



Government of the Russian Federation

Federal State Autonomous Educational Institution of Higher Education National Research University “Higher School of Economics”

Faculty of social sciences
Department of Sociology

Course syllabus

Basic Statistics and Introduction into R

For the Master’s Degree Program 39.04.01.” Comparative Social Research”

Authors:

Ponarin Eduard., PhD, eponarin@hse.ru

Almakaeva Anna, candidate of sociological sciences, aalmakaeva@hse.ru

Approved at the meeting of the School of Sociology «__»_____ 20__ г
Head of the School Prof. Alexander Chepurenskiy

Recommended by the Academic Council
of the Bachelor’s Degree Program ”Sociology” «__»_____ 20__ г
Head: [] _____

Approved «__»_____ 20__ г
Head of the School: Prof. Alexander Chepurenskiy _____

Registered by the Academic Council
of the Faculty of social sciences «__»_____ 20__ г.
Academic secretary _____

Moscow, 2017

This syllabus cannot be used by other University departments and other institutes of higher education without the permission of the department that developed the syllabus



1 Field of Application and normative references

The program of the course describes the basic requirements for the knowledge and skills of a student and determines the content and types of classes and assessment.

The program is designed for lectures of this discipline, learning assistants and students of sociology ("International Master in Comparative Social Research").

The program is developed according to:

- Educational Program of NRU HSE, field of study 39.04.01 «Sociology» (master's program) http://www.hse.ru/data/2015/05/08/1098813788/OC_mag_Социология_зам.pdf ;
- Master's Programme "Comparative Social Research", field of study 39.04.01 «Sociology»
- Curriculum of the Master's Programme "Comparative Social Research" confirmed in 2015.

2 The goal of the course

The course aims to provide students with understanding of basic concepts of statistical analysis and basic principles of programming in R statistical package. It gives an overview of the basic skills necessary for understanding of modern methods of data analysis and conducting independent research with quantitative survey data using R software. Skills include downloading data, creating a working dataset; recoding and creating new variables; obtaining descriptive statistics (mean, median, moda, standard deviation, variance), frequencies, cross-tabulations, chi square, t-test and basic graphics in R. The course also puts these skills into the broader academic context by reviewing how statistics are used in published scientific journal articles.

1 Competences acquired within the discipline

As a result of this course a student

should know

- Know the key concepts of statistics;
- Know the main procedures of data transformation using R;
- Know the academic standards of reporting results and professional scientific ethics;

be able to:

- to choose correct statistical methods and procedures according to the research questions and the level of measurement;
- to create basic graphics in R.
- to interpret and present the results of data analysis in oral and written form;

be experienced in

- using basic statistics
- using R software



The course develops the following competences:

Competences	NRU-HSE Code	Descriptors-the learning outcomes (the indicators of achievement)	Forms and methods of studies that contribute to the development of a competence
The graduate should have such system competences (SC), as:			
The ability to critically analyze the main methods of scientific inquiry and their applications	SK-M1	Students should be able to find a correct procedure of creating new variables under investigation and correct descriptive statistics according to level of measurement.	Group discussion, readings, class and home assignments, writing an exam.
The ability to introduce new concepts and methods and apply them in the professional activity	SK-M2	Students should be able to develop their own research project.	Readings, class and home assignments, writing an exam.
The ability to learn new methods and change the field of professional interests	SK-M3	Students should be able to find papers, books and electronic resources on the topic of interest	Readings, home assignments
The ability to analyze, verify and assess the completeness of information, fill the gaps if necessary under the condition of uncertainty	SK-M6	Students should be able to formulate a main research question and possible hypotheses from a theory, independently choose correct procedures for creating new variables under investigation and correct methods of data analysis to correspond to a research question and variables' level of measurement. Students should be able to independently find published research using different information resources (journal databases) on their own topics.	Group discussion, class and home assignments, readings, preparing data and writing an exam
The ability to work including research project at the international labor market	SK-M8	Students should be able to read literature in English, communicate in English discussing their class assignments, write class and home assignments in	Group discussion, readings, class and home assignments, writing an exam



