

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Electromagnetic compatibility		Code 1010812131010840233
Field of study Electronics and Telecommunications	Profile of study (general academic, practical) general academic	Year /Semester 2 / 3
Elective path/specialty Radio Communications	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 1 Classes: - Laboratory: 1 Project/seminars: -		No. of credits 2
Status of the course in the study program (Basic, major, other) major		(university-wide, from another field) from field
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 2 100% 2 100%
Responsible for subject / lecturer: Prof. dr hab. inż. Wojciech Bandurski email: wojciech.bandurski@put.poznan.pl tel. 061 665 3848 Wydział Elektroniki i Telekomunikacji ul. Polanka 3, 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Has general knowledge of the electromagnetic field theory, circuit theory, electronics systems and electrical basic metrology. Has a knowledge of basic of the mathematical analysis and vector analysis. Has a familiarity of mathematical analysis in the primary and vector analysis.
2	Skills	Is able to solve simple circuits (with lumped and distributed parameters) in steady and transient states using the Laplace transform method. Is able to apply vector calculus Demonstrates ability to use the software: Matlab, Mathcad, the Spice.
3	Social competencies	Able to self-learning (books, computer programs). Behaving actively in class, asks questions, consciously uses the contact with the teacher (eg consultation).
Assumptions and objectives of the course: Introduction to modeling of the impact of electromagnetic interferences on electronic circuits. Modeling and simulation of electromagnetic interference generated by electronic systems. Basic information about Government regulations in EM compatibility.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Is conversant with problems and methods related to electromagnetic radiation. - [K2_W04]		
2. Understands the basic principles in the design of electronic circuits allowing generation less interference and susceptibility of circuits to the interference. - [K2_W04]		
Skills:		
1. Is able to communicate freely in English. Is able to discuss professional matters in English; is able to use knowledgeably English language sources (books, technical and scientific journals, application notes, catalogues, instructions, standards, etc.). - [K2_U01]		
2. Understands the importance of, and able to identify and propose measures to prevent and protect against the harmful effects of electromagnetic fields on the environment and humans. - [K2_U06]		
Social competencies:		

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| <p>1. Is aware of the limitations of his/her current knowledge and skills; is committed to lifelong learning. - [K2_K04]</p> <p>2. Understands the legal framework of Polish and international standards in electronics and telecommunications. - [K2_K03]</p> <p>3. Demonstrates responsibility for designed electronic and telecommunication systems. Is aware of the hazards they pose for individuals and communities if they are improperly designed or produced. - [K2_K06]</p> |
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Assessment methods of study outcomes		
<p>1. Written examination and test questions</p> <p>2. Reports of laboratory.</p>		
Course description		
<p>1. Basic legislation in Europe and the U.S.</p> <p>1. General rules to prevent interference.</p> <p>2. Emission of radiation and susceptibility to radiation.</p> <p>3. Spectrum of digital signals.</p> <p>4. The Line Impedance Stabilization Network and measurement of conducted interference.</p> <p>5. Common and differential mode currents and emission of radiation.</p> <p>6. Basic principles of measurement of interferences.</p>		
Basic bibliography:		
<p>1. C. R. Paul, Introduction to electromagnetic compatibility, Wiley, 2006.</p> <p>2. T. W. Więckowski, Investigations of electromagnetic compatibility electrical and electronic equipment (in polish), Oficyna Politechniki Wrocławskiej, Wrocław, 2001.</p>		
Additional bibliography:		
<p>1. Journal: IEEE Transactions on Electromagnetic Compatibility</p> <p>2. A.Charoy, Interference with electronic equipment (in polish), T1, T2, T3, T4, Warszawa, 1996.</p>		
Result of average student's workload		
Activity	Time (working hours)	
1. Classes that require personal contact with an academic teacher	30	
2. Preparation for the laboratory and preparation of the reports.	20	
3. Reading literature (text books, catalogues).	10	
4. Preparation for the examination.	20	
Student's workload		
Source of workload	hours	ECTS
Total workload	65	2
Contact hours	35	1
Practical activities	30	1