STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Communication protocols**	Code **1010331541010332570**

Field of study **Information Engineering**	Profile of study (general academic, practical) **(brak)**	Year /Semester **2 / 4**

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

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

No. of hours				No. of credits **3**
Lecture: **30**	Classes: **-**	Laboratory: **15**	Project/seminars: **-**	

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:

dr inż. Tomasz Bilski
email: tomasz.bilski@put.poznan.pl
tel. 061 66 53 554
Faculty of Electrical Engineering
ul. Piotrowo 3A 60-965 Poznań

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Student has basic knowledge of physics, especially in such fields as mechanics, thermodynamics, optics, electricity, magnetism, nuclear physics, solid-state physics, including knowledge essential to understand physical phenomena in electronic circuits.
		Student has organized knowledge with theoretical foundations of basic program constructions, algorithm implementations, paradigms and programming styles, software verification methods, formal languages, compilers, platforms.
2	**Skills**	K_U01: Student is able to acquire information from literature, data bases and other sources; student is able to integrate acquired information, to interpret it, to draw conclusions and to formulate and justify judgments.
		K_U03: Student is able to create engineer work documentation and to prepare text with the work result discussion.
3	**Social competencies**	K_K02: Student understands and is aware of the importance of nontechnical issues related to computer engineer activity. Student understands the responsibility associated to his engineering decisions.
		K_K07: ma świadomość ważności dokładnego wykonania projektu, zachowania standardów notacyjnych, przestrzegania poprawności językowej i terminowego oddania prac

Assumptions and objectives of the course:

The main objective is to provide knowledge and skills related to communication protocols.

Protocols used for many different network services are presented.

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

Knowledge:

1. Student has organized knowledge with theoretical foundations of computer networks. - [K_W07]

2. Student has organized knowledge with theoretical foundations of Internet technologies. - [K_W11]

3. Student has organized knowledge with theoretical foundations of teleinformatics, protocols and services in telecommunication networks. - [K_W15]

Skills:

1. Student is able to work alone and in a group; student can assess time needed to finish a given work; student can develop and realize schedule necessary to keep up deadlines.   - [K_U02]

2. Student is able to create engineer work documentation and to prepare text with the work result discussion.   - [K_U03]

3. Student is able to do critical analysis of computer hardware operations, operating system and computer networks. - [K_U11]

Social competencies:

1. Student understands the responsibility associated to his own work. Student is able to subordinate to team work rules and to take responsibility for cooperative tasks. - [K_K04]

2. 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 exam.

Laboratory: tests, exercises assessment, reports assessment.

More than 50% of all points is necessary for positive result.

Course description

General characteristics of application layer protocols. Protocols used for network management processes: DHCP, SNMP. Domain Name System (domain name space, name servers, resolver-server communication modes, resource records. Time synchronization in computer networks (time sources, timestamps, time servers, NTP). Electronic mail (structure of mail system, protocols: SMTP, POP, IMAP, X.400, MIME). WWW (structure of system, proxy servers, HTTP cookies, CDN, web optimization tools). IP telephony (signalling protocols, H.323, SIP, real time transmission protocols, RTP, RTCP).

Course update 2017: protocols for IoT, DNSSEC.

Teaching methods:

- lecture with multimedia presentations,

- additional topics available in Moodle course.

Laboratory:

Standard protocols analysis with Wireshark tool.

Implementation and analysis of new protocols.

Basic bibliography:

1. Albitz P., Liu C., DNS and BIND. O?Reilly

2. Tanenbaum A., Computer Networks.2012

Additional bibliography:

1. Davidson J., Peters J., Voice over IP.

2. Parker T., Sportack M., TCP/IP

3. Wallingford T., Switching to VoIP, O?Reilly

4. Wessels D., Web caching. O?Reilly

Result of average student's workload

Activity	Time (working hours)
1. Lectures	30
2. Laboratory	15
3. Exam preparation	30
4. Exam	2
5. Theoretical preparation for laboratory	10
6. Practical preparation for laboratory	5
7. Reports	8
8. Consultations	3

Student's workload

Source of workload	hours	ECTS
Total workload	102	3
Contact hours	50	2
Practical activities	20	1