COURSE SYLLABUS

Statistics For The Social Sciences

1920-1-E2004P006

Learning area

n. 3: Study of socio-economical and cultural aspected related to communications processes

Learning objectives

Knowledge and understanding

Real world investigation. Measurement Scales. From concepts to variables. The methodology of official statistics production: Istat as part of Eurostat.

Descriptive statistics: a quantitative synthesis of psychosocial and behavioural phenomena. Uni- and bivariate analysis.

Introduction to statistical inference.

Applying knowledge and understanding

Statistical knowledge as interdisciplinarity

Basic skills in data analysis techniques, in particular, applying software IBM SPSS, with mention of open source. Proper setting of the statistical answer to a question, correct recognition and elaboration of analytical results.

In official statistics, retrieving metadata and data quality assurance. In the various media, critical reading of numerical information.

Contents

The course provides students with theoretical knowledge and analytical keys for accessing processing qualitative and quali-quantitative data.

Methods for data production are explored in official domestic statistics as part of Eurostat. The operationalization of concepts and phenomena, their measurement scales are explained referring to data collection and surveys about multidisciplinary fields.

The course promotes self-directed learning in statistical-computational reasoning, in acquiring data analysis basic skills and in accessing numerical information disseminated both by official agencies and in the media.

Embracing the didactical distinction between descriptive and inferential statistics, traditionally restricted to finite population, experimental statistics issues are sketched.

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.

- Variability and dispersion.

- Ratios and indexes. Composite indicators.

- Bivariate analysis. Contingency, Spearman and Pearson correlation.

- Principle of probability. Notable probability distributions. From population to samples.

- Inference: hypothesis testing and confidence intervals.

- Test of hypothesis for the difference of two means: the cases of independent or paired samples.

. Null hypothesis testing in bivariate analysis.

Prerequisites

Base math: high school commonly shared knowledge.

Competence in Informatics, a course of the first semester, is assumed.

A revision of required informatics knowledge will be performed hands-on in computer laboratories. Specific support path will be devised when needed.

Teaching methods

The course includes frontal lessons and computer laboratory applications. Frontal lessons are divided into two thematic modules.

The first module concerns statistical knowledge, with emphasis on the meaning and the rationale at the basis of analytical concepts. Computer laboratory applications allow students to practice by means of the software IBM Spss.

Access to official statistics forms the second thematic module. Istat web site, together with their open database, is explored. Students practice how to retrieve the corresponding online documentation, with particular attention to data quality and metadata. After some brief illustrations, students access official data in hands-on sessions in computerized laboratories.

Students are required to tackle a topic with a written report that analyses numerical information in the media compared with official statistics.

Assessment methods

The examination is computerized. It is divided into an applicative session and a synthetic review, on a freely selected topic, of the numerical information provided by official statistics and reported in one or two references from the media. Candidates are required to upload their review by means of a form, available on e-learning.

In the applicative section, quiz or multiple choice tests require answers to exercises with Spss . In addition, some open questions ascertain the actual understanding of the methods implied and the problem-solving attitude on a computational-statistical ground.

With reference to the synthetic review, assessment focusses on the correct recognition of the characteristics expressed by the numerical information, on the accuracy of data treatment proposal and on critical interpretation of the overall information.

When suitable, *in itinere* examinations will be issued. Upon student's or (associate) professor's request, an oral examination can complete the computerized exam on all the course topics, with open questions. The written evaluation can either increase or decrease the final grade up to a maximum of 4 points.

Textbooks and Reading Materials

Detailed information on references are to be published on the e-learning web page related to the course.