# King Fahd University of Petroleum and Minerals

Department of Mathematics

#### STAT 319 Lab Syllabus, Term 243

Coordinator: Raid Anabosi

**Course Title:** Probability and Statistics for Engineers and Scientists

**Course Credit Hours:** 3-1-3

\_\_\_\_\_

# **Objectives:**

This Lab of STAT 319 is designed to help the students in the following ways:

1. To easily understand and appreciate the practicability of the concepts taught in the STAT 319

curriculum.

2. To develop their ability to properly analyze and solve probability and statistics problems, and

reasonably interpret their results.

3. To learn how to use RStudio in solving a wide range of statistical problems in the real world,

since statistics has a lot of applications in almost all fields of life.

\_\_\_\_\_

#### Assessment:

Assessment for this Lab will be based on two lab exams, as follows:

Activity	Marks	
Midterm Lab Exam	8	
2 <sup>nd</sup> lab in the week: Tue 8 July OR Wed 9 July		
Final Lab Exam	12	
1ª lab in the week: Tue 3 Aug OR Wed 4 Aug	14	
Total	20	

#### Attendance:

Students are expected to attend all lectures and labs.

- If a student misses a class/lab, he/she is responsible for any announcement made in that class/lab.
- After being warned twice by the instructor, a DN grade will be awarded to any student who accumulates
  - 7 unexcused absences combined in lecture and lab. (20%)
  - 12 excused and unexcused absences combined in lecture and lab. (33%)
  - \_\_\_\_\_

### Missing an Exam:

In case a student misses an exam (**Midterm Exam or the Final Exam**) for a legitimate reason (such as medical emergencies), he/she must bring an official excuse from Students Affairs. Otherwise, he/she will get a score of zero in the missed exam.

## The Usage of Mobiles in Class:

Students are not allowed to use mobiles for any purpose during class time. Students who want to use electronic devices to take notes must get permission from their instructor. Violations of these rules will result in a penalty decided by the instructor.

·····

### Details and guidelines for Tests:

- ▶ We will use RStudio by logging in to our labs.
- Check Blackboard regularly for announcements.
- ➢ All tests will be conducted using the blackboard.
- All test dates will be announced in the BB, this is students' responsibility to remember the test dates.
- > We expect you to abide by all ethical rules and work individually.

### Academic Integrity:

All KFUPM policies regarding ethics apply to this course. See the Undergraduate Bulletin on the Registrar's website.

# <u>Coverage Plan</u>

Week	Topic	Related chapter in the manual
Week 1	Introduction to R: part 1 Introduction to R: continue Descriptive Statistics: computing Numerical Measures (by R)	1 2
Week 2	<b>Descriptive Statistics:</b> Frequency table, Graphs and charts for categorical and numerical data <b>Catch up and Practice LAB: Solving questions</b>	2
Week 3	Discrete Probability Distributions (by R): Binomial, Hypergeometric, & Poisson Distributions.	3
Week 4	Continuous Probability Distributions (by R): Exponential, Normal distribution Lab Midterm Exam (2 <sup>nd</sup> lab in the week: Tue 8 July OR Wed 9 July) Material: (Descriptive Statistics, Binomial, Hypergeometric, & Poisson Exponential, and Normal distributions)	
Week 5	Sampling Distributions (Solving questions) Confidence Intervals (by R) for the Population Mean, and for Population Proportion.	5 6
Week 6	<ul> <li>Hypothesis Testing (by R)</li> <li>Simple Linear Regression (by R):</li> <li>Correlation coefficient, Estimating the line of best fit, Sources of variation,</li> <li>Checking the model assumptions,</li> <li>Confidence Interval estimation of regression parameter, Prediction Interval</li> <li>(PI) for future observation, Testing the slope of the regression line</li> </ul>	7 8
Week 7	Practice LAB: Solving questions Multiple Linear Regression (by R):	8
Week 8	Practice LAB: Solving questions Lab Final Exam (1 <sup>st</sup> lab in the week: Tue 3 Aug OR Wed 4 Aug)	