



ACADEMIC SYLLABUS 2020/2021
International Summer School

MODULE TITLE	Introduction to Data Science with R and Python (4 ECTS)
Module title in Polish	
NUMBER OF ECTS CREDITS	4

STAFF TEACHING THE MODULE	Academic Degree	Name	Chair /Institute/ Center
		PhD	Veljko Jeremić
PRINCIPAL COORDINATOR			

PRE-REQUISITES FOR THE MODULE*	Students are expected to be familiar with the software environments (the materials will be sent before the course)
KOREKWIZYTY / CO-REQUISITES	None

AIMS	
-------------	--

LEARNING OUTCOMES AND COMPETENCES	
1. KNOWLEDGE AND UNDERSTANDING	To boost knowledge and skills of working in the two of the most frequently used data science software environments - R and Python. To lay out foundations of data analysis and machine learning algorithms and apply them in business projects.
2. SUBJECT SPECIFIC SKILLS (DISCIPLINE SKILLS)	To help students become proficient in R and Python.
3. PERSONAL TRANSFERABLE SKILLS	To enable students to develop functional codes in R and Python while working both individually and as a group.

METHODS OF TEACHING
The course will consist of practical class exercises in R and Python. The course consists of the following topics: Introduction to R and Python (I) – R and Python environment Introduction to R and Python (II) – Introductory data analysis and visualisation Advanced data analysis Foundations of machine learning algorithms (I) – unsupervised learning Foundations of machine learning algorithms (II) – supervised learning

MODULE CONTENT	NUMBER OF HOURS
TOTAL LEARNING HOURS:	20
SUGGESTED NO OF SELF LEARNING HOURS ***	80
TOTAL LEARNING HOURS	100

DESCRIPTION OF THE MODULE IN POLISH (MAX 300 SYMBOLS)

INTERNATIONAL DIMENSIONS	The students will gain knowledge of data visualisation and analysis in R and Python. Students will gain insights into applications of machine learning methods in R and Python environment and will be able to reflect on the employment of these methods in companies.
SOCIAL RESPONSIBILITY AND ETHICAL ISSUES	Using the datasets such as SDG UNDP, Better Life Index OECD, etc. the topics of great interest for humanity (sustainability, quality of life, etc.) will be elaborated, while the case studies tackling the issues of privacy and AI will add an ethical component to the course.

COMPULSORY READING (max 3 items)

LP.	AUTHOR, TITLE, PLACE & DATE OF PUBLISHING, PUBLISHER, PAGES
1.	Unpingco, J. (2016). Python for probability, statistics, and machine learning (Vol. 1). Springer International Publishing.
2.	Gutierrez, D. D. (2015). Machine learning and data science: an introduction to statistical learning methods with R. Technics Publications.

ADDITIONAL READING (max 5 items)

LP.	AUTHOR, TITLE, PLACE & DATE OF PUBLISHING, PUBLISHER, PAGES
1.	Dinov, I. D. (2018). Data science and predictive analytics: Biomedical and health applications using R. Springer.

MODULE BIBLIOGRAPHY (no limits)

LP.	AUTHOR, TITLE, PLACE & DATE OF PUBLISHING, PUBLISHER, PAGES
1.	Turner, R. (2020). Python Machine Learning: 3 books in 1-The Ultimate Beginners, Intermediate and Expert Guide to Master Python Machine Learning. Publishing Factory.
2.	Rhys, H. I. (2020). Machine Learning with R, the tidyverse, and mlr. Manning Publications.

METHOD OF ASSESMENT (written, oral, project)

What will the final grade be based on? Provide a breakdown of components and an explanation of your grading policies (e.g. weighting of grades, curves, extra-credit options, the possibility of dropping the lowest grade)

MODE of ASSESSMENT	TYPE (and SHORT DESCRIPTION)	DURATION	PERCENTAGE OF TOTAL GRADE
TO TEST KNOWLEDGE AND UNDERSTANDING	Tasks during the classes		30%
TO TEST ACQUIRED SKILLS (DISCIPLINE AND COMMUNICATION)	Final test		70%
SUPPLEMENTARY ASSESSMENT			

COMMENTS	
-----------------	--

PROGRAM	MSc in International Business and Management
STUDY YEAR / SEMESTER	I/1
SPECIALIZATION	
TYPE OF MODULE Basic B / Major M / Specialization S	
MODULE LEVEL	
CONTACT HOURS (BROKEN DOWN INTO) :	
Introduction to the problems of subject by leading lecturer	
Lectures	
Seminars with assistants	
Discussion seminar	
Team workshops	
Seminars with practitioners	
Laboratory	20
Projects	
E-learning	80
Diploma seminars	
Other	
Formal exam	
MODE OF TEACHING Full-time F / Part-time P	
TYPE OF PROGRAM Undergraduate U / Graduate G	
LANGUAGE OF INSTRUCTION (Polish/foreign)	English