

MEDICAL STATISTICS (PH000008)

1. language

Italian

2. course contents

Coordinator: Prof. PASTORINO ROBERTA

Academic Year: 2022/2023

Year Course: 1

Semester: 2

UFC: 4

Modules and lecturers:

- MEDICAL STATISTICS (PH000008) - 4 cfu - ssd MED/42

Prof. Roberta Pastorino

3. bibliography

Lecture notes (Mandatory)

Biostatistica, Wayne W. Daniel (EdiSES) (recommended for the descriptive statistics and statistical tests)

Jekel - Epidemiologia, biostatistica e medicina preventiva (EDRA) (recommended for the descriptive statistics and statistical tests)

4. learning objectives

The aim of the course is to acquire theoretical knowledge and practical skills regarding the collection, processing and interpretation of data of health interest.

Knowledge and understanding (Dublino 1)

Students have to acquire the essential tools of descriptive and inferential statistics

Applying knowledge and understanding (Dublino 2)

Students have to identify and apply the correct analysis methodology based on the question of interest and the data available.

Making judgements (Dublino 3)

At the end of the course, the student have to interpret the results of a statistical analysis with the aim of evaluating the functioning of a therapy, medical technique, drug etc.

Communication skills (Dublino 4)

At the end of the course, the student must be able to correctly and effectively communicate the results of a statistical survey

Capacità di apprendere – Learning skills (Dublino 5)

The student, on the basis of the elements acquired, must be able to expand their statistical knowledge / update themselves with texts and scientific papers.

5. PREREQUISITES

No prerequisites, just normal high school math knowledge

6. teaching methods

The course is organized with a series of lectures and exercises also with the aid of the computer.

The lectures allow the achievement of theoretical knowledge of descriptive and inferential statistics. The exercises (on paper and with the aid of computers) allow the achievement of the application knowledge necessary for the correct use of theoretical techniques on real data.

Knowledge and understanding (Dublino 1):

During the lectures, the teachers will illustrate the main topics of Epidemiology and Biostatistics. The student is pushed to develop and improve their own skills of observation of the different types of studies and comparison of measures/ methods.

Applying knowledge and understanding (Dublino 2):

During the lessons, students are invited to an active participation, stimulating their ability to analyze the different types of clinical studies, to apply the different statistical methods and soliciting questions and discussion.

Making judgements (Dublino 3):

During the practices, the students are encouraged to analyse/ interpret the different scientific problems and to solve them using the biostatistical abilities acquired.

Communication skills (Dublino 4):

Students are invited to ask questions and give answers both during lectures and practices. If the language does not appear correct from the point of view of the terminology, the teacher explains the correct way to express the concept in order to develop in the student an appropriate technical / scientific language.

Learning skills (Dublino 5):

The lessons are explanatory of the main topics of the epidemiology and biostatistics. However, students are encouraged to deepen these contents using textbooks, e-learning, or other subsidies and invited to propose doubts and / or questions at the end of the lesson or requesting a personal appointment with the teachers.

7. other informations

The teacher is available for clarification outside the scheduled lesson hours. Appointment to be agreed via email.

8. methods for verifying learning and for evaluation

Prova scritta con domande teoriche ed esercizi (valutazione con punteggio massimo 30 lode). Il voto massimo viene ottenuto con un compito corretto nella sua interezza. Il punteggio minimo per passare l'esame è 18. Nella prova viene riportato a fianco di ogni esercizio/domanda il punteggio massimo ottenibile in caso di risposta completamente corretta.

L'esame valuta: a) la conoscenza dei metodi statistici (**Dublino 1**); b) l'applicazione di tali metodi nel corretto contesto (**Dublino 2**); la comprensione dell'obiettivo e del disegno dello studio clinico e dei requisiti per l'applicazione dei test di ipotesi (**Dublino 3 e 5**); l'utilizzo di una corretta terminologia (**Dublino 4**).

Written test with theoretical questions and exercises (evaluation with a maximum score of 30 honors). The maximum grade is obtained with a correct assignment. The minimum score to pass the exam is 18. In the test, the maximum score that can be obtained with a correct answer is shown next to each exercise / question.

The exam evaluates: a) knowledge of statistical methods (Dublin 1); b) the application of these methods in the correct context (Dublin 2); understanding the objective and design of the clinical study and the requirements for the application of hypothesis tests (Dublin 3 and 5); the use of correct terminology (Dublin 4).

9. program

Introduzione agli strumenti per una lettura critica di un articolo scientifico.

Introduction to Biostatistics: Descriptive and Inferential Statistics.

Concepts of population, sample and statistical unit.

Classification of variables (quantitative and qualitative variables).

Collection and organization of data: Frequency tables and graphs.

Measure of positions

Measures of dispersions

The concept of probability.

The normal distribution and the binomial distribution.

Inferential statistics: introduction to hypothesis tests and confidence intervals.

Student's T test.

Chi-squared test and introduction to association measures (odds ratio and relative risk).

The concept of p-value.

Introduction to the tools for a critical reading of a scientific article.