

ECTS Syllabus

Course Title	Advanced Integrated Research Methods & Statistics				
Course Code	PGT-212				
Course Type	Elective				
Level	Bachelor/1st Cycle				
Year / Semester	3 rd Year				
Teacher's Name	Dr. Giorgos Charalammbous				
ECTS	6	Lectures / week	1 /12	Laboratories / week	
Course Purpose and Objectives	This course builds upon prior knowledge acquired in <i>Integrated Research Methods</i> and provides undergraduate students with advanced quantitative methodological and analytical competencies for social science research. Students will deepen their understanding of quantitative research design, statistical reasoning, multivariate analysis, survey methodology, longitudinal approaches, causal inference, and contemporary computational techniques increasingly used across sociology, political science, psychology, education, communication studies, criminology, and public policy. Particular emphasis is placed on selecting appropriate statistical techniques, critically interpreting quantitative evidence, conducting reproducible research, and communicating findings effectively using statistical software environments. The course prepares students for undergraduate dissertations, empirical social research projects, postgraduate study, and evidence-based professional practice. The course aims to: 1. Extend students' quantitative methodological competencies beyond introductory research methods. 2. Develop an advanced understanding of statistical analysis within social science contexts. 3. Strengthen students' ability to design and implement rigorous quantitative research. 4. Develop competence in statistical software used in contemporary social science research. 5. Enhance students' capacity to critically evaluate quantitative evidence.				

	6. Introduce advanced analytical approaches increasingly employed in social science research. 7. Foster transparent and reproducible research practices. 8. Prepare students for independent quantitative undergraduate dissertation research.		
Learning Outcomes	Upon successful completion of this course, students should be able to: • Explain advanced principles of quantitative social research. • Distinguish between different quantitative research designs. • Evaluate validity, reliability, and measurement quality. • Demonstrate understanding of statistical inference and multivariate analysis. • Interpret advanced statistical outputs. • Explain causal inference principles. • Understand contemporary developments in computational social science • Formulate research questions suitable for quantitative investigation. • Select appropriate statistical techniques for empirical problems. • Critically evaluate published quantitative studies. • Identify methodological limitations in social research. • Assess assumptions underlying statistical procedures. • Interpret statistical findings within theoretical frameworks. • Prepare datasets for analysis. • Conduct statistical analyses using software packages (SPSS, R, or Stata). • Perform regression and multivariate analyses. • Produce reproducible analytical workflows. • Visualize and communicate quantitative findings. • Report results according to disciplinary standards. • Quantitative literacy • Data interpretation competencies • Analytical problem-solving skills • Scientific communication skills • Digital research competencies • Evidence-informed decision-making abilities		
Prerequisites	None	Required	None
Course Content	Module 1: Revisiting Quantitative Research Foundations (Week 1) Module 2: Data Preparation and Management (Weeks 2–3) Module 3: Statistical Inference and Estimation (Weeks 4–5) Module 4: Correlation and Multiple Regression Analysis (Weeks 6–7)		

	Module 5: Logistic Regression and Categorical Outcomes (Week 8) Module 6: Survey Research and Measurement (Week 9) Module 7: Introduction to Causal Inference (Week 10) Module 8: Longitudinal and Comparative Quantitative Analysis (Week 11) Module 9: Contemporary Quantitative Methods and Computational Social Science (Week 12) Module 10: Quantitative Research Project Development (Week 13)
Teaching Methodology	Lectures, discussion, and online interaction
References	Core Bibliography Bryman, A. (2016). <i>Social Research Methods</i> (5th ed.). Oxford University Press. Field, A. (2018). <i>Discovering Statistics Using IBM SPSS Statistics</i> (5th ed.). Sage. Creswell, J. W., & Creswell, J. D. (2018). <i>Research Design: Qualitative, Quantitative and Mixed Methods Approaches</i> (5th ed.). Sage. Recommended Bibliography Pallant, J. (2020). <i>SPSS Survival Manual</i> (7th ed.). McGraw-Hill. Gelman, A., Hill, J., & Vehtari, A. (2020). <i>Regression and Other Stories</i>. Cambridge University Press. Kline, R. B. (2016). <i>Principles and Practice of Structural Equation Modeling</i> (4th ed.). Guilford Press. Morgan, S. L., & Winship, C. (2015). <i>Counterfactuals and Causal Inference</i>. Cambridge University Press. Online Resources for Advanced Quantitative Methods Statistical Learning • Harvard Quantitative Methods Resources • ICPSR Summer Program Learning Materials • UCLA Statistical Consulting Resources • Khan Academy Statistics and Probability

	• OpenIntro Statistics Statistical Software Resources • CRAN (R documentation) • Posit (RStudio learning resources) • IBM SPSS Tutorials • Stata Learning Resources Open Data Resources • ICPSR Data Archive • UK Data Service • World Bank Open Data • OECD Data Explorer • European Social Survey (ESS) • Eurostat • World Values Survey
Assessment	Data management assignment, critical quantitative article evaluation, mid-term test, final quantitative project, final exam
Language	English