

Faculty of Fundamental Problems of Technology						
COURSE CARD						
Name in polish	:	Wprowadzenie do Systemów Telekomunikacji Bezprzewodowej				
Name in english	:	Introduction to Wireless Telecommunication Systems				
Field of study	:	Computer Science				
Specialty (if applicable)	:					
Undergraduate degree and form of	:	masters, stationary				
Type of course	:	optional				
Course code	:	E2_W19				
Group rate	:	Yes				
		Lectures	Exercides	Laboratory	Project	Seminar
Number of classes held in schools (ZZU)		30	30			
The total number of hours of student work-load (CNPS)		60	120			
Assesment		pass				
For a group of courses final course mark		X				
Number of ECTS credits		3	3			
including the number of points corresponding to the classes of practical (P)			3			
including the number of points corresponding occupations requiring direct contact (BK)		3	3			
PREREQUISITES FOR KNOWLEDGE, SKILLS AND OTHER POWERS						
COURSE OBJECTIVES						
<p>C1 presentation of key concepts used in the construction of wireless communication systems</p> <p>C2 solving optimization problems in the construction of wireless communication networks</p>						

COURSE LEARNING OUTCOMES

The scope of the student's knowledge:

W1

W2

W3

The student skills:

U1

U2

U3

The student's social competence:

K1

K2

K3

COURSE CONTENT

Type of classes - lectures

Wy1	introduction to contemporary wireless communication systems: 2G/3G/4G; WLANs/Bluetooth	2h
Wy2	radio signal propagation: large scale path loss	2h
Wy3	radio signal propagation: small-scale fading and multipath	2h
Wy4	modulation techniques	2h
Wy5	compensation, diversity, channel encoding	2h
Wy6	voice encoding	2h
Wy7	radio access techniques	2h
Wy8	wireless networking	2h
Wy9	chosen aspects of cellular systems 2G, 3G and 4G	4h
Wy10	network planning and optimization	2h
Wy11	authentication and encryption in wireless systems	4h
Wy12	special purpose wireless systems	4h

Type of classes - exercises

Ćw1		4h
Ćw2		4h
Ćw3		2h
Ćw4		2h
Ćw5		2h
Ćw6		2h
Ćw7		2h
Ćw8		2h
Ćw9		2h
Ćw10		4h
Ćw11		4h

Applied learning tools		
<ol style="list-style-type: none"> 1. Traditional lecture 2. Multimedia lecture 3. Solving tasks and problems 4. Consultation 5. Self-study students 		
EVALUATION OF THE EFFECTS OF EDUCATION ACHIEVEMENTS		
Value	Number of training effect	Way to evaluate the effect of education
F1	W1-W3, K1-K3	
F2	U1-U3, K1-K3	
$P = \%*F1 + \%*F2$		
BASIC AND ADDITIONAL READING		
<ol style="list-style-type: none"> 1. 2. 		
SUPERVISOR OF COURSE		
prof. Mirosław Kutyłowski		

RELATIONSHIP MATRIX EFFECTS OF EDUCATION FOR THE COURSE
Introduction to Wireless Telecommunication Systems
WITH EFFECTS OF EDUCATION ON THE DIRECTION OF COMPUTER SCIENCE

Course training effect	Reference to the effect of the learning outcomes defined for the field of study and specialization (if applicable)	Objectives of the course**	The contents of the course**	Number of teaching tools**
W1	K2_W01 K2_W03 K2_W04 K2_W05 K2_W09	C1	Wy1-Wy12	1 2 4 5
W2	K2_W01 K2_W02 K2_W04 K2_W05 K2_W07	C1	Wy1-Wy12	1 2 4 5
W3	K2_W01 K2_W02 K2_W04 K2_W05 K2_W06 K2_W07 K2_W08 K2_W09 K2_W10	C1	Wy1-Wy12	1 2 4 5
U1	K2_U01 K2_U02 K2_U05 K2_U09 K2_U10 K2_U11 K2_U12 K2_U13 K2_U14 K2_U16 K2_U17 K2_U18 K2_U19 K2_U20 K2_U21 K2_U22	C2	Ćw1-Ćw11	3 4 5
U2	K2_U01 K2_U02 K2_U03 K2_U08 K2_U09 K2_U10 K2_U11 K2_U12 K2_U14 K2_U15 K2_U16 K2_U18 K2_U19 K2_U20 K2_U21	C2	Ćw1-Ćw11	3 4 5
U3	K2_U01 K2_U03 K2_U05 K2_U08 K2_U09 K2_U10 K2_U12 K2_U13 K2_U15 K2_U16 K2_U17 K2_U18 K2_U19 K2_U20 K2_U21 K2_U22	C2	Ćw1-Ćw11	3 4 5
K1	K2_K01 K2_K03 K2_K05 K2_K06 K2_K08 K2_K11 K2_K12 K2_K13 K2_K14	C1 C2	Wy1-Wy12 Ćw1-Ćw11	1 2 3 4 5
K2	K2_K01 K2_K03 K2_K05 K2_K14 K2_K15 K2_K16	C1 C2	Wy1-Wy12 Ćw1-Ćw11	1 2 3 4 5
K3	K2_K01 K2_K03 K2_K06 K2_K08 K2_K12 K2_K13	C1 C2	Wy1-Wy12 Ćw1-Ćw11	1 2 3 4 5