Department	Pharmacy

Course Name	Applied biostatistics	Course No.	٠٢٠١٤٢٤
Prerequisite	Calculus +Pharmaceutics lab	Credit Hours	١
Number & date of course plan approval		Brief Description	See form QF02/0409

Course Objectives	This course provides a graduate level introduction to the use of the computer as a health science research tool. It will introduce students to basic methodological and statistical issues in managing and analyzing data using specific and sophisticated computer applications. In addition patterns and relationship between variables and data will be examined. Using SPSS (Statistical Package for Social Sciences) software, students will calculate needed statistics for reaching correct and sound conclusions about research hypotheses. Students will gain basic through intermediate computer knowledge and expertise needed to successfully compete in many levels of today's health related data research.
Intended Learning Outcomes	Students who successfully complete this course will be able to: • Describe the roles biostatistics serves in public health and biomedical research; • Explain general principles of study design and its implications for valid inference when, for example, identifying risk factors for disease, isolating targets for prevention, and assessing the effectiveness of one or more interventions; • Assess data sources and data quality for the purpose of selecting appropriate data for specific research questions; • Translate research objectives into clear, testable statistical hypotheses; • Describe basic principles and the practical importance of key concepts from probability and inference, inductive versus deductive reasoning, including random variation, systematic error, sampling error, measurement error, hypothesis testing, type I and type II errors, and confidence bounds; • Apply numerical, tabular, and graphical descriptive techniques commonly used to characterize and

	summarize public health data; • Identify appropriate statistical methods to be applied in a given research setting, apply these methods, and acknowledge the limitations of those methods; • Evaluate computer output containing statistical procedures and graphics and interpret it in a public health context; and • Differentiate between quantitative problems that can be addressed with standard, commonly used statistical methods and those requiring input from a professional biostatistician.		
Course Topics	Introduction to SPSS Input and data cleaning Data manipulation Descriptive analysis of data Statistical tests Correlation and regression Multivariate analysis		
Text Books	Field A., Discovering Statistics Using SPSS, Fourth Edition, SAGE, 2013		
References	Biostatistics for the Biological and Health Sciences ISBN: 0321194365 Publisher: Pearson, Addison Wesley Author(s): Marc Triola, Mario Triola Publication Date: 2006		
Grade Determination	1st Exam = 25% 2nd Exam = 25% Final Exam = 50%	Practical Course Grade Determination	Course Work = 50% (Reports, Term Papers, Quizes) Final Exam = 50%
Course Outline			

Week	Hours	Subjects	Chapters in Textbook	Notes
1	1 1	- Introduction to SPSS - Data analysis with SPSS: general aspects, workflow, critical issues	Chapt. 3	
2	1 1	- SPSS: general description, functions, menus, commands - SPSS file management	Chapt. 3	
3	1 1	- Defining variables - Manual input of data	Chapt. 3	
4	1 1	- Automated input of data and file import - Data Transformation	Chapt. 3	
5	1 1	- Syntax files and scripts - Output management	5.7	
6	1 1	Descriptive analysis of date: - Frequencies, Descriptives, Explore - Crosstabs, Charts	Chapt.4	
7	1 1	Statistical tests: - Means - T-test	Chapt. 5, 9	
8	1 1	- One-way ANOVA - Non parametric tests	Chapt. 10, 15	
9	1 1	Correlation and regression - Linear correlation and regression - Multiple regression (linear)	Chapt. 6 & 7	
10	1 1	- Multiple regression (linear) Multivariate analysis - Factor analysis	Chapt. 7, 17	
11	1 1	- Factor analysis - Cluster analysis	Chapt. 7, 17	
12	1 1	- Cluster analysis - Cluster analysis	Chapt. ١٧	
13	1 1	-Practical exercises -practical exercises	Chapt. 17	

Course Detailed Description – Procedures of the Course Plan Committee /Faculty of Pharmacy	QF02/0408-2.10E

Approved by Dept. Chair		Date of Approval	

Extra Information: (Updated every semester and filled by course instructor)

Course Instructor	Dr. Walid AlQerem
Office No.	222
Extension **Email**	Waleed.qirim@zuj.edu.jo
Office hours	