design with HTML, CSS, JavaScript and jQuery, Wiley, 2014.

2. B. Sholtz, A. Tijms, The Definitive Guide to JSF in Java EE 8: Building Web Applications with JavaServer Faces, Apress, 2018.

3. K. Hadlock, Ajax for Web Application Developers, Sams Publishing, 2006.

4. J. Liberty, D. Hurwitz, B. MacDonald, Learning ASP.NET 2.0 with AJAX: A Practical Hands-on Guide, O'Reilly, 2007.

Additional bibliography:

1. E. Jendrock, I. Evans, D. Gollapudi, K. Haase, C. Srivathsa, The Java EE 6 Tutorial, Oracle, 2010.

Result of average student's workload

Activity	Time (working hours)
1. taking part in laboratories	30
2. preparing for the laboratories	10
3. consultations regarding project and homework assignments	2
4. homerowk assignments	8
5. preparing for tests	8
6. taking part in lectures	30
7. preparing for final test	15

Student's workload		
Source of workload	**hours**	**ECTS**
Total workload	98	4
Contact hours	34	1
Practical activities	48	2