		English, write an essay and complete an exam in English. Students practice skills of reading, writing, analyzing data, which are necessary on the international academic labor market.	
The graduate should have such general professional competences (PC) as:			
To be able to use social and humanitarian theories and methods in analytic, consulting and expert activity	PC2	Students should be able to put forward research questions and hypotheses; choose correct methods of data analyses according to the research questions and evaluable data	Readings, class and home assignments, writing an exam
To be able to formulate aims and purposes of fundamental and practically oriented sociological research and solve them using contemporary research methods (Russian and foreign) and technology.	PC3	Students should be able to put forward research questions and hypotheses; choose correct methods of data collection and data analysis	Group discussions, readings, class and home assignments, writing an exam
To be able to speak foreign language fluently	PC8	Students should be able to ask questions, take part in discussions, fulfill home assignments and write a written exam.	Group discussions, readings, class and home assignments, writing an exam
To be able to present the results of the activity using presentation methods and techniques	PC9	Students should be able to pass a written exam	Reading, written exam
To be able to collect, analyze and interpret data using contemporary technology and draw conclusions on social, scientific and ethical problems	PC11	Students should be able to choose the correct method of data analysis according to the measurement scales.	Group discussions, readings, class and home assignments, writing an exam
To be able to use sociological research methods to study important social problems and identify the needs of specific	PC13	Students should be able to put forward research questions and hypotheses; choose correct methods of data collection and data analysis	Group discussion, class and home assignments, readings, writing an exam



social groups			
To be able to follow professional ethical standards and principles of social responsibility	PC21	Students are expected to avoid plagiarism and unfair behavior. Students will not share answers on exams. Students will follow the ethical standards of the profession in using formal citation format in their writing.	Group discussion, class and home assignments, writing an exam
To be able to generate new ideas and products, be creative and initiative	PC22	Students should be able to put forward research questions and hypotheses, collect and find appropriate data for analysis	Group discussion, class and home assignments, readings, writing an exam

4 The place of the course in the plan of program

The current course relates to the disciplines preparing masters students in sociology. This course is a compulsory course for MA students of Comparative Social research.

The course is based on the following previously covered courses:

- Sociology
- Methods of social research

Skills and information from this course should be the basis for studying the following courses and activities:

- Methodology and Research methods in Sociology: Quantitative Research methods
- Research design
- Contemporary social theory: comparative sociology
- Introduction to SEM
- Multilevel regression analysis
- MA thesis workshop

The course is strongly related and complementary to other compulsory courses and provides crucial prerequisites for later courses and research projects as well as skills necessary for the master thesis. The course takes place in the first module of the first year of the program, giving students the important skills in designing and conducting their own research as well as assessing the quality of research projects published in a series of working papers and peer-reviewed journals.

5 Thematic plan of the course

№	Theme	Total Contact Hours	Of which: Lecture hours	Of which: Lab hours	Student Work
1.	Introduction to sociological inquiry	4	2	0	4
2	Measurement	6	4	4	8
3	Introduction into R	4	2	2	6



4	Data transformation	2	0	2	6
5	Basic graphs	4	2	2	8
6	Descriptive statistics: frequencies and cross tabulations, visualization	4	2	2	6
7	Descriptive statistics: mean, median, mode, standard deviations, variance	4	2	2	6
	Total hours	28	14	14	44

6 Forms of control of students` knowledge

Type of control	Form of control	Detailed explanation
Current	Home assignment	Students will be expected to complete written homework assignments outside of class time. All assignments will require using R and the dataset(s) for this course. All assignments are due at the beginning of the following class time.
	Quiz	Students will be expected to complete a short test before classes
Final	Written exam	Students will take a final exam in the lab. This exam will consist of conducting R exercises on a new dataset and writing about the results.

6.1 Assessment criteria

Intended learning outcomes At the end of the course students will be able to:	Home assignments	Quiz	Written exam
% of total grade	40%	10%	50%
Be able to choose correct statistical methods and procedures according to the level of measurement;	x	x	x
Be able to use R software for creating and transforming variables, conducting data analyses;	x		x
Be able to interpret and present the results of data analysis in oral and written form	x	x	x

The final grade consists of:

1. Written homework assignments (40%);
2. Quiz (10%);
3. Written final exam (50%).

Using LMS system. The current syllabus and all assignments are uploaded into LMS system (<http://lms.hse.ru>). Students are required to check LMS every week and upload all assignments into LMS according to the due date. If LMS is temporarily unavailable an assignment should be sent to the instructor's e-mail (aalmakaeva@hse.ru; emmitrokhina@gmail.com) according to the due date.



