

Course Specification

College: **College of Pharmacy**

Institution: **King Saud University**

Department: **Pharmacology**

Degree: **MSc. Pharm.**

A Course Identification and General Information

Course code	Course title	Credit Hours			
		Lecture	Lab.	Other	Credit
PHL 541	Pharmacometrics	3	-	-	3
Pre-requisites for this course: --					
Co-requisites for this course: --					
Level/year at which this course is offered:					
Name of faculty member responsible for the course: Dr. Gouda K. Helal, Dr. Mohamed M. Sayed-Ahmed					

B Objectives

1. Summary of the main learning outcomes for students enrolled in the course.

- To describe the concept of various biostatistical methods for analysis of data.
- To gain knowledge about various methods for data collection and analysis.
- To understand and appreciate the concept of normal frequency distribution.
- To differentiate between different data depending on experimental design.
- To gain awareness and understanding of the various parametric data analysis.
- To gain awareness and understanding of the various non-parametric data analysis.
- To pin-point the differences between the different biostatistic procedures.
- To know the advantages and disadvantages of the used statistical analysis technique.
- To know how to use software facilities in statistical procedures.
- To define and acquire knowledge regarding the meanings of the various methods for data transformation.
- To gain knowledge regarding the various types of correlations.
- To recognize when and why this test for this analysis.

2. Briefly The objectives of this course are concerned with experimental pharmacological design and the use of biostatistics in analysing the results.

- Reference to web material

C. Course Description

This course is directed to provide the students with knowledge regarding the principles of statistical analysis in medical studies and to choose the specific test for the obtained data.

1. Topics to be Covered

Topic	Weeks	Contact hours
Introduction to biostatistics.	1	3
Normal frequency distribution.	1	3
Measures of central tendency.	1	3
Measures of Variability	1	3
One way and two way analysis of variance.	1	3
Student's t-test	1	3
Using of soft ware programs in data analysis.	1	3
Introduction to non-parametric analysis of data.	1	3
Data transformations.	1	3
Wilcoxon signed rank test	1	3
Wilcoxon rank sum test.	1	3
Mann-Witney test.	1	3
Kruskal Wallis test.	1	3
X²- test.	1	3
Correlation coefficients.	1	3

Course components (total contact hours per semester):

Lecture:	Tutorial	Practical	Other
45	-	-	-
Additional private study/learning hours expected for students per week. (This should be an average for the semester not a specific requirement in each week) 45 hours			

<p>Development of Learning Outcomes in Domains of Learning</p> <p>For each of the domains of learning shown below indicate:</p> <ul style="list-style-type: none"> • A brief summary of the knowledge or skill the course is intended to develop; • A description of the teaching strategies to be used in the course to develop that knowledge or skill; • The methods of student assessment to be used in the course to evaluate learning outcomes in the domain concerned.
<p>a. Knowledge</p>
<p>(i) Description of the knowledge to be acquired</p> <ul style="list-style-type: none"> • Knowledge of different types of data. • Knowledge of different types of analysis. • How to decide the test of choice.
<p>(ii) Teaching strategies to be used to develop that knowledge</p> <ul style="list-style-type: none"> • Lectures • Assignment
<p>(iii) Methods of assessment of knowledge acquired</p> <ul style="list-style-type: none"> • Exams. • Quizzes. • Student oral presentation
<p>b. Cognitive Skills</p>
<p>(i) Cognitive skills to be developed</p> <ul style="list-style-type: none"> • Understanding how to choose a suitable test for data analysis.
<p>(ii) Teaching strategies to be used to develop these cognitive skills</p> <ul style="list-style-type: none"> • Give students assignments that require collecting information from the internet.
<p>(iii) Methods of assessment of students cognitive skills</p> <ul style="list-style-type: none"> • Exams • Reports • Faculty evaluation
<p>c. Interpersonal Skills and Responsibility</p>
<p>(i) Description of the interpersonal skills and capacity to carry responsibility to be developed</p> <ul style="list-style-type: none"> • Ability to collect and analyse data
<p>(ii) Teaching strategies to be used to develop these skills and abilities</p> <ul style="list-style-type: none"> • Performance for data analysis for derived examples.
<p>(iii) Methods of assessment of students interpersonal skills and capacity to carry responsibility</p> <ul style="list-style-type: none"> • Oral presentation and reports.

