Course Book
Computer Application
for Biostatistics
Using SPSS

2nd Year Biology dep.
Academic Year 20223-2024

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Class Office Hours: Monday theory 8:30 –10:30

2nd stage : Wednesday Practical 8:30- GA ,10:B12:30GC

Thursday , Practical 8:30- GD ,10: GE ,12:30G F.

Course Book

Computer Application (SPSS) **Pakhshan Ahmad Hamad**	**1. Course name** **2. Lecturer in charge**
Mathematic-Education	**3. Department/ College**
e-mail: paxshan.ahmad1@su.edu.krd **Tel: (optional)**	**4. Contact**
Theory: 1 **Practical: 2**	**5. Time (in hours) per week**
Availability of the lecturer to the student during the week **Monday 8:30 –2:30**	**6. Office hours**
	7. Course code
e.g Webpage, Blog, Moodle … **or few paragraphs about not less than 100 words** **لێرە مامۆستای وانەبێژ پرۆفایلێک دەنووسیت لەسەر ژیانی ئەکادیمی (تەنها ئەکادیمی) خۆی**	**8. Teacher's academic profile**
Statistical analysis , prediction ,descriptive statistics	**9. Keywords**

10. Course overview:

This course, is proposed for 2nd year Chemistry Dep. The course will give student a brief over view of creating data files, running statistical analysis , and reading output using Statistical Package(SPSS).two-hour course practical will be sufficient to students with SPSS, leding class and research.

The main objective is to help students gain a thorough understanding of applied statistics and learn how to explore and handle data in a systematic manner using the most popular **Statistical Package for the Social Sciences (SPSS)**, to give the student good understanding of the role of statistical analysis and its methodology in solving problems and help in applying theoretical concepts they have learned to solve real world problems through analyzing data, interpreting

The course focuses on two main topics; first students are oriented to an introduction to SPSS program and how to examine data sets, which will be taught parallel to biostatistics and its application; second will revise the quantitative techniques to summarize and present different types of data with applications. Topics addressed will include statistical tests, comparing means, categorical data analysis, analysis of variance, correlation, simple linear regression and multiple regression, non parametric analysis using SPSS.

11. Course objective:

The main objective is to help undergraduate students gain a thorough understanding of applied statistics and learn how to explore and handle data in a systematic manner using the most popular **Statistical Package for the Social Sciences** (SPSS) students will acquire good understanding of biostatistics and survey research in addition to basic data analysis; learn how to conduct statistical analysis by hand and using SPSS; gain skills of describing and interpreting statistical data; apply statistical inferences to address research questions; evaluate the role of statistical methods in solving real life problems.

12. Student's obligation:

Students and their obligations throughout the academic year:

Required of students:

1-Attendance at all theoretical and practical hours , daily exams

2-Perform all exams: at least two theoretical exam and a 2 practical exam.

3. Assignments, reports, data analysis, home works and reporting and interpretation of outputs.

13. Forms of teaching

Different forms of teaching methods such as the lecture method, discussion method, and Power Point presentations are used for the head titles, definitions and summary of conclusions, classification of materials and explanation of SPSS software. Moreover, students will be asked to prepare an individual, or in group work(research study) on selective topics then asked to give a seminar that will be submitted as a written article; this will be evaluated.

There will be classroom tutorials and assignments with practical examples that use biostatistics methods to evaluate and analyze data to solve real life problems. To get the best of the course, it is suggested that students attend classes and computer labs for practical exercises as much as possible and solve given assignments.

14. Assessment scheme

60 minutes Exam 1 10 marks, 60 minutes Exam 2 10 marks.

Programming assignments with SPSS: practical course exam , total 10marks for each 2-exame, additional marks will be given to extra optional seminars and reports on the related topics and data analysis.

3 h final exam (30marks theory and 30marks practical).

15. Student learning outcome:

By the end of the course students will acquire good understanding of biostatistics and survey research in addition to basic data analysis; learn how to conduct statistical analysis by hand and using SPSS; gain skills of describing and interpreting statistical data; apply statistical inferences to address research questions; evaluate the role of statistical methods in solving real life problems.

16. Course Reading List and References:

Collier, J. (2009), *Using SPSS Syntax: A Beginner's Guide*, London, SAGE

Davis, C. (2002), *Statistical Methods for the Analysis of repeated measurements*, USA, Springer-Verlang.

Field, A. (2009), *Discovering Statistics Using SPSS*, Third Edition, London, SAGE publication Ltd.

Field, A. (2000), *Discovering statistics Using SPSS for Windows: Advance technique for the beginners*, London, SAGE publication Ltd.

Landau, S. And Exeritt, B. (2004), *A Handbook of Statistical Analyses Using SPSS*, London, Chapman & Hall/CRC Press LLC.

Wani, J. (1971), *Probability & Statistical Inference*, USA, Meredith Corporation.

SPSS Tutorials http://www.spsstools.net/spss.htm.

Lecturer's name	13. The Topics:
Lecturer's name: PakhshanA.Hamad theory: (1 hrs) 1ST theory exam: 2nd theory exam:	***Theoretical subject*** • Getting started, the data editor, the data view and the variable view. Storing and retrieving data files • Description of data and entering data • Using Analyze list for descriptive statistics frequency& descriptive • Using Analyze list for descriptive statistics use crosstab • Using SPSS for graphical presentation • Output edit • Relationship between 2-variables (value-direction and power of correlation coefficient) • Example in difference type of correlations. • Regression, prediction-model the relation between 2- (depend , in-depend) variables ,ANOVA tables components .

	• Application of regression models. • Compere Mean ,One –sample ,independent T-test • Pair sample t-test
	Practical Topics (If there is any)
Lecturer's name: BakhshanA.Hamad Practical : (2 hrs) 6 groups :6*2=12hrs 1st practical exam: 2nd practical exam:	***Practical*** • Open SPSS windows ,data editor(data view-variable view) Output file • Save, copy, cut, past , rename and delete SPSS file(data editor, output) • Define variable in variable view(name ,type , label ,value , measures , width) • Enter data in data view (add ,insert new variable ,case and deleting)and Output edit • Option: frequency ,descriptive and crosstab • Choose graph by type of data: • Nominal ,ordinal data –pie, bar chart(simple-complex) Scale data-histogram • Person , spearman and phi correlation dependence on type of data • Regression methods, R-square, Adjusted R Square, and excepted value • Mean ,One –sample ,independent T-test

	• Pair sample T-test application • Application of regression and ANOVA table in biology data

19. Examinations:

1. Compositional:

When is it useful to use the :

- Wilcoxon's Matched-Pairs Signed-Ranks Test.
- Shapiro WilksW test.

How many Windows do we have?

what kind of data is represented by chart?

2.True or false type of exams:**Mark the following statements with (T) for true and (F) for false:**

- If data show "homogeneity of variance", it means that the data are normally distributed.
- Pie chart uses for graphical representation of scale and ordinal data.
- To meet the equal variance assumption you want Levene's test to be significant.

3. Multiple choices:

Researchers wanted to investigate whether gender or marital status (single, married, divorced) relates to the average number of Facebook friends .

a. Which test would you use?

1. Simple linear regression 2. Multiple regression 3. ANOVA 4. Two-way ANOVA

b. What are the null and alternative hypotheses?

20. Extra notes:

Here the lecturer shall write any note or comment that is not covered in this template and he/she wishes to enrich the course book with his/her valuable remarks.

21. Peer review

This course book has to be reviewed and signed by a peer. The peer approves the contents of me

course book by writing few sentences in this section.
Dr.SalarMajeed Mostafa