KINGDOOM OF SAUDI ARABIA
Ministry of Education
Al-Imam Mohammad Ibn Saud Islamic University
College of Sciences
Department of Mathematics & Statistics

المملكة العربية السعودية
وزارة التعـليـم
جامعة الإمام محمد بن سعود الإسلامية
كلية العلوم
قسم الرياضيات والإحصاء

SYLLABUS

Course Code	Course Num.	Course Name	Credit Hours	Lec.	Lab.	Tut.	Private study	Pre-requisites	Course Level	Teaching Language
STA	**217**	**Biostatistics**	**3**	**2**	**1**	**1**	**5**	**MAT 101**	**3[1]**	**English**

A. Course Description

This course describes the most important ideas, practical results, and examples of Descriptive Statistics, Probabilities and Distributions, Estimation, Hypothesis Testing, Inferences, Correlation and Regression, and Multinomial Experiments. The course includes the essential fundamentals of these topics. The emphasis is on calculations, and some applications are mentioned.

B. Course Outcomes

At the end of this course the student will be able to:

- Describe discrete data graphically and compute measures of centrality and dispersion
- Compute probabilities based on practical situations.
- Apply techniques of estimations
- Use some tests of hypothesis.
- Estimate and Use the linear regression Line
- Use the ANOVA analysis

C. References:

Required Textbook

- *Biostatistics for Biological and Health Sciences*, M.M. Triola & M.F. Triola, Pearson, 2006.

Other references

- *Biostatistical Analysis*, Jerrold H. Zar, 5th Edition, Pearson Education. Inc., 2010.
- *The Analysis of Biological Data*, M.C. Whitlock, D. Schluter, Roberts & Company Publishers, 2015.
- *Intuitive Biostatistics*, Harvey J. Motulsky, 3rd Edition, Oxford University Press, 2013.
- *Basic Biostatistics: Statistics for Public Health Practice*, B. Burt Gerstman, 2nd Edition, Jones & Barlett Learning, 2015.

---

[1] *B.Sc. in Biology.*

KINGDOOM OF SAUDI ARABIA
Ministry of Education
Al-Imam Mohammad Ibn Saud Islamic University
College of Sciences
Department of Mathematics & Statistics

المملكة العربية السعودية
وزارة التعليـم
جامعة الإمام محمد بن سعود الإسلامية
كلية العلوم
قسم الرياضيات والإحصاء

D. Topics Outline

1. **Descriptive Statistics:** Types of Data, Design of Experiments, Frequency Distributions, Visualising Data, Measures of Center, Measures of Variation, Measures of Relative Standing, Exploratory Data Analysis.

2. **Probabilities and Distributions:** Fundamentals, Addition Rule, Multiplication Rule, Condition Probability, Bayes' Theorem, Risks and Odds, Rates of Mortality, Fertility, and Morbidity. Random variables, Mean, Variance, Standard deviation, Binomial Distribution, Poisson Distribution, Standard Normal Distribution, Applications of Normal Distributions, Sampling Distributions and Estimators, The Central Limit Theorem, Normal as Approximation to Binomial, Assessing Normality.

3. **Estimates and Sample Sizes with One Sample:** Estimating a Population Proportion, Estimating a Population Mean (sigma known and unknown), Estimating a Population Variance.

4. **Hypothesis Testing with One Sample**: Basics of Hypothesis Testing, Testing Claim about Proportion, Testing Claim about Mean (Sigma Known and unknown), Testing Claim about Standard Deviation and Variance.

5. **Inferences from Two Samples:** Inferences about Two Proportions, Inferences about two Means: Independent Samples, Inferences from Matched Pairs, Odds Ratios, Comparing Variations in Two Samples.

6. **Correlation and Regression:** Correlation, Regression, Variation and Prediction Intervals, Multiple Regression

7. **Multinomial Experiments:** Multinomial Experiments: Goodness-of-Fit, Contingency Tables: Independence and Homogeneity, One-Way ANOVA.

E. Office Hours

Office hours give students the opportunity to ask in-depth questions and to explore points of confusion or interest that cannot be fully addressed in class.

F. Exams & Grading System

The semi-official dates of the exams for this course are:

- **Midterm 1:** 6th or 7th week.
- **Midterm 2:** 11th or 12th week.
- **Quizzes & Homeworks:** During the semester.
- **Final Exam:** 16th week.

Your course grade will be based on your semester work as follows:

Midterm 1: 20 %	Midterm 2: 20 %	Final Exam: 40 %
Quizzes, Homework, Attendance & Participation: 20 %		

KINGDOOM OF SAUDI ARABIA
Ministry of Education
Al-Imam Mohammad Ibn Saud Islamic University
College of Sciences
Department of Mathematics & Statistics

المملكة العربية السعودية
وزارة التعلـيـم
جامعة الإمام محمد بن سعود الإسلامية
كلية العلوم
قسم الرياضيات والإحصاء

The grading distribution:

A+	A	B+	B	C+	C	D+	D	F
[95, 100]	[90, 95)	[85, 90)	[80, 85)	[75, 80)	[70, 75)	[65, 70)	[60, 65)	[0, 60)

G. Student Attendance/Absence

Only three situations will be considered as possible excused absences:

- Occurrence of a birth or death in the immediate family will be excused. ("Immediate family" is defined by the University as spouse, grandparents, parents, brother, or sister).
- Severe illness in which a student is under the care of a doctor and physically unable to attend class will be excused. Students are not excused for a doctor's appointment. Do not make appointments that conflict with rehearsals. Notes from the University Health Center will be accepted.

Executive Rules for Study Regulations and Exams
goo.gl/ykm7t3