d. Communication, Information Technology and Numerical Skills
(i) Description of the skills to be developed in this domain. <ul style="list-style-type: none"> • Performance of software analysis techniques.
(ii) Teaching strategies to be used to develop these skills <ul style="list-style-type: none"> • Lectures • Training examples.
(iii) Methods of assessment of students numerical and communication skills <ul style="list-style-type: none"> • Exams • Assignments.

e. Psychomotor Skills (if applicable)
(i) Description of the psychomotor skills to be developed and the level of performance required Not Applicable
(ii) Teaching strategies to be used to develop these skills Not Applicable
(iii) Methods of assessment of students psychomotor skills Not Applicable

5. Schedule of Assessment Tasks for Students During the Semester			
Assessment	Assessment task (eg. essay, test, group project, examination etc.)	Week due	Proportion of Final Assessment
1	First midterm exam	7	30
2	Second midterm Exam	13	30
3	Final Exam	16	40

D. Student Support
Arrangements for availability of faculty for individual student consultations and academic advice. (include amount of time faculty are available each week) <ul style="list-style-type: none"> • office hours: 2

E. Learning Resources

<p>Required Text(s)</p> <ul style="list-style-type: none"> • Kirkwood B. R and .Sterne J. A.(2005).Essential medical biostatistics . Publisher: Blackwell Science.Hardman J.G. and Limbird L.E. (eds). (2008).
<p>Essential Reference</p> <ul style="list-style-type: none"> • Kirkwood B. R and .Sterne J. A.(2005).Essential medical biostatistics . Publisher: Blackwell Science.
<p>Recommended Books and Reference Material (Journals, Reports, etc) (Attach List)</p> <ul style="list-style-type: none"> • Medical biostatistics.
<p>Electronic Materials, Web Sites etc</p> <ul style="list-style-type: none"> • www.google.com • Pubmed • Science direct

<p>F. Facilities Required</p>
<p>Indicate requirements for the course including size of classrooms and laboratories (ie number of seats in classrooms and laboratories, extent of computer access etc.)</p>
<p>1. Accommodation (Lecture rooms, computer laboratories, etc.)</p> <ul style="list-style-type: none"> • Lecture room • Laboratory instruments: Computer
<p>2. Computing resources</p> <ul style="list-style-type: none"> • Internet access • Projector • Smart board • Lab top • Printer • Scanner
<p>3. Other resources (specify --eg. If specific laboratory equipment is required, list requirements or attach list)</p> <ul style="list-style-type: none"> • Computerized statistics including GraphPad Instate, SPSS ,....etc

<p>G Course Evaluation and Improvement Processes</p>
<p>1. Strategies for Obtaining Student Feedback on Effectiveness of Teaching</p> <ul style="list-style-type: none"> • Students evaluation in each semester • Meeting with students • Open door policy
<p>2. Other Strategies for Evaluation of Teaching by the Instructor or by the Department</p>

<ul style="list-style-type: none"> • Self evaluation
3. Processes for Improvement of Teaching <ul style="list-style-type: none"> • Studying reports
4. Processes for Verifying Standards of Student Achievement (eg. check marking by an independent faculty member of a sample of student work, periodic exchange and remarking of a sample of assignments with a faculty member in another institution) <p style="text-align: center;">Not Applicable</p>
5. Describe the planning arrangements for periodically reviewing course effectiveness and planning for improvement. <ul style="list-style-type: none"> • Collecting all reports and evaluations at the end of the semester for a reviewing purpose.