STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Advanced traffic theory and egineering in multiservice systems**	Code **1010803111010824616**

Field of study **Communications Technologies**	Profile of study (general academic, practical) **general academic**	Year /Semester **1 / 1**

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

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

No. of hours Lecture: **15** Classes: **-** Laboratory: **-** Project/seminars: **-**	No. of credits **2**

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

Education areas and fields of science and art **technical sciences** **Technical sciences**	ECTS distribution (number and %**)** **15 100%** **15 100%**

Responsible for subject / lecturer: prof. dr hab. inż. Maciej Stasiak email: stasiak@et.put.poznan.pl tel. +48 61 665 39 06 Wydział Elektroniki i Telekomunikacji ul. Piotrowo 3A 60-965 Poznań	Responsible for subject / lecturer: prof. dr hab. inż. Maciej Stasiak email: stasiak@et.put.poznan.pl tel. +48 61 665 39 06 Wydział Elektroniki i Telekomunikacji ul. Piotrowo 3A 60-965 Poznań

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Has a systematic knowledge, with necessary mathematical background, of traffic theory and traffic engineering; of design, dimensioning and optimization of networks and network systems.[K2_W11]
2	**Skills**	Is able to use already known mathematical models and methods to analyze and design telecommunication devices and systems. [K2_U18]
3	**Social competencies**	Is aware of the limitations of his/her current knowledge and skills; is committed to lifelong learning.[K2_K04]

Assumptions and objectives of the course:

The aim of the course is to familiarize students with current research problems in the field of modeling of multiservice systems, especially systems of IP network.

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

Knowledge:

1. Advanced-level knowledge of general nature in the scope defined by the PhD thesis being written, as well as indepth knowledge of related subjects - [SD-W01]

2. Acquaintance with important unsolved problems in the domain under study. - [SD-W03]

Skills:

1. Ability to efficiently obtain information connected with scientific activity from various sources, and proper selection and interpretation of such information - [SD-U01]

Social competencies:

1. Self-criticism in creative work, recognition and appreciation of the need for continuous improvement of professional competences - [SD-K01]

Assessment methods of study outcomes

Written or oral exem.

Course description

1 Basics of modeling multi-service systems.

2 The models of the systems with advanced traffic engineering mechanisms.

3 Modeling of multi-service queuing systems.

4 Overview of recent work in the field of multi-service systems modeling.

Basic bibliography:

1. Stasiak M, Głąbowski M., Wiśniewski A., Zwierzykowski P.: Modeling and Dimensioning of Mobile Networks. From GSM to LTE. A John Wiley and Sons, Ltd, Publication, 2011, pp.1- 315.

2. Annually updated list of publications.

Additional bibliography:

1. Bonald T., M. Feuillet, Network Performance Analysis. A John Wiley and Sons, Ltd, Publication, 2011, pp.1-253.

Result of average student's workload

Activity	Time (working hours)
1. Lectures	15
2. Individual consultations	15
3. Study of literature	10
4. Preparation to the exem.	10

Student's workload

Source of workload	hours	ECTS
Total workload	60	2
Contact hours	30	1
Practical activities	20	1