



**Code: M-PED/04**

**Credits: 9**

**Matter: Experimental pedagogy**

**Main language of instruction: Italian**

**Other language of instruction: English**

## **Teaching Staff**

### **Head instructor**

**Prof. Roberto Melchiori - roberto.melchiori@unicusano.it**

**Dr. Nicoletta Guglielmo - nicoletta.guglielmo@unicusano.it**

### **Introduction**

#### *1. Objective of the course :*

The main objective of the course is to develop knowledge, starting from an elementary level, useful for statistical analysis and data interpretation in research context and/or for educational intervention. The course is structured to ensure the immediate application of statistical concepts and data analysis in pedagogy. Students will be able to incorporate the results of their analysis into laboratory reports, and how to interpret results sections of journal articles, that means to stress conceptual understanding rather than mere knowledge of procedures.

### **Objectives**

#### *2. Course Structure:*

This is an undergraduate-level distance-learning course in research methods and statistics and it is divided in nine modules corresponding to the nine formative credits. Course delivery is mainly asynchronous on the proprietary LMS with recorded lessons and corresponding slides and documentation. The interactive teaching is delivered through the forum (virtual classrooms) and video-chatrooms that constitute an synchronous discussion space, where teachers and / or tutors identify the most significant topics and subjects of teaching and interact with students. In particular, in the interactive teaching area, e-tivity with information on course contents will be proposed to the students.

### **Competencies:**

Upon completion of the course, the students should be able to: - appraise methodological approaches and tools of empirical and experimental research in the educational field; - outline, in its various phases, a project in the educational field; - know and apply assessment tools and methodologies in the context of educational interventions; - analyse and evaluate, through appropriate methodologies and procedures, the processes and results of educational projects; - document, through appropriate presentations, research data elaborated in relation to predefined problems and hypotheses, more specifically:

- 1) Use and interpret basic statistical analyses:
  - Summarize distribution information.
  - Appropriate use of parametric/non-parametric statistics.
  - Tests for association of categorical and correlation of continuous data.
- 2) Impute data into a spreadsheet (such as Excel) and use of a statistical analysis package (JASP):
  - Application of statistical tests through JASP GUI.
- 3) Interpret basic statistical analyses and write up the results as a report in APA style.

## **Syllabus**

### *3. Programme of the course:*

The course is aimed at dealing with some specific topics related to the research in the field of education through Experimental Pedagogy scientific paradigm.

The students will have the possibility to know:

- the differences between observation research and experimental research;
- the qualitative and quantitative models in the educational research;
- the empirical and experimental research phases;
- the importance of explorative-qualitative research in education and in teaching practice;
- some research tools and proceedings that can be used into school.
- Principles of inferential statistics: basic concepts and test for categorical data
- Parametric Tests of Hypotheses (and non-parametric Chi square)
- Measure of variable relationships: correlation and regression

## **Evaluation system and criteria**

**Student Project work** (50% of final grade): short presentation of the student about the results of data analysis conducted through the JASP software on an example database. Appraisal of critical reasoning and reporting competence.

**Final exam** (50% of final grade): A written test, in which the student should choose 2 questions (or exercises) out of 4. The evaluation of the written test will be determined by the degree of knowledge demonstrated, use of the correct test and related skills.

### **Bibliography and resources**

#### *4. Materials to consult:*

Will be posting further materials on the subject matter if necessary.

#### *5. Recommended bibliography:*

Francesco M. Melchiori, *Psicometria*, Roma, Anicia, 2014.

Roberto Melchiori, *La qualità della formazione*, Lecce, PensaMultimedia, 2012