Department of   Medical Laboratory Analysis + Medical Microbiology

College Health Science

University of Cihan- Sulaimaniya

Subject: Biostatistics

Course Book – Year 3/ Semester 1

Lecturer's name:

Saya J. Aziz
Academic Year: 2023/2024

Course Book

1. Course name	Biostatistics
2. Lecturer in charge	Saya J. Aziz
3. Department/ College	Medical laboratory Analysis (MLA)
4. Time (in hours) per week	4 hours
5. Office hours	Saturday from 9:00 – 2:00
6. Course code	MLA 3105
7. Teacher's academic profile	https://uni.sulicihan.edu.krd/qa/profile.php?id=110
8. Keywords	SPSS ,Statistical descriptive, biostatistical data analysis, t-test, Chi-square test, correlation Coefficient, and Linear regression

9. Course overview:

Biostatistics is one of the fundamental disciplines that underpins health care research at all levels, as well as health evaluation and disease prevention. It is the scientific study of describing, summarizing, and analyzing health data. An understanding of biostatistics methods is required for the design and execution of health studies. The course emphasizes the fundamental importance of biostatistics in both health research and health care practice. Biostatistics is rapidly evolving to address new areas involving the collection and analysis of large, complex data sets.

10. Course objective:

- Using basic statistical principles and applications to clinical and public health problems.
- The following statistical inference will be covered: t-tests, chi-square tests, ANOVA, and linear regression.
- Results interpretation and presentation

11. Student's obligation:

- In order to complete this course, you will need to work through each unit and all of its assigned materials.
- Students will be required to perform some calculations by hand and using a calculator.
- Keep up-to-date with all readings and assignments and seek help if you do not understand a concept or problem.
- Biostatistics is a subject in which each new concept builds on previous concepts. Thus, it is imperative that you understand every concept, or you will be unable to understand later ones.
- Start the readings and homework early, giving yourself plenty of time to attend office hours, ask questions in class, and seek outside help if necessary. I am here to help you learn this material, so I encourage you to make use of us during office hours and class time.
- All cell-phones and pages must be set to silent mode throughout the time of the class.

12. Forms of teaching
- PowerPoint slides on data-show
- Computer Using
- Whiteboard using
- Goggle Classroom using
- Case study within subgroups

13. Assessment scheme
Midterm Practice Exam	15%
Quizzes and Activities	5 %
Final Practice exam	20%

14. Student learning outcome:

Upon successful completion of this course, the student will be able to:
- Familiar with basic statistical methods.
- Compute and interpret summarizing statistics, such as Mean, Median, Mode, and Standard Deviation.
- Learn basic techniques for exploring and describing data sets.
- Understand of sampling and population of the data.
- Learn some statistical graphics
- Recognize and give examples of different types of data arising in public health and clinical studies
- Provide students an appreciation of the analyses of the paired data and using the hypothesis testing
- Interpret and explain a p-value and significant levels
- Perform a two-sample t-test and interpret the results
- Chi-square test for categorical data

15. Course Reading List and References:

- **Reference:**

    PALLANT Julie, (2007) SPSS survival manual: a step by step guide to data analysis using SPSS for Windows, Open University Press
- **Useful references:**
    - o https://www.ibm.com/products/spss-statistics/resources –
    - o https://www.spss-tutorials.com

Lecture No	Topic
16. The Topics:	

Lecture No	Topic
1, 2	**Week 1: Lecturing-Introduction** - Sample Files , Defining variables, Data entry in SPSS - Opening a Data File - Reading Excel Data, Saving Data.
3	**Week 2: Data Analysis: Descriptive Statistics** - Frequency distribution - Central tendency and dispersion - Outputs - Interpretation
4	**Week 3: Creating and editing charts** - Chart creation basics - Using the Chart Builder gallery - Defining variables and statistics - Adding text - Creating the chart
5	**Week 4: Statistical Hypothesis** - Association between quantitative and qualitative or quantitative variables - Association between two qualitative variables
6	**Week 5: Checking Data for Normality** - How to understand that the data have come from a normally distributed population - Outputs - Interpretation
7	**Week 6: Student's t-test for Hypothesis** - Testing One-sample t-test - Outputs, Interpretation - Independent samples t-test - Commands ,Outputs ,Interpretation
8	**Week 7: t-Test** - Paired t-test - Commands ,Outputs, Interpretation
	Week 8 and 9: Midterm Exam
10	**Week 10: Association between Two Categorical Variables:** Chi-Square Test of Independence - Chi-square test of Independence - Commands ,Outputs ,Interpretation
11	**Week 11: Interpretation Association between Two Continuous Variables: Correlation Pearson correlation** - Commands for scatter plot - Commands for Pearson correlation Outputs
12,13	**Week 12: Correlation Coefficient** - Interpretation Spearman's correlation - Commands for Spearman's correlation - Outputs Interpretation Partial correlation - Commands Outputs Interpretation

14, 15	**Week 13: Regression Analysis**
	- Simple linear regression
	- Commands, Outputs ,Interpretation
	- Multiple linear regression

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Final Examination

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17. Peer review