

SYLLABUS

1. Information about the study program

1.1 Higher education institution	Babeş-Bolyai University
1.2 Faculty	Faculty of Psychology and Educational Sciences
1.3 Department	Department of Psychology / Department of Clinical Psychology
1.4 Field of study	Psychology - Cognitive Sciences
1.5 Study cycle	Bachelor level
1.6 Study program / Qualification	Psychologist

2. Course data

2.1 Title of the course	Quantitative research methods and data analysis						
2.2 Teacher in charge of the lecture	Assistant Professor Ionuț-Stelian Florean, Ph.D.						
2.3 Teacher in charge of the seminar	Assistant Professor Ionuț-Stelian Florean, Ph.D.						
2.4 Study year	I	2.5 Semester	I	2.6. Examination type	Final exam	2.7 Course type	Mandatory

3. Estimated total time (number of hours of teaching activities per semester)

3.1 Number of hours per week	4	out of which: 3.2 lecture	2	3.3 seminar / laboratory	2
3.4 Total number of hours in the curriculum	56	out of which: 3.5 lecture	28	3.6 seminar / laboratory	28
Distribution of the allocated amount of time:					hours
Individual study (textbook, course support, bibliography, and notes)					30
Supplementary documentation at the library using specialized electronic platforms in the field					24
Preparing for seminars / laboratories, homework, papers, portfolios, and essays					10
Tutoring					6
Exams					2
Other activities: research activities					0
3.7 Total number of hours of individual study	70				
3.8 Total number of hours per semester	128				
3.9 Number of credits (ECTS)	5				

4. Prerequisites (if applicable)

4.1 Curriculum	Basic knowledge of research methods in psychology (Quantitative research methods and data analysis I)
4.2 Competencies	English language

5. Requirements (if applicable)

5.1 For the lecture	<ul style="list-style-type: none"> Classroom with at least 180 seats, computer and video projector / Online course conducted through the MS Teams platform.
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5.2 For the seminar / laboratory	<ul style="list-style-type: none"> Room with at least 50 seats, computer and video projector / Online seminar conducted through the MS Teams platform; computers with data analysis software Excel and JASP.
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6. Specific competencies acquired

Professional competencies	<p>Knowledge of descriptive and correlational/predictive research designs (design, selection of participants and data collection).</p> <p>Knowledge of univariate and bivariate descriptive statistical indicators (design, selection of participants and data collection).</p> <p>Explain the advantages and disadvantages of the most important descriptive/correlational research methods.</p> <p>Conduct an observational research study (behavior sampling, participants sampling, observational data collection and data analysis).</p> <p>Conduct a survey research study (participants sampling, survey data collection and data analysis).</p> <p>Conduct a correlational/predictive research study (participants sampling, survey data collection and data analysis).</p> <p>Read and evaluate scientific research reports involving descriptive and correlational/predictive studies in cognitive science.</p> <p>Promotes scientific rigor in the design, execution, collection, processing, and interpretation of research data.</p> <p>Shows interest in scientific research in the field of cognitive sciences.</p>
Transversal competencies	<p>Mathematical competence and competence in science.</p> <p>Digital competence.</p> <p>Personal, social, and learning to learn competence.</p> <p>Carrying out complex professional tasks under circumstances of professional autonomy and independence.</p>

7. Objectives of the course (outcome of the acquired competencies)

7.1 General objective of the course	The course intends to familiarize the students with the main quantitative descriptive and correlational research methods in cognitive sciences.
7.2 Specific objective of the course	The course intends to present the core techniques of quantitative approaches involved in analyzing social phenomena. A special emphasis will be placed in developing the basic skills for using statistical software.

8. Content

8.1 Lectures	Teaching strategies	Remarks
1. Introductory course. Description of the course objectives, its content and evaluation criteria.	Presentation, discussion	
2. Introduction to research in cognitive sciences: scientific knowledge and scientific facts (data) Research paradigms in cognitive sciences.	Presentation, discussion, problem solving	
3. Measurement in cognitive sciences. Manifest and latent variable in cognitive sciences.	Presentation, discussion, case studies, exercises	
4. Descriptive observational study. Scientific observation vs. unscientific observation.	Presentation, discussion, case studies, exercises	
5. Descriptive survey study. Sample and population. Participants selection strategies in descriptive studies. Introduction of the concept of probability. Probabilistic and non-probabilistic sampling.	Presentation, explanation, demonstration, exemplification, dialogue, debate.	
6. Frequency distributions. Graphic representation of frequency distributions. Univariate descriptive statistics.	Presentation, discussion, case studies, exercises	

7. z transformation. Standardized scores. Normal distribution. Standardized normal distribution.	Presentation, discussion, case studies, exercises	
8. Correlational descriptive study. Correlation and causality. Advantages and limitations of correlational study. Bivariate descriptive statistics.	Presentation, discussion, problem solving	
9. Correlational-predictive study. Simple regression analysis.	Presentation, explanation, demonstration, exemplification, dialogue, debate.	
10. Correlational-predictive study. Multiple regression analysis.	Presentation, discussion, case studies, exercises	
11. Sampling distribution. The problem of estimating a population parameter using a randomly selected sample.	Presentation, discussion, case studies, exercises	
12. Estimating confidence interval for the population mean.	Presentation, discussion, case studies, exercises	
13. Estimating confidence interval for the population correlation and/or regression coefficients.	Presentation, explanation, demonstration, exemplification, dialogue, debate.	
14. Summary course. Descriptive/correlational/predictive research in the field of cognitive sciences. Advantages and limitations of descriptive research. Analysis of published research reports.	Presentation, discussion, case studies, exercises	

Mandatory references:

1. Anderson, N. (2007) Empirical direction in design and analysis. Mahwah, NJ: Erlbaum.
2. Cohen, B. (2001) Explaining psychological statistics. John Wiley & Sons, New York.
3. Gravetter, F. J., Wallnau, L. B., Forzano, L. A. B., & Witnauer, J. E. (2021). Essentials of statistics for the behavioral sciences. Cengage Learning.
- Leary, M. (2001) Introduction to Behavioral Research Methods. Allyn & Bacon, Boston
4. Shaughnessy, J. J. Zechmeister, E. B. & Zechmeister, J. (2012). Research methods in psychology. NY: McGraw Hill

8.2 Seminar / Laboratory	Teaching strategies	Remarks
1. Introductory course. Description of the course objectives, its content and evaluation criteria.	Presentation, discussion,	-
2. Introduction to research in cognitive sciences: science and pseudoscience.	Case studies and applications. Demonstration, exemplification, data analysis.	
3. Measurement in cognitive sciences. Measurement scales.	Case studies and applications. Explanation, demonstration, dialogue exemplification. Computer assisted data analysis based real or simulated data sets.	
4. Descriptive observational study. Computing inter-rater reliability.	Computer assisted data analysis based real or simulated data sets.	
5. Descriptive survey study. Sampling. Survey questionnaire construction.	Explanation, demonstration, dialogue exemplification. Computer assisted data analysis based real or simulated data sets.	
6. Computing univariate descriptive statistics using R & JASP.	Case studies and applications. Explanation, demonstration, dialogue exemplification. Computer assisted data analysis based real or simulated data sets.	
7. Using z transformation to answer important research questions: statistical standardization using R & JASP.	Case studies and applications. Simulation in supporting scientific papers. Computer assisted data	

	analysis based real or simulated data sets.	
8. Correlational descriptive study. Estimating bivariate descriptive statistics using R & JASP.	Case studies and applications. Explanation, demonstration, dialogue exemplification. Computer assisted data analysis based real or simulated data sets.	
9. Correlational-predictive study. Estimating regression parameters (intercept and slope) using R & JASP.	Case studies and applications. Explanation, demonstration, dialogue exemplification. Computer assisted data analysis based real or simulated data sets.	
10. Correlational-predictive study. Estimating regression parameters (intercept and multiple slopes) using R & JASP.	Case studies and applications. Explanation, demonstration, dialogue exemplification. Computer assisted data analysis based real or simulated data sets.	
11. Estimating a population parameter using a randomly selected sample using R & JASP.	Case studies and applications. Explanation, demonstration, dialogue exemplification. Computer assisted data analysis based real or simulated data sets.	
12. Estimating confidence interval for the population mean using R & JASP.	Case studies and applications. Explanation, demonstration, dialogue exemplification. Computer assisted data analysis based real or simulated data sets.	
13. Estimating confidence interval for the for the population correlation and/or regression coefficients using R & JASP.	Case studies and applications. Explanation, demonstration, dialogue exemplification. Computer assisted data analysis based real or simulated data sets.	
14. JASP application for descriptive univariate and bivariate data R & JASP.	Case studies and applications. Explanation, demonstration, dialogue exemplification. Computer assisted data analysis based real or simulated data sets.	

9. Correlations between the content of the course and the expectations of the representatives of the epistemic community, professional associations and representative employers in the field related to the program

The course covers typical topics taught in introductory research methods and data analysis at similar study programs, from the country and abroad; It is adapted to current knowledge in the field; The subjects taught are useful for professionals and researchers applying quantitative methods in cognitive sciences.

10. Evaluation

Type of activity	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	Correct, logical and coherent application of the concepts learned. Logical and accurate explanation and interpretation of the results.	Final Exam: multiple-choice questions and written answers	60%

10.5 Seminar/laboratory	Project	The project will be presented at the end of the semester during the seminar and will focus on applying the analyses learned.	40%
	Attendance	To be eligible for the exam during the main session, a student must attend at least 70% of the seminars. Those who do not meet this requirement can take the exam in the retake session.	
10.6 Minimum performance standard			
The students should prove that acquired the concepts, notions and tools of descriptive/correlational research and data analysis above a minimal accepted level. The students should prove that have the ability to apply this knowledge to practical problems and real life situations, above a minimal accepted level (minimum grade of 5)			

Date: 31.10.2024

Signature of the teacher in charge of the seminar

Assistant Professor Ionuț-Stelian Florean, Ph.D.

Signature of the teacher in charge of the lecture

Assistant Professor Ionuț-Stelian Florean, Ph.D.

Approval date in the department

Signature of the Head of the department /director