STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Design and simulation of electronic systems**	Code **1010325341010326095**

Field of study **Electrical Engineering**	Profile of study (general academic, practical) **(brak)**	Year /Semester **2 / 4**

Elective path/specialty **Measurement Systems in Industry and**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**

Cycle of study: **Second-cycle studies**	Form of study (full-time,part-time) **part-time**

No. of hours				No. of credits **2**
Lecture: **-**	Classes: **-**	Laboratory: **-**	Project/seminars: **18**	

Status of the course in the study program (Basic, major, other) **(brak)**	(university-wide, from another field) **(brak)**

Education areas and fields of science and art **technical sciences** **Technical sciences**	ECTS distribution (number and %**)** **2 100%** **2 100%**

Responsible for subject / lecturer:

dr hab. inż. Andrzej Odon
email: andrzej.odon@put.poznan.pl
tel. 616652599
Wydział Elektryczny
ul. Piotrowo 3A 60-965 Poznań

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge ine the scope of electrotechnics and metrology. Basic knowledge in the scope of electronics, including analog and digital electronic circuits.
2	**Skills**	Ability of the efficient self-education in the area concerned with the module
3	**Social competencies**	Awareness of the necessity of competence broadening and ability to show readiness to work as a team

Assumptions and objectives of the course:

- Sills in the scope of design and analysis of the electronic analog and digital circuits with application of computer assistance to simulate these circuits.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. Ability to explain the principles and techniques of measurement signals acquisition and processing for the modern applications in industry and biomedical engineering - [K_W12 +++]

2. Ability to describe the application areas and potential of the modern measurement systems - [K_W18 +]

Skills:

1. Ability to design creatively the modern measurement systems, using the possibilities offered by presenty available technologies, taking into account the limitattions of the knowledge and technique status - [K_U01 +, K_U09 +++, K_U15 +]

Social competencies:

1. Ability to think and act enterprisingly in the area of the moderne measurement systems - [K_K01 +]

2. Understanding a need of the broad populatrization of the knowledge in the area of simple and complex measurement systems used in industry and biomedical engineering - [K_K02 +]

Assessment methods of study outcomes

Pojects:

- continuous evaluation, at all classes,and awarding the skill increase in the use of the known principles and methods,

- evaluation of the knowledge and skills related to a given group or independent project and evaluation of the prepared reports.

Course description
Updating 2017:
Methods of education are orientated to students to motivate them to participate actively in education process by discussion and reports.
Projects:
Groups of students work as teams. Discussion on different methods and aspects of problem solutions. Detailed reviewing of particular projects documentation with:
- Design and analysis of properties of the selected electronic systems and carrying out the simulation studies using specialized programming environments.
- Making the circuit diagrams by the use of MultiSIM environment.
- Application of the MultiSIM environment for the DC, AC, frequency and time analysis of electronic circuits.

Basic bibliography:

1. T. Bogart, J. Beasley, G. Rico, Electronic Devices and Circuits, Prentice-Hall, Inc., New Jersey 2001.

2. U. Tietze, Ch. Schenk, Układy półprzewodnikowe, WNT, Warszawa 2001.

3. K. Baranowski, A. Welo, Symulacja układów elektronicznych, Wydawnictwo MIKOM, Warszawa 1996.

Additional bibliography:

1. A. Król, J. Moczko, PSPICE ? Symulacja i optymalizacja układów elektronicznych, Wydawnictwo Nakom, Poznań 1999.

2. J. Porębski, P. Korohoda, PSPICE ? program analizy nieliniowej układów elektronicznych, WNT, Warszawa 1994.

Result of average student's workload

Activity	Time (working hours)
1. Participation in projects classes	18
2. Participation in consulting with lecturers	5
3. Realization of projects	25

Student's workload

Source of workload	hours	ECTS
Total workload	48	2
Contact hours	23	1
Practical activities	43	2