DIPARTIMENTO
DI MATEMATICA,
INFORMATICA ED ECONOMIA

COURSE: Statistics			
ACADEMIC YEAR: 2017/2018			
TYPE OF EDUCATIONAL ACTIVITY: Characterizing			
TEACHER: Antonio Azzollini, Rosaria Simone			
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phone:		mobile (optional):	
Language: Italian			
ECTS: 10	n. of hours: 80	Campus: Potenza Dept. of Mathematics, Computer Science and Economics	Semester: 2nd

EDUCATIONAL GOALS AND EXPECTED LEARNING OUTCOMES

The course is the first teaching class in Statistics for the Students and introduces to elements of foundation of Probability theory and Statistics.

The main goal of the course is to provide students with a satisfactory background to perform data analysis and to manage decisional process with uncertainty. At the end of the course, the student is expected to be able to select proper statistical tools and methodology for different circumstances, being aware of their advantages and limitations, in order to interpret and report the results of a statistical analysis.

The main topics to be covered are:

- Introduction to exploratory data analysis
- Main inferential techniques
- Foundation of probability theory.

The main expected learning outcomes are:

- Proper application of tools from Exploratory data analysis
- Identification of statistical problems and understanding of the main probability methods.
- Main statistical techniques, terminology, application and interpretation of the main graphical

PRE-REQUIREMENTS

It is advisable to have a good background in Mathematics, with specific reference to:

- set theory
- real numbers
- elements of calculus

SYLLABUS

First module

Data Exploratory Analysis (15 hours of theoretical lessons + 5 hours of tutorials)

Statistical variables, frequency distributions, graphical representations, statistical indexes, location and variability indexes, measures of association and linear correlation.

Second module

Probability Theory (18 hours of theoretical lessons + 7 hours of tutorials)

Foundation of probability theory. Discrete random variables. Continuous random variables: the Normal distribution. Central limit theorems and applications

Statistical Inference (18 hours of theoretical lessons + 8 hours of tutorials)

Estimation Theory and properties of Estimators. Sampling methods. Hypothesis testing and confidence intervals.

Statistical Models (10 ore)

Simple linear regression models: introduction and examples

TEACHING METHODS

Theoretical lessons, Classroom tutorials, Other activities (Seminars given by experts).

EVALUATION METHODS

Intermediate verifications, Final written examination.

- The final written examination is about all the course programme; it is tailored to assess students' understanding and developed skills with respect to the different topics. The examination is composed by 4 exercises aiming to test both computational and theoretical background of the students. The examination is successfully passed if the student achieves a score of at least 18 out of a maximum of 30. The examination lasts 2 hours. Textbooks, personal laptops and smartphones are not allowed. The only devices allowed are personal calculators and statistical tables in paper format.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

Transparencies and Slides will be shared with students.

Main reference textbook:

- *D. Piccolo (2010), Statistica per le Decisioni, Il Mulino*

G. Cicchitelli (2012) Statistica: principi e metodi. Seconda edizione. Pearson Italia, Milano.

INTERACTION WITH STUDENTS

Educational materials will be shared with students. During the second semester, office hours are on Friday morning before the teaching class. It is advisable to contact the Lecturer to make an appointment.

EXAMINATION SESSIONS (FORECAST)[1]

13/04/2018, 18/05/2018, 02/07/2018, 13/07/2018, 07/09/2018, 16/11/2018

SEMINARS BY EXTERNAL EXPERTS YES x NO □

FURTHER INFORMATION The programme is divided into two modules: the first module of 20 hours will be lectured by Prof. Antonio Azzollini, the second module of 60 hours will be lectured by PhD Rosaria Simone.

[1] Subject to possible changes: check the web site of the Teacher or the Department/School for updates.