STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Fundamentals of data communications		**1010334571010304968**

Field of study	Profile of study (general academic, practical)	Year /Semester
Information Engineering	**(brak)**	**4 / 7**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
-	**Polish**	**obligatory**

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

No. of hours				No. of credits
Lecture: **16**	Classes: **-**	Laboratory: **-**	Project/seminars: **8**	**3**

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

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**3 100%**
Technical sciences	**3 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	K_W04: possesses ordered and theoretically founded knowledge on the basic algorithms and analytic techniques for designing algorithms, abstract data structures and their implementation, computationally difficult problems; K_W07: student has organized knowledge of theoretical foundations of computer networks. K_W12: has ordered and methodological knowledge of software engineering
2	**Skills**	K_U02:is able to work independently and in a team, is able to estimate the time needed for the commissioned tasks, able to develop and implement a schedule of work to ensure deadlines, K_U03: is able to develop documentation of engineering tasks and prepare a text containing a discussion of the results of this task
3	**Social competencies**	K_K04: is aware of responsibility for his/her own work and a willingness to comply with the principles of teamwork and shared responsibility for the implementation of tasks

Assumptions and objectives of the course:

To acquaint students with the basics of advanced transmission layer network protocols, applications, broadband networks, social networks and security aspects of networks.

During the course, the following issues will be discussed:
- Authentication and authorization systems in computer networks.
- Internet Protocols (SIP, Diamater, OAuth2)
- The basics of the game theory (types of games, Prisoner's dillema, strategy)
- Evaluation of the users behaviour and reliability in computer networks.
- The basics of the acquisition systems and image processing. Morphology operators. Contour and skeleton finding algorithms.
- Biometry and remote monitoring systems.

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

Knowledge:

1. Student has organized knowledge ofwith theoretical foundations of Internet technologies. - [K_W11]
2. Student has organized knowledge of theoretical foundations of teleinformatics, protocols and services in telecommunication networks. - [K_W15]

Skills:

1. Student is able to analyse particular programming platforms, protocols and telecommunication services. - [K_U18]
2. Student is able to evaluate tools and methods usefulness for simple engineering tasks related to computer science. Student is able to choose and to implement proper technologies - [K_U22]

Social competencies:

1. Student understands the importance of stringent accomplishment of a given project with proper notation standards, proper language. Student understands the importance of keeping deadlines. - [K_K07]

Assessment methods of study outcomes

Lecture: written examination checking basic knowledge of ICT. Student activity is included in the assessment.

Project: demonstration and documentation of developed applications using network services.

Course description

Applied methods of study:

1. Lecture - lecture is conducted using a multimedia presentation and allows to initiate a discussion within the topic. The students' activity will be included in the final assessment.

Within the lecture, the following topics will be discussed:

- Authentication and authorization systems in computer networks.
- Internet Protocols (SIP, Diamater, OAuth2)
- The basics of the game theory (types of games, Prisoner's dillema, strategy)
- Evaluation of the users behaviour and reliability in computer networks.
- The basics of the acquisition systems and image processing. Morphology operators. Contour and skeleton finding algorithms.
- Biometry and remote monitoring systems.

2. Project.

Implememntation of the network application on the chosen platforms (Windows, Linux) using at least two elements of:

- network services,
- the authorization system,
- users' reliability evaluation,
- algorithms of image processing.

Update 2017:

- Authentication and authorization systems in computer networks.
- Internet Protocols (SIP, Diamater, OAuth2)
- The basics of the game theory (types of games, Prisoner's dillema, strategy)
- Evaluation of the users behaviour and reliability in computer networks.
- The basics of the acquisition systems and image processing. Morphology operators. Contour and skeleton finding algorithms.
- Biometry and remote monitoring systems.

Basic bibliography:

1. Krzysztof Wesołowski, Introduction to Digital Communication Systems, Wiley (2009)
2. Materials https://oauth.net/2/
3. Madjid Nakhjiri, Mahsa Nakhjiri. AAA and network security for mobile access: radius, diameter, EAP, PKI, and IP mobility, Wiley, 2004
4. Tadeusiewicz R., Korohoda P., Komputerowa analiza i przetwarzanie obrazów, FPT, Kraków, 1997.
5. Gonzales R., Woods R., Digital Image Processing, Prentice-Hall, New Jersey, 2002.
6. Philip D. Straffin Teoria Gier WN Scholar W-wa 2001

Additional bibliography:

1. Lecture notes from Internet

Result of average student's workload

Activity	Time (working hours)
1. .Lectures	16
2. Project	8
3. Preparation to project	30
4. Independent work on lecture topics	21

Student's workload		
Source of workload	**hours**	**ECTS**
Total workload	75	3
Contact hours	24	1
Practical activities	55	2