

		The 3 rd International IPSA – HSE Summer School for Methods of Political & Social Research Course Syllabus
Course title:		Introduction Into R
Instructor:		Sr. Lecturer Ilya Musabirov, Lecturer Viktor Karepin
ECTS / academic hours		1 ECTS / 36 academic hours: 18 contact hours, 18 self – study hours
Brief course description (up to 100 words):		<p>The goal of this course is to help you learn from scratch the most important tools in R that will allow you to perform basic data analysis.</p> <p>We will teach you to perform data analysis in R using modern toolchain, including tools which allow to:</p> <ul style="list-style-type: none"> - Import data in different formats - Clean (tidy) data and transform it for the analysis (dplyr, tidyr) - Explore data with aggregation techniques - Visualize data (ggplot2 and extensions) - Communicate results (RMarkdown) and incorporate your analysis to reports in different formats (PDF, Word, dynamic html) <p>The course is built around tidyverse infrastructure: a collection of R packages designed for data science with common design, grammar, and data structures.</p>
Indicative concepts (up to 10):		data visualization, data transformation, exploratory data analysis, Rmarkdown, tidyverse
Workshops overview:	Day 1	First day will be dedicated to data importing and data manipulation tasks. Students will learn the grammar of data manipulation and therefore the dplyr package, providing a complete set of tools to solve the most common data manipulation challenges. We will also discuss reproducible research and data organization practices for research projects.
	Day 2	The day starts with introduction to the grammar of graphics and features of ggplot2 package and its' extensions. During the day principles of visualization for exploratory data analysis will be discussed and as well as the examples of truly insightful and misleading visualizations. During the second part of the day students will choose a dataset from a proposed list to perform basic exploratory data analysis and extract some knowledge and insights from the raw data.
	Day 3	The last day will introduce the ways to report results of Exploratory Data Analysis, such as interactive notebooks and presentations. Students will have to finish their data analysis projects with the help of experts and prepare reports and presentation of the findings.
Assessment techniques to receive graded certificate:		For getting ECTS and course completion certificate students must participate in a team project focused on exploratory data analysis, submit their individual scripts and group presentation.
Essential readings: (additional readings will be suggested during the first class)		<ul style="list-style-type: none"> - Wickham, H., & Grolemund, G. (2016). <i>R for data science: import, tidy, transform, visualize, and model data</i>. " O'Reilly Media, Inc.". (online version: https://r4ds.had.co.nz) - Peng, R. D., & Matsui, E. (2015). <i>The Art of Data Science. A Guide for Anyone Who Works with Data</i>. Skybrude Consulting, LLC.
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