STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Integrated Networks**		Code **1010831171010820080**
Field of study **Electronics and Telecommunications**	Profile of study (general academic, practical) **general academic**	Year /Semester **4 / 7**
Elective path/specialty **Telecommunication Systems**	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 Lecture: **2** Classes: **-** Laboratory: **1** Project/seminars: **-**		No. of credits **3**
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 %) **3 100%** **3 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	He knows the basic terminology in telecommunication and computer networks and understands technical aspects of these terminology [K1_W22]
2	**Skills**	He is able to find information in literature and data bases, as well as other reference sources in Polish or English; is able to integrate and interpret obtained information, draws conclusions and justifies opinions [K1_U01]. He is able to communicate with other professionals in Polish or English [K1_U02].
3	**Social competencies**	He knows the limitations of their own knowledge and skills, he understands the need for further education [K1_K01].

Assumptions and objectives of the course:

To make students familiar with the structure, function and operation of integrated networks and services offered in these networks.

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

Knowledge:

1. He has a well-ordered knowledge in integrated networks architectures and structures - [K1_W22]
2. He has a well-ordered knowledge in current standards concerning integrated networks - [K1_W22]
3. He knows directions of telecommunication networks evolution - [K1_W24]

Skills:

1. He is able to indetify problems in access networks operation - [K1_U25]
2. He is able to check correctness of network devices operation in access networks - [K1_U25]
3. He is abble to assest usefulness of certain solutions according to requirements of users - [K1_U21]

Social competencies:

1. He is aware of significance of telecommunication networks for society - [K1_K04]
2. He knows the limitations of their own knowledge and skills, he understands the need for further education - [K1_K01]

Assessment methods of study outcomes

http://www.put.poznan.pl/

Forming assessment:

In the laboratory: on the basis of short questions before exercises and written reports from the laboratory exercises.

Summary assessment:

Lectures: Written exam in the form of the multiple choice test; points for each question: -0,25 p. (wrong answer), 0 p. (no answer), 1 p. (correct answer); exam is passed when student receives at least 50% points. Exam can be taken after the completion of laboratory.

Course description

Lectures:

Telecommunication networks and information transfer methods. ISDN: an introduction and reference configuration, interfaces, the structure of the interfaces. Reference Model. Services: definitions, attributes, types of attributes, the attribute values in different networks, classification of services. Services in different networks. Layers 2 and 3. Example of call handling. SS7: Types of signaling, CCS and CAS, SS7 protocols, Layer 1 and 2, MTP, SCCP, TC, ISUP, INAP, MAP, B-ISUP. Classification of switching networks. ATM technology: general principle, the model and layers, ATM cell. Construction of ATM nodes. The use of ATM in UMTS networks. ATM switching nodes. ATM switching fabrics.

Laboratory: Internal and external connections in PABX systems. Basic terminology in DSS1 and SS7. Signalling messages. Exchange of signalling messages in DSS1 and SS7. Operation of space, time, and time-space switching elements. Configuration of devices in ATM networks. Routing in ATM networks.

Basic bibliography:

1. W. Kabaciński, Standaryzacja w sieciach ISDN, Wydawnictwo Politechniki Poznańskiej, 2001
2. W. Kabaciński, M. Żal: Sieci Telekomunikacyjne, WKŁ, 2008.
3. G. Danilewicz, W. Kabaciński: System sygnalizacji nr 7, WKŁ, 2005.

Additional bibliography:

1. A. Jajszczyk: Wstęp do telekomutacji, WNT, 2000
2. M.A. Rahman: Guide to ATM Systems and Technology, 1998

Result of average student's workload

Activity	Time (working hours)
1. Lectures	30
2. Laboratory	15
3. Preparation for laboratory	15
4. Preparation for the exam	10
5. Exam	2
6. Discussion of exam otucomes	2

Student's workload

Source of workload	hours	ECTS
Total workload	75	3
Contact hours	50	2
Practical activities	30	1

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