UNIVERSITÀ DEGLI STUDI LINK

PROGRAM
**POLITICAL SCIENCES AND INTERNATIONAL RELATIONS**
CURRICULUM: INTERNATIONAL POLITICS AND GOVERNMENT
A.Y. 2023/2024

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|---|---|
| course | Statistics |
| ects (cfu) | 9 |
| year running | 1° |
| semester | first |
| lecturer | Flaminia Musella |
| e-mail | f.musella@unilink.it |
| consultation time | By appointment |

## LEARNING AND SKILLS OUTCOMES

The course is split into two parts: the first part (6 CFU) provides the basics on descriptive statistics; the second part (3 CFU) introduces to the probability and probability models. Different learning outcomes belong to each part:

1. **KNOWLEDGE AND UNDERSTANDING**: the first part provides the main descriptive statistical tools in the field of observational data analysis with a particular focus on the socio-political and economic context. The second part provides the basic knowledge of probability and probability model.
2. **APPLIED KNOWLEDGE AND UNDERSTANDING**: based on the knowledge acquired in the first part, the student will be able to build and comment tables and graphs, calculate and interpret synthetic distribution indicators, test the dependence between two variables with the use of appropriate indices. Based on the knowledge acquired in the second part, the student will be able to solve probability calculation exercises, use the main probabilistic models.
3. **MAKING JUDGEMENTS**: the theoretical and applied knowledge acquired in the two parts allow the student to be able to collect sample data, analyse qualitative and quantitative information and interpret the results of observational studies.
4. **COMMUNICATION SKILLS**: the theoretical and applied knowledge acquired in the two parts allow the student to written synthesize, by using technical language, the information arising from the analysis of socio-economic data.
5. **LEARNING SKILL**: At the end of the teaching, the student will have acquired the necessary skills to be able to analyse real data in the context of socio-economic investigations.

## COURSE DETAILED CONTENTS

The weekly teaching involves lecture and practices. During the practices, students will analyze data, optionally by groups, by using the techniques presented in the previous theoretical lessons. Data analysis is helped by the teacher with the aim of reinforcing the acquired theoretical knowledge. The course is in English as well as the teaching materials and the textbook.

**FIRST PART (6 CFU):**

1. Introduction and data gathering:
   - Data collection
   - Population and sample
   - Sampling methods

2. Descriptive statistics:
   - Organizing and summarizing data: qualitative data, quantitative data, tables and graphs
   - Numerically summarizing data: measures of central tendency (computation, interpretation and properties), measures of dispersion (computation, interpretation and properties), measures of central tendency and dispersion for grouped data, measures of position and outliers, boxplot
   - Relations between two variables: scatter diagram, correlation, Least-square regression, the coefficient of determination, contingency table and association

**SECOND PART (3 CFU):**

1. Probability and Probability distribution:
   - Probability: rules, counting techniques
   - Discrete random variables: Bernoulli probability distribution and Binomial probability distribution

## SUGGESTED PRE-REQUISITE QUALIFICATIONS

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## FINAL EXAM

The evaluation is based on a written and practical exam divided into two parts.
It is worth noting that, for non-attending students or for specific and certificated situations, the examination procedure can be agreed directly with the lecturer.
The lecturer may ask an oral integration to practical exam if needed.
Due to pandemic, evaluation features may change.

## ASSESSMENT METHODS

The exam is written and practice lasting one hour and half.
I Part: practical exam lasting 1 hour for testing the acquired expertise in analyzing data by using Excel; some theoretical issues may be explored.
II Part: practical examination lasting 30 minutes consisting of multiple-choice questions and/or exercises to be performed in written mode.
The final grade will be given by the weighted average of the marks obtained in the two parts.

## MARKING CRITERIA

Maximum score (30) is assigned for students able to build and proper comment descriptive statistics and to compute probability; minimum score (18) is assigned for correct and complete computation without any comment.

## TEACHING MATERIALS

- M. Sullivan III, *Fundamentals of Statistics*. V edition, Pearson Edition
- Teaching materials provided by the lecturer

## FINAL RECOMMENDATIONS

Due to the subject, the lecturer recommends attending the class.