FACULTY W4 / DEPARTMENT K4

SUBJECT CARD

Name of subject in Polish:	**Technologia elektroniczna**
Name of subject in English:	**Electronic technology**
Main field of study (if applicable):	**Electronic and Computer Engineering**
Specialization (if applicable):	**……..**
Profile:	**academic**
Level and form of studies:	**1 st level/ full-time**
Kind of subject:	**obligatory**
Subject code:	**ECEA00006**
Group of courses:	**YES**

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)	30		30		
Number of hours of total student workload (CNPS)	60		90		
Form of crediting	crediting with grade		crediting with grade		
For group of courses mark (X) final course	**x**				
Number of ECTS points	**5**				
including number of ECTS points for practical (P) classes			3		
including number of ECTS points corresponding to classes that require direct participation of lecturers and other academics (BU)	1		2		

*delete as applicable

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

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SUBJECT OBJECTIVES

C1 Earning fundamental knowledge in designing mechanical and electronic units
C2 Earning fundamental knowledge in the field of mechanical units production
C3 Earning fundamental knowledge in the field of electronic units production
C4 Getting skills in a design of electronic and mechanical devices

SUBJECT LEARNING OUTCOMES

relating to knowledge:
PEU_W01 – Student knows the principles used in a design and documentation preparation processes of mechanical units
PEU_W02 – Student possesses knowledge required to choose a technology of mechanical unit production
PEU_W03 – Student knows the principles used in a design process of electronic units
PEU_W04 – Student possesses knowledge required to choose a technology of electronic unit production
PEU_W05 – Student knows the principles of testing electronic units

relating to skills:
PEU_U01 – Student can use software tools in a mechanical design process
PEU_U02 – Student can effectively use datasheets in a design process
PEU_U03 – Student can use software tools in an electronic design process
PEU_U04 – Student can choose a right production technology for designed unit

relating to social competences:

PROGRAMME CONTENT

Lecture		**Number of hours**
Lec 1	Introduction to design process of electronic and mechanical units. CAD/CAE software tools.	2
Lec 2	Fundamentals of technical drawing. Drawing rules of sketches and cross-sections.	2
Lec 3	Principles of dimensioning and technical documentation preparation.	2
Lec 4 Lec 5	Fundamentals of mechanical unit production. Principles of choosing a production technology, material and machine tool.	4
Lec 6 Lec 7 Lec 8	Production technology of electronic components. Electrical and thermal parameters and available packages. Component selection taking into account their working conditions.	6
Lec 9 Lec 10	Production technology of printed circuit boards. Production and design of PCBs and their parameters optimization.	4
Lec 11 Lec 12	Electronic circuits assembly technology. Review of practical solutions.	4
Lec 13 Lec 14	Reliability of electronics devices. Review of test and examination methods. Introduction to IPC norms.	4
Lec 15	Summary	2
	Total hours	30

Laboratory		**Number of hours**
Lab 1	Introduction to CAD software tool	2
Lab 2 Lab 3	Sketches and constraints in 2D	4
Lab 4 Lab 5	Creating solids	4
Lab 6	Designing cases. Electronic circuits and electro-mechanical components integration	2
Lab7	Creating a documentation of a project	2
Lab 8	Summary	1
	Total hours	15

TEACHING TOOLS USED

N1. Lecture with a usage of a chalkboard and a multimedia presentation
N2. Laboratory classes – discussion of used solution
N3. Consultations

N4. Independent work – preparation to laboratory classes N5. Independent work – self-study and preparation to final test

EVALUATION OF SUBJECT LEARNING OUTCOMES ACHIEVEMENT

Evaluation (F – forming (during semester), P – concluding (at semester end)	Learning outcomes code	Way of evaluating learning outcomes achievement
F1	PEU_W01 – PEU_W05	Written test
F2	PEU_U01 – PEU_U02	Tests, assessment of laboratory work and reports
F3	PEU_U03 – PEU_U04	Tests, assessment of laboratory work and reports
P = 0.6*F1+0.2*F2+0.2*F3, all forming grades have to be positive		

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

[1] Introduction to Basic Electricity and Electronics Technology, Earl D. Gates, Delmar Cengage Learning
[2] Practical Electronics for Inventors, Paul Scherz, Simon Monk, Tab Books, 3rd edition
[3] The Circuit Designer's Companion, Peter Wilson, Newnes, 3rd edition
[4] An Introduction to Mechanical Engineering, Jonathan Wickert, Kemper Lewis, CL Engineering, 3rd edition
[5] Technical Drawing for Engineering Communication, David E. Goetsch, Raymond L. Rickman, William S. Chalk, Delmar Cengage Learning, 7th edition

SECONDARY LITERATURE:

[1] Electronic Components and Technology, Stephen Sangwine, CRC Press, 3rd edition
[2] Electronic, Magnetic and Optical Materials, Pradeep Fulay, Jung-Kun Lee, CRC Press

SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

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