



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

DIPARTIMENTO
DI PSICOLOGIA
"RENZO CANESTRARI"

PhD Program in Psychology

"Psychological methods, introductory and advanced statistical models"

Generalized Linear Model	Mariagrazia Benassi, Matteo Orsoni	8	03.02.2026 (9-13) 04.02.2026 (9-13)	Cesena (Laboratorio informatica 2)
Introduction to Python	Mariagrazia Benassi, Matteo Orsoni	8	04.02.2026 (14-18) 05.02.2026 (9-13)	Cesena (Laboratorio informatica 2)
The open science revolution: why and how to	Sara Garofalo	8	10.02.2026 (9-13; 14-18)	Cesena (Aula E)
Introduction to Structural Equation Modeling	Giulia Casu	4	20.02.2026 (14-18)	Bologna (Aula 2)
Post-hoc analysis: Do's and don'ts	Sara Garofalo	4	20.02.2026 (9-13)	Cesena (Laboratorio informatica 1)
Exploratory and confirmatory factor analysis	Sara Giovagnoli	8	03.03.2026 (14-18) 16.03.2026 (14-18)	Cesena (laboratorio informatica 2)

General info on the courses

The course requires mandatory attendance (students must attend at least 80% of the classes). In addition to attendance, individual study and the completion of a set of assignments are required. To complete the course and earn the corresponding credits, doctoral students must attend the classes and receive a positive evaluation for each required assignment (information for each assignment will be provided during the classes). The final assessment will be pass/fail (no grade will be given).

Teaching methods

The activity will include brief lectures, discussions in the class, and practical activities.

Description of the modules:

Module 1: Generalized Linear Model

Prof. Mariagrazia Benassi

Tutor Dr Matteo Orsoni

Students will learn the theoretical basis and application examples of the generalized linear model using SPSS and JASP.

References



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IBM SPSS (free access for Unibo Lab), JASP (free online access), Benassi, M., Bolzani, R., Forsman, L., Ådén, U., Jacobson, L., Giovagnoli, S., & Hellgren, K. (2018). Motion perception and form discrimination in extremely preterm school-aged children. *Child Development*, 89(6), e494-e506.

Module 2 Introduction to Python

Prof. Mariagrazia Benassi

Tutor Dr. Matteo Orsoni

Students will learn the basic concepts of programming with Python, the practical skills to import, analyze, and visualize data; create basic plots to foster autonomy in using open-source tools for research data processing and analysis.

References

Shovic, J. C., & Simpson, A. (2024). *Python All-in-One For Dummies* (3rd ed.). John Wiley & Sons. ISBN 9781394236152.

Module 3: The open science revolution: why and how to

Prof. Sara Garofalo

Students will learn about open science practices, including pre-registration and FAIR data sharing, to enhance transparency and reproducibility in research.

References

Open Science Collaboration. (2015). Estimating the reproducibility of psychological science. *Science*, 349(6251), aac4716. [DOI: 10.1126/science.aac4716](https://doi.org/10.1126/science.aac4716)

Gilbert, D. T., King, G., Pettigrew, S., & Wilson, T. D. (2016). Comment on “Estimating the reproducibility of psychological science”. *Science*, 351(6277), 1037-1037. [DOI: 10.1126/science.aad7243](https://doi.org/10.1126/science.aad7243)

Chambers, C. D., & Tzavella, L. (2022). The past, present and future of Registered Reports. *Nature Human Behaviour*, 6(1), 29-42. <https://www.nature.com/articles/s41562-021-01193-7>



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Module 4: Introduction to Structural Equation Modeling

Prof. Giulia Casu

Students will learn fundamental concepts and modeling procedures in Structural Equation Modeling (SEM). Students will explore and apply SEM techniques, including SEM with observed variables, latent variables, and a combination of both within mediation models.

References

Thakkar, J.J. (2020). Structural Equation Modelling. Springer. https://doi.org/10.1007/978-981-15-3793-6_3 [CHAPTERS 2 AND 3]

Module 5: Post-hoc analysis: Do's and don'ts

Prof. Sara Garofalo

Students will learn the limits and opportunities of using post-hoc analyses, focusing on when and how to apply them effectively in research.

References

Garofalo S., Giovagnoli S., Orsoni M., Starita F. & Benassi M. (2022) Interaction effect: Are you doing the right thing? *PLoS ONE* 17(7): e0271668. <https://doi.org/10.1371/journal.pone.0271668>

Module 6 Exploratory and Confirmatory Factor Analysis

Prof. Sara Giovagnoli

Students will learn the theoretical basis and application examples of Exploratory and Confirmatory Factor Analysis using SPSS and JASP.

References

Giovagnoli, S., Marotta, L., Magri, S., Muccinelli, M., Albani, A., Casu, G., ... & Benassi, M. (2020). Preliminary Validation of the CI-FRA Checklist: A Simple Screening Tool for Measuring the Early Signs of Reading and Spelling Disorders in Italian Primary Students. *Frontiers in Psychology*, 11, 516424.