

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Wireless networks standards</b>		Code <b>1010811171010813615</b>
Field of study <b>Electronics and Telecommunications</b>	Profile of study (general academic, practical) <b>general academic</b>	Year /Semester <b>4 / 7</b>
Elective path/specialty <b>Radio Communications</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>elective</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time, part-time) <b>full-time</b>	
No. of hours Lecture: <b>2</b> Classes: <b>-</b> Laboratory: <b>1</b> Project/seminars: <b>-</b>		No. of credits <b>4</b>
Status of the course in the study program (Basic, major, other) <b>other</b>		(university-wide, from another field) <b>university-wide</b>
Education areas and fields of science and art <b>technical sciences</b> <b>Technical sciences</b>		ECTS distribution (number and %) <b>4 100%</b> <b>4 100%</b>
<b>Responsible for subject / lecturer:</b>  dr hab. inż. Paweł Szulakiewicz, prof. nadzw. email: szulak@et.put.poznan.pl tel. 61 6653870 Faculty of Electronics and Telecommunications ul. Piotrowo 3A 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Student has a well ordered knowledge concerning signal theory, signal transmission, wireless channels, digital communication systems and theory of telecommunications (K1_W06, K1_W14, K1_W15, K1_W17)
2	<b>Skills</b>	Student is able to compare and evaluate digital communication systems, knows the system parameters, digital modulations, transmitters and receivers, wireless channels. (K1U01, K1_U05, K1_U17, K1_U21)
3	<b>Social competencies</b>	Student understands the necessity of professional approach to engineering problems solving (K1_K01), he feels responsibility for the systems designed by him (K1_K03), he understands the challenges caused by the rising demand for the spectrum (K1_K04)
<b>Assumptions and objectives of the course:</b> The course objective is to teach a student to understand the wireless networks, to know how to utilize them. Student is able to study standardz of the wireless networks and can such networks design.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b> 1. Student knows the structure, advantages and disadvantages and the applications of different wireless networks (for example 802.11, 802.15, 802.16, UWB, networks with LEDs, etc.) - [K1_W14]		
<b>Skills:</b> 1. Student is able to design and deploy WiFi network, can compare parameters of the different networka - [K1_U25] 2. Student is able to evaluate some standardization processes, for example 802.11ac, cognitive radio, networks with LEDs - [K1_U25]		
<b>Social competencies:</b> 1. Student understands the importance of standardization in the field of wireless networks - [K1_K01] 2. Student understands the necessity of cooperation the different professionalists in the standardization process - [K1_K03] 3. Student knows the main challenges standing in front of the wireless networks - [K1-K04]		
<b>Assessment methods of study outcomes</b>		
Oral examination (about 20 minute discussion with each student) concerning the subjects covered by the course.		
<b>Course description</b>		

<p>WiFi standards (802.11a,b,n,ac,e, ...          Physical layer (OFDM), link layer, network layer.          MIMO technique.          Multiaccess protocols in 802.11ac.          Mesh networks (802.11s)          WiMAX, OFDMA.          Overview of Bluetooth, Zigbee, UWB, H2.</p>		
<p><b>Basic bibliography:</b>          1. Selected parts of the wireless network standards available in IEEE e-Library.          2. Papers in scientific journals and available in the internet          3. Any guide to the WiFi network</p>		
<p><b>Additional bibliography:</b></p>		
<p><b>Result of average student's workload</b></p>		
<p><b>Activity</b></p>	<p><b>Time (working hours)</b></p>	
1. Lectures	30	
2. Laboratory	15	
3. Student self study	56	
<p><b>Student's workload</b></p>		
<p><b>Source of workload</b></p>	<p><b>hours</b></p>	<p><b>ECTS</b></p>
Total workload	100	4
Contact hours	50	2
Practical activities	35	2