UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Modulo Quantitativo - A

2526-1-F5112P008-F5112P008002-A

Learning area

Experiential learning

Learning objectives

Knowledge and understanding

- Identifying the correct analysis to be performed among Principal Component Analysis, Regression, and Analysis of Variance to test a hypothesis.
- Identifying the variables to run the analysis

Applying knowledge and understanding

- Running Principal Component Analysis, Regression, and Analysis of Variance in
- Interpreting Results

Making Judgements

- Students will be encouraged to critically evaluate methodological choices, independently identifying the most appropriate techniques for specific theoretical questions and research contexts, with attention to the conceptual implications of analytical decisions.
  Communication Skills

Communication Skills

- Students will learn to clearly and effectively communicate the rationale behind analytical choices and to present the results obtained, appropriately articulating statistical inferences using technically accurate yet

accessible language.

Learning Skills

- Through practical use of the JAMOVI software and both individual and collaborative work, students will develop competencies that can be independently applied in future academic and professional settings, fostering continuous and self-directed learning.

Contents

We will use the *jamovi* statistical package to perform Principal Component Analysis on questionnaire data, Regression Analysis, and simple Analysis of Variance for experimental data. During the laboratories, students will learn how to perform these statistical techniques on different datasets and how to interpret the results.

Detailed program

- Brief Introduction to *jamovi*
- Principal Component Analysis
- Linear Regression (simple, multiple including mediation and moderation analyses)
- Analysis of Variance (between-subject, within-subject)

Prerequisites

Students should have basic knowledge of statistical software (such as SPSS or *jamovi*) to be able to perform basic operations (e.g., data entry, creation of variables, etc.). Furthermore, they should be attending or have attended the Quantitative Methodologies course, because it provides theoretical knowledge regarding the statistical techniques used.

Teaching methods

24 hours of interactive exercises (interactive teaching), organized into three-hour in-person sessions. Each session includes the presentation of analysis examples and the individual completion of similar exercises by the students.

Assessment methods

As part of the laboratory, students will perform specific exercises regarding the topics they studied (Principal Component Analysis, Regression, and ANOVA) to test their abilities in evaluating the validity of a series of hypotheses by conducting appropriate analyses and interpreting the results.

Textbooks and Reading Materials

Gallucci, M., Leone, L., & Berlingeri, M. (2017). Modelli statistici per le scienze sociali. Pearson

Danielle J. Navarro and David R. Foxcroft, Learning Statistics with jamovi: A Tutorial for Beginners in Statistical Analysis. Cambridge, UK: Open Book Publishers, 2025, https://doi.org/10.11647/OBP.0333

Sustainable Development Goals

QUALITY EDUCATION