SYLLABUS DEL CORSO

Statistica per la Ricerca Sociale (blended)

2425-1-E2004P006

Learning area

3: Study of socio-economical and cultural aspects related to communication processes.

Learning objectives

Knowledge and understanding

- Real-world investigation. Measurement Scales. From concepts to variables: operationalization of concepts into statistical measures.
- Data production methodology in official statistics, with special regard to the National Institute of Statistics - Istat the European Union statistical information - Eurostat.
- Descriptive statistics: the quantitative synthesis of psychosocial and behavioural phenomena. Uni- and bivariate analysis.
- Introduction to statistical inference. Test on the mean and on correlation. Non parametrics test for independence.

Applying knowledge and understanding

- Statistical knowledge as interdisciplinarity.
- Recognizing and integrating data with other information sources.
- Basic skills in data analysis techniques, in particular with the package IBM SPSS, with mention to open source packages.
- Essential elements for the quantitative analysis of situations and phenomena.
- Statistical premises and procedures.
- Computation or estimation of statistical measures with software. Elaboration and understanding of analytical results.

- In official statistics, metadata recovering and data quality assuring.
- UN Sustainaible Development Goals in official statistics.
- Critical reading of numerical information as reported in the media.

Contents

The course provides students with theoretical knowledge and analytical tools for processing qualitative and quali-quantitative data. Methods for data production are explored with reference to official domestic statistics as part of the Eurostat network. The operationalization of concepts and phenomena, the identification of their measurement scales are explained with reference to multidisciplinary fields, in the first place referred to acquired undergraduate courses. The didactic promotes self-directed learning in statistical-computational reasoning, in mastering basic data analysis skills and in accessing numerical information disseminated both by official agencies and in the media.
Embracing the didactical distinction between descriptive and inferential statistics, the course sketches also experimental statistics. So-called self-reported data are faced mainly in the context of participation and e-participation.

Detailed program

- Measurement scales.
- Data collection.
- Official statistics. Types of data collection and surveys.
- Data quality: concepts and definitions.
- Statistical variables. Graphical representation.
- Measures of synthesis and position. Herzel statistical synthesis.
- Variability and dispersion.
- Ratios and indexes. Composite indicators.
- Bivariate analysis. Contingency, Spearman and Pearson correlation.
- Principles of probability. Notable probability distributions. From population to samples.
- Inference: parametric and distribution-free hypothesis testing and related confidence intervals.
- Test of hypothesis on the population mean. One sample, two correlated samples and independent samples t-tests
- Test of hypothesis in bivariate analysis

Prerequisites

Base math: high school commonly shared knowledge.
Informatics: competencies related to the first-semester course are required. Specific mathematics and/or informatics support paths will be devised when needed.

Teaching methods

The course is in blended learning with different teaching methods:

- 13 2-hour frontal lessons in didactic method, with planned interaction when assessing full understanding of new topics;
- 3 2-hour frontal interactive lessons, with excercises and the like;
- 3 2-hour streaming interactive lessons, with analysis of official statistics websites and related production;
- 9 2-hour streaming software interactive application.

The first module develops along with two thematic modules. The first one concerns statistical methodology, with emphasis on the meaning and the rationale at the basis of analytical concepts, with specific attention to psycho-social topics. Computer-assisted practice transpose systematically this knowledge into applications, so as to set them into their context., by means of IBM Spss software together with open-source packages for statistical computation. All computer-assisted practice are frontal and in person, as well as first and last theoretical lessons, while the other theoretical ones are frontal in streaming.

Mastering access to official statistics is at the core of the second thematic module, with Istat as a node of the Eurostat network, together with their open database. Official data are widely explored with reference to the pertaining disciplinary fields. Accessing the official statistical website, students practice how to retrieve the online documentation of interest, data quality assurance and metadata. Web conferences face the methodological aspects of official data, while hands-on activities allow navigating official data portals.

A section of the online activities consists of teamwork, exercises and simulations freely accessible on the e-learning platform, with the aim of harmonising the two modules. namely setting theoretical knowledge into the current publicly available data information. From the teaching point of view, mastering this competence enables to debate the huge data flow coming from all media, also in the light of the official statistical production. This debate takes place in groups of students based on issues and topics at the base of their academic interest.

Assessment methods

The assessment is strictly written and is composed of a project workand in a computer exam on Moodle platform, with no intermediate tests.

The project work , henceforth project, consists of an inspection and a critical analysis on a topic investigated by means of the statistical methods of designated institutions, where each student develops a communication scheme of a topic. Availability of data and related database from official statistical institutes are reckoned in terms of methods and metadata. Then the chosen official statistical topic is critically compared with current general information on the matter. This exam section assesses competencies in identifying fundamentals of descriptive statistics in the quantitative informative dissemination, of its unbiased reading in the light of modes and collection instruments, of the optimal communication strategies. Besides the pertaining methodological aspects, students are required to provide, as original contributions, a concise representation of issues, an infographic and a critical comparison of the use of data in current information. The project provides 35% of finale grade.

The computerised exam on Moodle platform consists of a comprehensive basic statistical analysis, both descriptive and inferential, on a data set that simulates a simple real survey. The step-by-step solution to the problem is performed by means of IBM Spss and it requires the mastery of both the theoretical statistical fundamentals and the basic software functions. These problems, developed in an organic sequence, are answered with numerical closed, True/False, multiple-choice quizzes and graphs. Some mutiple-choice questions, with some highlights on key methodological aspects, complement the exam. This section of the exam calls for competence in the conceptual understanding and the problem-solving attitude on bth theoretical and computational ground. The computerised exam on Moodle platform provides 65% of finale grade.

Textbooks and Reading Materials

Aron, A., Coups, E.J., Aron, E.N. (2018). *Fondamenti di Statistica. Introduzione alla Ricerca in Psicologia*. Pearson Editore. ISBN: 9788891905185. Digital edition: ISBN9788891911841.

Websites and additional learning material as indicated by instructors.

Although this course is held in Italian, for Erasmus students, course material is available also in English, and students can sit the exam in English if they wish.

Sustainable Development Goals

GENDER EQUALITY | PEACE, JUSTICE AND STRONG INSTITUTIONS