

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Fundamentals of data communications		Code 1010334571010334968
Field of study Information Engineering	Profile of study (general academic, practical) (brak)	Year /Semester 4 / 7
Elective path/specialty -	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: First-cycle studies	Form of study (full-time, part-time) part-time	
No. of hours Lecture: 16 Classes: - Laboratory: - Project/seminars: 8		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: prof. dr hab. inż. Czesław Jędrzejek email: czeslaw.jedrzejek@put.poznan.pl tel. 61 665 3532 Wydział Elektryczny ul. Piotrowo 3A, 60-965 Poznań		
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 Wesolowski, 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	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