

Course portfolio:

1. Instructor / Instructors Information

N	Name of the instructor(s)	Office hours	Section	Building and office location	Contact number	E-mail
1	Aisha Fayomi	10-11 U.T. 9.30-11 M.W.	FAR	07-103C	6400000 Extn 63158	Ah_fayomi@ho tmail.com

2. Course Information

Course Name	Course code	Course Number
Theory of probability 1	Stat	211

Theoretical course meeting time	Theoretical course meeting places	Lab work meeting time	Lab work meeting place
U.T11-12 M.W 11-12:30	90/C (FAR)		

Course website address	Course prerequisite and needed skills to course success
www.kau.edu.sa/girls/statistics	Stat 110- -Math 205

Teaching method	<ul style="list-style-type: none">• Lectures• Discussions• Exercises
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Description of the course	General objective from the course	The students will study the theory of some important methods of elementary probability theory , its mathematics and applications, the concept of univariate discrete and continuous random variables and its pmf, CDF and their properties, and the properties of some important discrete and continuous distribution
	Relationship between this course and other courses according to department plan	Course Prior Requirements: STAT 110,STAT 101& MATH 205 Course Next Requirements: STAT 302

3. Course Objectives

1. A statement of what the student will know and be able to do as the result of learning
 - ❖ The student will know the basic assumptions of probability theory
 - ❖ The student can calculate the moments for discrete and continuous random variables, and study the behavior of these random variables through using the skewness and kurtosis.
 - ❖ The student will identify some important discrete and continuous distributions and be able to apply these distributions in practical problems.

2. A statement on how they will be expected to demonstrate their learning
 - ❖ **CH 1:**The student can obtain the sample space (discrete-continuous for any random experiment)
 - ❖ The student can obtain the probability of event using the classical or the mathematical definition of probability
 - ❖ The student can obtain the event (simple- compound- sure-impossible- mutually exclusive)
 - ❖ The student will know the random selection of an object from a finite collection of objects

- ❖ The student will know the addition and multiplication rules for probability
- ❖ The student will know the total probability theorem and the Bayes rule.
- ❖ The student will know the probability of any event using counting techniques

CH 2: The student will know the definition of random variable (discrete or continuous)

- The student will obtain the probability mass function and the cumulative distribution of the discrete random variable and know their properties
- The student will obtain the probability density function and the cumulative distribution of the continuous random variable and know their properties
- The student will obtain the expected value and its properties – r -th moment about zero , r -th moment about mean , median, mode, coefficient of skeweness and kurtosis for the random variable (discrete-continuous)
- The student will know the moment generating function and its properties for the discrete and continuous random variable and know how to obtain the moments by using the moment generating function
- The student will know the probability generating function and its properties for the discrete and continuous random variable and know how to obtain the factorial moments and probabilities by using the probability generating function
- The student will know how to obtain the lower and upper bounds of probability of random variable (discrete-continuous) by using Chebyshev's inequality

CH3: The student will know some discrete distributions (Bernolli-Binomial-Poisson-Negative binomial-Geometric-Haypergeometric) and its their properties (mean-variance- CDF-MGF-FMGF)

- The student will know how to apply the discrete distributions in practical problems
- The student will know some continuous distributions(Continuous uniform-Exponential Gamma-Chisquare-Beta-Normal) and its their properties (mean-variance- CDF-MGF)

4.Learning Resources

Course	Textbook, and where to obtain it	probability and statistics, MorrisH DeGroot and mark, j.Sechervish . fourth edition (2012)
References	List of the references and where to obtain them	<p>Introduction to probability and mathematical statistics Bain, L.J and Engelhardt, M. (1992)</p> <p>** An introduction to probability and statistics, Richard, J. Larson and Morris, L. (2001)</p> <p>** An introduction to mathematical statistics and its application, Vijy K. Rohatgy, MD Ehsanses (2001) -Library</p>
Activities	To communicate with students and link them together	Blackboard + My KAU application

5. Course Requirements and Grading

1. The number and grading of exams

- ❖ 2 exams with 25 grad for every exam.(50)
- ❖ Assignments, Student responsibilities to the course (10).
- ❖ Final exam (40).

6. Detailed Course Schedule

Course Schedule template: (meeting four times a week)

The time distribution		Course topics	The notes regarding the students activities	
Week #	Date	Topic	Reading Assignment	What is Due?
1	<u>25Jan.-28Jan.</u> (5-8 Rabi,II)	Introduction to the course .Review of basic concepts of combinations, sampling	Chapter 1	Assignment1
2	<u>1-4 Feb</u> (12-15 Rabi,II)	Basic concepts of probability random experiment- events(simple- compound – sure – indep.)-Theorems of probability – exercise	Chapter 1	Assignment2
3	<u>8-11 Feb</u> (19-22 Rabi,II)	Conditional probability, Bayes theorem and independence events	Chapter 2	Discussion of Assignment 1&2
4	<u>15-18 Feb.</u> (26-29 Rabi,II)	Random variables (discrete-continuous), and cumulative distribution function,	Chapter 3	Assignment 3

The time distribution		Course topics	The notes regarding the students activities	
Week #	Date	Topic	Reading Assignment	What is Due?
5	<u>22-25 Feb.</u> (3-6 jumadaI)	Probability mass function, probability density and cumulative distribution function.	Chapter 3	Complete Discussion of Assignment 2
6	<u>1-4 Mar.</u> (10-13- jumadaI)	Mathematical Expectation and its properties -variance and its properties – median -mode, exercise-	Chapter 4	Discussion of Assignment 3
7	<u>8-11 Mar</u> (17-20 jumadaI)	Rth moments about zero, Rth moments about mean, coeffs. of skewness and kurtosis	Chapter 4	Complete Discussion of Assignment 3
8	<u>15-18 Mar.</u> (24-27 jumadaI)	Chebyshev inequality, moment generating function and its properties- probability generating function,	Chapter 4	Quiz1 & Exam1 QUIZSun (15Mar) ExamMon(16Mar)
Break				
9	<u>29Mar-1 Abr.</u> (9-12 jumadaII)	Discrete Distributions, Bernoulli, Binomial.	Chapter5	Assignment 4
10	<u>5-8 Abr.</u> (16-19 jumadaII)	Discrete Distributions, Geometric, negative binomial , Hyper		
11	<u>12-15 Abr.</u> (23-26 jumadaII)	Discrete Distributions, Poisson, and Poisson distribution as an approximation of Binomial distribution. Negative binomial –	Chapter 5	Discussion of Assignment 4

The time distribution		Course topics	The notes regarding the students activities	
Week #	Date	Topic	Reading Assignment	What is Due?
12	<u>19 -22 Abr.</u> (30-3 Rajab)	Continuous Distributions, uniform, exponential, - chi-square .	Chapter 5	QUIZ 2
13	<u>26-29 Abr.</u> (7-10 rajab)	Continuous Distributions, Gamma, beta and normal Dist.	Chapter 5	EXAM 2
14	<u>3-6 May.</u> (14-17 rajab)	Normal and standard normal distribution	Chapter 5	Complete Discussion of Assignment 4
15	<u>10-13 May.</u> (21 -24 rajab)	Revision		
Final Exam				

Instructors

Dr. Aisha fyaomi