



KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
College of Computing and Mathematics

STAT302: Statistical Inference (221)

Instructor	Email	Office Location	Office Hours
Esam Al-Sawi	Using BB/MS teams	B5-R310	UTW: 11-11:45 AM Or by appointment

Course Objectives

Present a solid undergraduate foundation in statistical theory, its relevance and importance in solving practical problems in the real world.

Course Description

Random sampling and the sampling distributions: t, chi-square, and F. Order Statistics. Methods of estimation: maximum likelihood and moments. Properties of a good estimator: unbiasedness, consistency, efficiency, sufficiency, and approximate normality. Testing of simple hypotheses, the Neyman-Pearson lemma. Testing composite hypotheses, uniformly most powerful and likelihood ratio tests. Bayesian Statistics.

WACKERLY • MENDENHALL • SCHEAFFER
Mathematical Statistics
 with Applications
 7th Edition

Textbook:

Mathematical Statistics with Application, by: Wackerly, Mendenhall and Scheaffer, 7th edition.

Assessment:

Assessment for this course will be based on attendance, homework, two major exams and a comprehensive final exam, as in the following:

Activity	Weight
Homeworks	15%
Exam 1	25%
Exam 2	25%
Final Exam	35%
Total	100%

Topics to be covered & HW problems

Section	Title	HW problems	Remarks
2.12	Random Sampling		
6.7	Order Statistics	74, 75, 86, 89	
7.1 7.2	Introduction to Sampling Distributions, Sampling Distributions Related to the Normal Distribution	10, 13, 14, 21, 26, 30	
8.1-8.10	Estimation	1, 2, 3, 5, 21, 25, 32, 33, 39, 43, 56, 60, 70, 71, 81, 82, 96, 97	
9.1-9.9	Properties of Point Estimators and Methods of Estimation	1, 3, 4, 15, 28, 38, 39, 49, 56, 60, 71, 72, 81, 82	
10.1-10.12	Hypothesis Testing	2, 3, 17, 19, 30, 31, 37, 46, 50, 51, 56, 62, 63, 68, 69, 79, 80, 83, 88, 96, 100, 106, 107	
16.1-16.5	Introduction to Bayesian Methods for Inference	1, 2, 7, 8, 18, 24	
14.1-14.7	Analysis of Categorical Data	2, 4, 14, 22, 23	If time permits

✓ **Important Remarks:**

Attendance

- ➔ Students must adhere to the attendance policy of KFUPM.
- ➔ A **DN** grade will be awarded to any student who accumulates more than 20% (9 lectures) unexcused absences or more than 33% (15 lectures) excused and unexcused absences of lectures.
- ➔ A DN grade will be assigned to the eligible student after being warned twice by his/her instructor.
- ➔ Students are expected to **attend** all lecture classes **on time**.
- ➔ If a student misses a class, he is responsible for any announcement made in that class.

Exam issues

- No student will be allowed to take the exam if not having his/her **KFUPM ID or National/Iqama ID**.
- Students are not allowed to carry mobiles, smart watches, or electronic devices to the exam halls/rooms.
- Students must take the exam in the place assigned to them.
- Missing an Exam: In case a student misses an exam (Exam I, Exam II, 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 zero in the missed exam.
- **Cheating** or any attempt of cheating by use of illegal activities, techniques and forms of fraud will result in a grade of **F** in the course along with reporting the incident to the higher university administration for further action. Cheating in exams includes (but is not limited to):
 - ▶ looking at the papers of other students
 - ▶ talking to other students
 - ▶ **using mobiles or any other electronic devices including smart watch.**

Mobiles and Smart Watches

- ➔ Students are **not allowed** to use mobiles for any purpose **during class time**.
- ➔ Students who want to use electronic devices to take notes must take permission from their instructor.
- ➔ Violations of these rules will result in a penalty decided by the instructor.
- ➔ Academic Integrity: All KFUPM policies regarding ethics apply to this course.
 - ➔ *See the Undergraduate Bulletin.*
- ➔ **Students are not allowed to carry mobile phones and smart watches to the exam halls.**

Homework Problems

- Homework should be submitted in class on the first day after a chapter ends.
- No **late** homework will be accepted.
- Homework **not submitted** will get a score of zero.
- Homework problems solutions should be complete with **justifications and reasons** for all steps by referencing theorems, equations and discussion from your textbook.
- **Copying** from any source, human, print or electronic will result in a zero on the homework and will be considered cheating.