The Hebrew University of Jerusalem

Syllabus

STATISTICS FOR PHARMACOLOGISTS - 52024

Last update 30-09-2020

HU Credits: 3

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: Statistics

Academic year: 0

Semester: 1st Semester

Teaching Languages: Hebrew

Campus: Ein Karem

Course/Module Coordinator: Shir Moshe

Coordinator Email: shir.tapiro@mail.huji.ac.il

Coordinator Office Hours:

Teaching Staff:

Ms. Shir Moshe,
Mr. Nadav Har-tuv

Course/Module description:

The main topics that will be studied in this course "statistics for pharmacologists" are:

1. Descriptive statistics;
2. Linear relationship between two variables;
3. Probability
4.Random variables (Discrete and Continuous random variables)
5. Normal distribution
6. Statistical inference - point estimation, confident intervals, hypothesis test
7. Tests of independence
8. Nonparametric statistics

Course/Module aims:

To provide a basic knowledge in probability and Statistical inference.

Learning outcomes - On successful completion of this module, students should be able to:

1. Basic concepts in probability.
2. Quantitative tools enabling them to solve problems and assist them in decision making.
3. Fundamental abilities to estimate risks.
4. Basic tools for dealing with situations of uncertainty.
5. Means of presenting, interpreting and analyzing quantitative data.

Attendance requirements(%):

Teaching arrangement and method of instruction: ■ Frontal Lecture - 2 academic hours a week.
■ Frontal Tutorial - 1 academic hour a week.
■ Home exercises, will be given weekly, in order to practice the material studied in the course.

Course/Module Content:

[1] Descriptive Statistics:
• summarizing and organizing data in tables and graphs;
• measure of central tendency – mean, median, mode and percentile; ■ measures of variability – range, variation and standard deviation;
• linear relationship between two variables - correlation and simple linear regression.

[2] Probability:
• Probability:
o Events and their relationships: union and intersection, relationships between events, Van diagram
o Binomial coefficient
o multiplication rule, independent events, Bayes' theorem;
• Discrete random variables:
o expected value, variance and standard deviation;
o Uniform distribution, the Bernoulli and Binomial distributions.
• Continuous random variables:
o Density function, CDF , expected value, variance and standard deviation.
o Uniform and Exponential distributions
o Normal distribution: Z
• Law of Large Numbers and the Central Limit Theorem.

[3] Statistical inference:
• Point estimation and Confidence interval and Statistical hypothesis testing.
• Tests of Independence
• Non-parametric tests:
o One sample Wilcoxon signed rank test
o Two sample Wilcoxon rank sum test

Required Reading:
1. Talma Levitan and Alona Raviv – Introduction to Probability and Statistics – Probability, 2nd Edition (Hebrew).
2. Talma Levitan and Alona Raviv – Introduction to Probability and Statistics – Statistical Inference (Hebrew).

Additional Reading Material:

Course/Module evaluation:
End of year written/oral examination 100 %
Presentation 0 %

Participation in Tutorials 0 %
Project work 0 %
Assignments 0 %
Reports 0 %
Research project 0 %
Quizzes 0 %
Other 0 %

Additional information: