COURSE UNIT INFORMATION SHEET (*SYLLABUS*)
2022/2023

Study Program: Postgraduate Diploma in Data Analysis in Psychology

Name **Meta-Analysis**
Teaching staff (Also indicate the Professor in charge) **Magda Sofia Roberto** (Professor in charge)
ECTS 6 ECTS
Functioning 18 hours/semester of theoretical-practical classes for 15 weeks
Learning goals To present different methods of meta-analysis and their advantages and disadvantages, exploring the approaches that exist for different study designs. Identify common issues frequently encountered in data extraction. Combine different measures and graphical representations that summarize the effects, perform subgroup analyzes and meta-regressions, and perform heterogeneity and bias diagnoses. Introduce meta-analysis using the R environment, particularly Jamovi, a free and open-source project that articulates the R language in a user-friendly platform similar to SPSS.
Skills to be developed 1. Plan, develop, analyze, interpret and report meta-analyses of different types of studies; 2. Extract data in different formats and convert effects to a standard unit; 3. Use Jamovi to perform the meta-analysis; 4. Estimate fixed and random effects models, prediction intervals and forest plots; 5. Analyze heterogeneity and assess how subgroup analysis and meta-regression can be applied to explain its reduction.

6. Interpret funnel plots and perform sensitivity analyses.

Prerequisites (precedences) *

In order to carry out this curricular unit, it is assumed that students have previous knowledge in Probability and Statistics.

Contents

1. Introduction to Meta-Analysis (in R, using Jamovi).

1.2. Basic concepts.

1.3. Dimension, determination and conversion of effects.

1.4. Fixed and Random Effects Models, Prediction Intervals and Forest Plots.

1.5. Heterogeneity, Subgroup Analysis and Meta-Regression.

1.6. Publication Bias: Funnel Graphs and Sensitivity Analysis.

Bibliography

Borenstein, M. (2019). *Common mistakes in meta-analysis and how to avoid them.* Englewood.

Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. (2021). *Introduction to meta-analysis.* John Wiley & Sons.

Cooper, H. M. (2017). *Research synthesis and meta-analysis: A step-by-step approach.* SAGE.

Cooper, H., Hedges, L. V., & Valentine, J. C. (Eds.). (2019). *The handbook of research synthesis and meta-analysis.* Russell Sage Foundation.

Higgins, J.P.T., Thomas, J., Chandler, J., Cumpston, M., Li, T., Page, M.J., & Welch, V.A. (2021). *Cochrane Handbook for Systematic Reviews of Interventions version 6.2*. Cochrane. Available from https://training.cochrane.org/handbook/current.

Teaching methods

Theoretical and practical, small groups and individual tasks (using Jamovi).

Evaluation Regimes (General and/or Alternative)

Successfully completing the Postgraduate Diploma course is conditional on the realization of three mandatory evaluations elements:

1. **Global approval on Learning control sheets in each curricular unit**. These sheets are multiple choice sheets in an applied context with questions and random answers alternatives and is performed in the *e-learning ULisboa* (*Moodle)* at the end of each c. u. (minimum grade of 9.5 values);

2. **At the end of the first semester**, an individual work that consists of a critical analysis of a scientific article, namely its methodological section and how the research hypothesis/objectives/questions are well articulated with the proposed data analysis strategy, the results obtained, and the discussion presented (minimum grade of 9.5 values);

3. **At the end of the second semester**, an individual work aimed at the application skills acquired in the various curricular units, applying advanced data analysis techniques, and including the analysis, interpretation and reporting of a set of data collected by application of a questionnaire.

Evaluation Elements (Dates due, weights, minimum required grades)

Approval in the **Postgraduate Program in Data Analysis in Psychology** requires obtaining a final weighted average (among the three assessment components) **greater than or equal to 9.5 values** among the following results:

1. **Average of the grades of all the Learning Control Sheets related to each curricular unit, with a weighting of 50% in the final grade;**

2. **Grade in the Critical analysis of a scientific article, with a weighting of 25% in the final grade;**

3. **Grade in an Individual Work with a weighting of 25% in the final grade.**

Rules for grade improvement

The grade improvement may only occur in the assessment elements performed individually.

Rules for students having previously failed the course unit *

Non-applicable.

Requirements on attendance and punctuality

Classes operate in a hybrid regime and punctuality and student participation in at least 2/3 of the total number of classes are assumed.

Rules for special students (workers, elite athletes, student body leaders, military, fathers/mothers, with special needs) **

General rules of the FPUL.

Language of instruction

Portuguese but English reading domain is necessary.

Disciplinary violations and penalties

Consult the "Regulamento Geral de Avaliação de Conhecimentos e Competências dos Alunos (RGACCA) (Capítulo IV)".

* If applicable