STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Fundamentals of data communications		**1010331461010334968**
Field of study: **Information Engineering**	Profile of study (general academic, practical): **(brak)**	Year /Semester: **3 / 6**
Elective path/specialty: **-**	Subject offered in: **polish**	Course (compulsory, elective): **obligatory**
Cycle of study: **First-cycle studies**	Form of study (full-time,part-time): **full-time**	
No. of hours: Lecture: **2** Classes: **-** Laboratory: **-** Project/seminars: **1**		No. of credits: **3**
Status of the course in the study program (Basic, major, other): **(brak)**	(university-wide, from another field): **(brak)**	
Education areas and fields of science and art: **technical sciences**		ECTS distribution (number and %): **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: potrafi pracować indywidualnie i w zespole; umie oszacować czas potrzebny na realizację zleconego zadania; potrafi opracować i zrealizować harmonogram prac zapewniający dotrzymanie terminów K_U03: potrafi opracować dokumentację dotyczącą realizacji zadania inżynierskiego i przygotować tekst zawierający omówienie wyników realizacji tego zadania
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.

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. Project: screening of applications using Web services.
Course description
Lecture. Transmission in the network and the physical link. Shannon Law. Circuit switching. Network protocol stack. ISDN, ADSL and MPLS. Internet protocols, SIP. Spread spectrum. Mobile networks: GSM, UMTS, LTE, challenges in implementing IMS. GSM Security System. Authorization and authentication systems, Diameter Server. Features of communication between people. Sensor networks. Satellite communications. Overview of the ICT market: the size of the world market and the current state of implementation and an estimate of telecommunications and information technology, with particular emphasis on new broadband services (video conferencing, remote education, remote work, video on demand, streaming. Project. The use of web services to communicate between applications related to semantic search.
Basic bibliography: 1. Krzysztof Wesołowski, Introduction to Digital Communication Systems, Wiley (2009) 2. Materials www.3gpp.org 3. Madjid Nakhjiri, Mahsa Nakhjiri. AAA and network security for mobile access: radius, diameter, EAP, PKI, and IP mobility, Wiley, 2004
Additional bibliography: 1. Lecture notes from Internet

Result of average student's workload

Activity	**Time (working hours)**
1. .Lectures	30
2. Preparation to project	15
3. Executing project	15

Student's workload

Source of workload	**hours**	**ECTS**
Total workload	75	3
Contact hours	45	2
Practical activities	30	1