Reexamination policy. Students who fail the course are entitled to retake a final exam. This reexamination option will count only toward the students' final exam grade (50% of the course). Students' reexamination grade will not substitute for poor grades earned prior to the final exam in other aspects of the course (attendance/class participation, paper, or homework). Therefore, students seeking a minimally passing grade must also turn in homework assignments.

8 Educational techniques

Lectures, group discussions, home readings, independent use of R software for data analysis in seminar hours and home work, writing home and class assignments.

9 Readings and online resources

9.1. Core readings

1. Babbie, E. R. 2015. The practice of social research. Nelson Education.
2. Healey J. F. 2009 The essentials of statistics: A tool for social research. Cengage Learning.
3. Kabacoff, Robert. 2011. R in Action. Manning Publications Co.

9.2. Supplementary readings

1. Agresti, A., Finlay, B. 2009. Statistical Methods for the Social Sciences. Pearson Prentice Hall.
2. Black, T. R. 2001. Understanding social science research. Sage.
<https://ebookcentral.proquest.com/lib/hselibrary-ebooks/reader.action?docID=334609&ppg=9>
3. Kalof, L., Dan, A., & Dietz, T. 2008. Essentials of social research. McGraw-Hill Education (UK).
<https://ebookcentral.proquest.com/lib/hselibrary-ebooks/detail.action?docID=409763>
4. Stowell, S. (2014). Using R for statistics. Apress. <https://link.springer.com/book/10.1007/978-1-4842-0139-8> (available till December 2017)
5. Wickham, H. (2016). ggplot2: elegant graphics for data analysis. Springer. (available till December 2017) <https://link.springer.com/book/10.1007/978-3-319-24277-4>
6. Zuur, A., Ieno, E. N., & Meesters, E. (2009). A Beginner's Guide to R. Springer Science & Business Media. (available till December 2017) <https://link.springer.com/book/10.1007/978-0-387-93837-0>

9.3. Online resources

1. R-analytics (in Russian) http://r-analytics.blogspot.de/p/blog-page_80.html#.VeLUJfntmko .
2. Try R <http://tryr.codeschool.com/>
3. Stackexchange <http://stats.stackexchange.com/>
4. Free online tutorials <http://pairach.com/2012/02/26/r-tutorials-from-universities-around-the-world/>
5. Quik-R <http://www.statmethods.net/>
6. R resources search <http://rseek.org/>
7. R Tutorial <http://www.r-tutor.com/>



8. Cookbook for R <http://www.cookbook-r.com/>
9. 60+ R resources to improve your data skills
<http://www.computerworld.com/article/2497464/business-intelligence/business-intelligence-60-r-resources-to-improve-your-data-skills.html>
- 10.

9.4. On-line courses

1. R programming <https://www.coursera.org/course/rprog>. This is a four week course, starts every month.
2. Exploratory data analysis <https://www.coursera.org/course/exdata> . This is a four week course, starts every month.
3. Learn how to analyze data with R with Coursera's "Data Analysis" videos
<http://blog.revolutionanalytics.com/2013/04/coursera-data-analysis-course-videos.html>
4. Introduction to R Programming <https://www.edx.org/course/introduction-r-programming-microsoft-dat204x?gclid=CIXdqO7A08cCFYT2cgod070Fww>
5. Explore statistics with R <https://www.edx.org/course/explore-statistics-r-kix-kiexplorx-0#.VAVqHxAxj44>
6. Jeromy Anglim's Blog: Psychology and Statistics <http://jeromyanglim.blogspot.ru/>
7. Introduction into R https://www.datacamp.com/courses/free-introduction-to-r?utm_source=fb_paid&utm_medium=fb_desktop&utm_campaign=dc_registered
8. R programming (In Russian) <https://stepik.org/course/497>

11 Software and distance support of discipline

The course requires installed R or R Studio software and regular access to Internet resources including but not limited to: 1) the source of data used for this course on the official site of the World Values Survey (<http://www.worldvaluessurvey.org/wvs.jsp>); 2) the electronic resources of HSE library (<http://site.ebrary.com/>), and the LMS system at HSE for readings and assignments (<http://lms.hse.ru>); 3) Link for downloading r <https://cran.r-project.org/bin/windows/base/> 4)Link for downloading R Studio <https://www.rstudio.com/products/RStudio/>