

FACULTY OF MANAGEMENT

SUBJECT CARD

Name of subject in Polish: Pracownia Inteligencji Biznesowej**Name of subject in English: Business Intelligence Workplace****Main field of study (if applicable): Business Engineering****Specialization (if applicable): Business Intelligence****Profile: academic****Level and form of studies: 2nd level, full-time****Kind of subject: obligatory****Subject code W08IZZ-SM8029****Group of courses YES**

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)	15		30	15	
Number of hours of total student workload (CNPS)	25		50	50	
Form of crediting	Crediting with grade				
For group of courses mark (X) final course	X				
Number of ECTS points	5				
including number of ECTS points for practical classes (P)			2	2	
including number of ECTS points corresponding to classes that require direct participation of lecturers and other academics (BU)	0,68		1,28	0,68	

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

Basic computer programming skills (e.g., C ++, Excel / VBA, Matlab, Netlogo, Python) and understanding of fundamental statistical methods.

SUBJECT OBJECTIVES

C1 Mastering programming skills useful for business intelligence applications.

SUBJECT EDUCATIONAL EFFECTS

relating to knowledge:

PEU_W01 Knows computational environments (MATLAB/Octave, Python and R) useful for business intelligence applications.

PEU_W02 Knows the basic and selected advanced modeling and forecasting tools and knows how to use them for descriptive, predictive and prescriptive analytics.

relating to skills:

PEU_U01 Is able to use selected computational environments to perform specific business intelligence tasks.

PEU_U02 Is able to implement simple and apply selected advanced modeling and forecasting techniques.

relating to social competences:

PEU_K01 Is aware of the need for independent, critical assessment of the scope and level of knowledge in the field of business intelligence. Is prepared to independently search for knowledge in this area.

PROGRAMME CONTENT		
Lecture		Number of hours
Lec 1-2	Introduction to the Business Intelligence Workplace – basics of MATLAB/Octave, Python and R environments	2
Lec 3-5	Descriptive analytics module: data management, interoperability between the frameworks, visualization techniques, dashboards	3
Lec 6-7	Predictive analytics module: modeling and clustering	2
Lec 8-10	Predictive analytics module: classification tasks using convolutional neural networks and random forests	3
Lec 11-12	Predictive analytics module: non-linear regression forecasting using neural networks	2
Lec 13-15	Prescriptive analytics module: simulation, optimization	3
	Total hours	15

Laboratory		Number of hours
Labs 1-2	Introduction to the Business Intelligence Workplace – basics of MATLAB/Octave, Python and R environments	4
Labs 3-5	Descriptive analytics module: data management, interoperability between the frameworks, visualization techniques, dashboards	6
Lab 6-7	Predictive analytics module: modeling and clustering	4
Labs 8-10	Predictive analytics module: classification tasks using convolutional neural networks and random forests	6
Labs 11-12	Predictive analytics module: non-linear regression forecasting using neural networks	4
Labs 13-15	Prescriptive analytics module: simulation, optimization	6
	Total hours	30

Project		Number of hours
Proj 1-4	Descriptive analytics project in R	4
Proj 5-11	Predictive analytics project in Python	7
Proj 12-15	Prescriptive analytics project in MATLAB/Octave	4
	Total hours	15

TEACHING TOOLS USED
N1. Multimedia presentations (lectures). N2. Computational tasks in MATLAB/Octave, Python, R (computer lab). N3. Case studies (projects).

EVALUATION OF SUBJECT LEARNING OUTCOMES ACHIEVEMENT

Evaluation (F – forming during semester), P – concluding (at semester end)	Learning outcomes	Way of evaluating learning outcomes achievement
F1	PEU_W01, PEU_W02	Based on project reports
F2	PEU_U01, PEU_U02, PEU_K01	Project reports
F3	PEU_U01, PEU_U02, PEU_K01	Lab tasks
P = F1+F2+F3 - computed in percentage points (%), transformed into the scale 2-5.5		

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

- [1] Camm, J. D., Cochran, J. J., Fry, M. J., Ohlmann, J. W., Anderson, D. R., Sweeney, D. J. & Williams, T. A. (2019) Business analytics. Cengage.
- [2] Vercellis, C. (2009) Business intelligence: data mining and optimization for decision making. Wiley.

SECONDARY LITERATURE:

- [1] Sharda, R., Delen, D. & Turban, E. (2020). Analytics, Data Science & Artificial Intelligence: Systems for decision support. Pearson.
- [2] Ferrari, A., Russo, M. (2016) Introducing Microsoft Power BI. Microsoft Press.

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

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