

FACULTY OF ELECTRICAL
ENGINEERING**SUBJECT CARD**

Name in Polish: **Metody podejmowania decyzji**
 Name in English: **Decision making methods**
 Main field of study (if applicable): **Industrial Control Engineering**
 Specialization (if applicable):
 Level and form of studies: **1st level, full-time**
 Kind of subject: **optional**
 Subject code: **APR012107**
 Group of courses: **NO**

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU):	15				15
Number of hours of total student workload (CNPS):	60				30
Form of crediting:	crediting with grade				crediting with grade
For group of courses mark (X) final course:					
Number of ECTS points:	2				1
including number of ECTS points for practical (P) classes :					1
including number of ECTS points for direct teacher-student contact (BK) classes:	1.40				0.70

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Knowledge of basics of control systems, power system protection and control and mathematical statistics.
2. Practical skills of using PowerPoint software.
3. An ability to think and act in a creative way

SUBJECT OBJECTIVES

- C1. Mastering fundamentals of decision theory and basic approaches to rational and effective decision making as related to automation and control systems.
- C2. Acquiring practical skills of critical assessment of decision making methods as well as presentation of decision problems with Office software.

SUBJECT LEARNING OUTCOMES*relating to knowledge:*

- PEU_W01 Possesses knowledge related to fundamentals of decision theory.
- PEU_W02 Possesses knowledge related to multi-criterial analysis and statistical decision making.
- PEU_W03 Possesses knowledge related to application of intelligent approaches for process control and decision making.

relating to skills:

- PEU_U01 Is able to perform multi-criterial analysis for the problems of wide understood control, with special attention to power system protection and control.
- PEU_U02 Is able to apply selected statistical methods for decision tasks.

relating to social competences:

- PEU_K01 Is able to assess possibility of decision making methods application as well as to present proposed solution with use of Office software.

PROGRAMME CONTENT

Form of classes - lecture		Number of hours:
Lec 1	Introduction. Setting rules of course crediting. Decision situations, decisions and decision making processes, decision procedures and models, rationality and efficiency of decision making, decision analysis, information base for decision making, decision quality.	1
Lec 2	Four decision making stages by Simon – problem identification, design activities, choice making, evaluation.	1
Lec 3	Rationality and decision making – sociological and economical approach to rationality, economical and organizational contexts of decision making.	1
Lec 4	Analytical modeling of the decision situation – decision situation and its model, modeling of the decision making, matter-of-fact model of the decision situation.	1
Lec 5	Multicriterial analysis – basic definitions, survey of the methods for solving of multicriterial analysis tasks.	1
Lec 6	Methods of uncertainty representation – probabilistic models, fuzzy and approximate sets.	1
Lec 7	Decision making based on statistical analysis – statistical hypothesis testing.	1
Lec 8	Introduction to intelligent decision making and control systems.	1
Lec 9	Fuzzy decision making and fuzzy control.	1
Lec 10	Structures of complex and multi-level decision making systems.	1
Lec 11	Adaptive decision making and control systems.	1
Lec 12	Decision making in power system protection and control systems.	1
Lec 13	Examples of intelligent techniques application for identification of events and phenomena analysis in power systems.	1
Lec 15	Crediting test.	2
Total hours:		15

Form of classes - seminar		Number of hours:
Sem 1	Introduction, setting up rules of crediting, assignment of topics to work on.	2
Sem 2	Presentation of assigned topic related to decision making methods.	12
Sem 3	Summary, crediting.	1
Total hours:		15

TEACHING TOOLS USED

- N1. Informative lecture.
N2. Presentations, problem discussion.

EVALUATION OF SUBJECT LEARNING OUTCOMES ACHIEVEMENT

Evaluation <i>F - forming (during semester) P - concluding (at semester end)</i>	Educational effect number	Way of evaluating educational effect achievement
F1(w)	PEU_W01 PEU_W02 PEU_W03	Participation in the course.
F2(w)	PEU_W01 PEU_W02 PEU_W03	Crediting test.
P(w)	$P = 0,1F1 + 0,9F2$	
F1(s)	PEU_U01 PEU_U02 PEU_K01	Activity during seminar.
F2(s)	PEU_U01 PEU_U02	Presentation of the seminar problem.
P(s)	$P = 0,2F1 + 0,8F2$	

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

- [1] Lewandowski, A., Wierzbicki A.P. (Eds.), Aspiration Based Decision Support Systems, Springer Verlag, Berlin 1990
[2] Turban, E., Decision Support and Expert Systems, Prentice-Hall, London 1995

SECONDARY LITERATURE:

- [1] Robbins S., Ehrlich A., Skuteczne podejmowanie decyzji, PWE, Warszawa 2005
[2] Rebizant W., Metody podejmowania decyzji, Skrypt PWr, Wrocław 2012

SUBJECT SUPERVISOR
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