

Title <b>Telecommunication Networks Design</b>	Code <b>POZ04WTS2ICC21</b>
Field <b>Electronics and Telecommunications</b>	Year / Semester <b>2 / autumn</b>
Specialty	Course <b>core</b>
Hours Lectures: <b>2</b> Classes: <b>1</b> Laboratory:    Projects / seminars:	Number of credits <b>4</b>

**Lecturer:**        **Prof. dr hab. inż. Maciej Stasiak**  
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**Status of the course in the study program:**

Obligatory course for students

**Objectives of the course:**

To provide the student with a fundamentals of traffic theory and methodology of telecommunication and computer networks design.

**Course description:**

Traffic engineering in communication networks. Mathematical fundamentals of traffic theory and queuing theory. The basic models of loss and delay systems. Links and nodes dimensioning for circuit switched network and packet network. Characteristics of overflow traffic. Access and core network design problems. Network optimization criteria and models. Integrated networks. Mathematical fundamentals of multi-rate systems theory. Link models for multiservice network. Call admission models: resource reservation, threshold systems, bandwidth compression systems. Qos in Virtual circuit switched networks. Variable bit rate sources. Self-similar sources. Bandwidth discretization and elements of broadband networks dimensioning.

**Initial knowledge:**

Basic knowledge on probability theory and stochastic processes

**Teaching methods:**

Lectures illustrated with multimedia presentations and exercises.

**Assessment methods:**

Exam.

**Bibliography:**

1. Stasiak M, Głabowski 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. Iversen V., red.: Teletraffic Engineering Handbook, **ITU-D, Study Group 2**, Question 16/2, Geneva, 2005, on line.
3. Akimuru H., Kawashima K.: Teletraffic. Theory and Applications, **Springer**, NY, 1993.