S T U
F E I
SLOVAK TECHNICAL UNIVERSITY IN BRATISLAVA
Faculty of Electrical Engineering and Information Technology
Institute of Multimedia Information and Communication Technologies

Working title of the subject	Telemetry and Data Transmission
For which study program	Applied Electrical Engineering
For which year	1. year 2. degree
For which semester	summer semester
Hours allowance (lecture/ seminar)	2/2
Form of teaching	daily full - time
Provided by the institute	I-MICT
Lecturer	Assoc. Prof. Ing. Martin Rakús, PhD.

Annotation: the student will become familiar with the basic principles and techniques of wireless transmission, which are used in current wireless data transmission systems.

Course contents - syllabi:	
1.	Digital transmission system. Signal classification. Basic signal parameters: P, S, E_b, E_s, N, N_0, R_b, R_m, R_k, SNR, E_b / N_0, E_s / N_0, BER.
2.	Transmission of signals through a communication channel. Conditions for undistorted transmission. Transmission in baseband and bandpass. Basic principles of: wired, wireless, optical and acoustic transmission. Line codes.
3.	Basics types of data transfer. Communication modes. Transmission modes. Basic limitations of high-speed data transmissions.
4.	Data protection during transmission (error control): parity, CRC, basic methods of solving FEC.
5.	Basic types of digital modulations.
6.	Principles of multiple access: TDMA, FDMA, CDMA, OFDM.
7.	Antennas and their basic parameters.
8.	Link budget.
9.	Basic principles of spread spectrum transmission systems: DS-SS, FH-SS, TH-SS.
10.	RF signal propagation near the earth's surface.
11.	Basics of network communication.
12.	Wireless sensor networks.

Recommended literature:

1. B. Sklar and F. Harris: „Digital Communications“, Pearson Education.
2. Dixon R.C.: „Spread Spectrum with Commercial Applications“, J. Wiley & Sons, Inc.
3. Goldsmith A.: “Wireless Communications“, Stanford University
4. Pahlavan K., Levesque A. H.: “Wireless Information Networks“ , J. Wiley & Sons, Inc.

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Course completion conditions:
seminars: submission of completed assignments or participation in exercises.
exam: 100b. The exam consists of a written part - 50b and an oral part - 50b
To successfully complete the course, the student must obtain a minimum of 56b.

In Bratislava 11. 1. 2024 **Assoc. Prof. Ing. Martin Rakús, PhD.**