KOMAR UNIVERSITY OF SCIENCE AND TECHNOLOGY
(KUST)

Statistics for Engineering and Science Syllabus			
Course Title	**Statistics for Engineering and Science**		
Course Code	**MTH3320**	**No. of Credits**	**3 CH**
Department	**All Engineering Departments**	**Faculty**	**Engineering**
Pre-requisites Course Code	**Calculus II**	**Co-requisites Course Code**	
Course Coordinator(s)	**Mr.Sardasht Sardar**		
Email	**sardasht.sardar@komar.edu.iq**	**Room No.**	**238**
Other Course Teacher(s)/Tutor(s)	**N/A**		
Learning Hours	**Section 1:** T,R (08:00 – 09:30) **Section 3:** M,W (12:00-13:30)		
Contact Hours	**M,W** (09:00-10:30)		
Course Type	**College Requirement**		
Offer in Academic Year	**Spring 2016**		

COURSE DESCRIPTION

This course provides the students with exposure to fundamentals of statistical methods and their applications, covering Introduction to Statistics descriptive and data analysis, Probability, Random Variables and Probability Distributions, Mathematical Expectation, Discrete Probability Distributions, Continuous Probability Distributions, Functions of Random Variables, Fundamental Sampling Distributions and Data Descriptions. After this course, the student will be able to understand and speak the basic language of statistics and select the right statistical method for his/her applications. Also, the course will provide the fundamental theoretical background that will allow the student to appreciate the strengths and limitations of each method and formulate conclusions accordingly.

COURSE OBJECTIVES

Course Objectives are as follows:

1. Understand basic statistical process.
2. Understand the difference between statistics and probability.
3. Be able to recognize between the discrete and continuous probability functions.

COURSE LEARNING OUTCOMES

After participating in the course, students would be able to:

1. Understand basic statistics, sampling distributions, and data analysis. [ABET Outcome Program a].
2. Apply statistical concepts such as means, variances, and various types of graphs. [ABET

Outcome Program a].

3. Apply basic mathematical concepts in probability. [ABET Outcome Program a].
4. Use common discrete and continuous probability functions. [ABET Outcome Program k].
5. Understand the fundamental sampling distributions, data descriptions, linear regression, and hypothesis testing [ABET Outcome Program a].

Grading Scale:

Points	Percentage Scores
A	**95-100**
A-	**90-94**
B+	**87-89**
B	**83-86**
B-	**80-82**
C+	**75-79**
C	**70-74**
C-	**65-69**
D+	**60-64**
D	**55-59**
D-	**50-54**
F	**0-49**
W	**Withdrawal**
I	**Incomplete**

Note: The minimum passing grade to pass this course is C-which is equivalent to 65%.

COURSE CONTENT

Course topics include:

- Introduction to Engineering Statistics
- Statistics Descriptive and Data Analysis
- Probability
- Random Variables and Discrete Probability Distributions
- Continuous Probability Distributions
- Simple Linear Regression and Correlation
- Fundamental Sampling Distributions and Data Descriptions
- Hypothesis Testing

Note: Adding more material is governed by the time.

COURSE TEACHING AND LEARNING ACTIVITIES

Course Teaching and Learning Activities: (short description)

1. Interactive class discussion
2. Hands- on Exercises
3. Assignments, Home work
4. Tests and Quizzes

COURSE ASSESSMENT TOOLS		
Assessment Tool	**Description**	**Weight**
Quizzes (5)	There will be five quizzes as scheduled in the course schedule.	15 %
Assignments (5)	Five assignments will be given after and before midterm exam.	10 %
Midterm	The midterm exam will be conducted after week 7	20 %
Project	Project to be performed on different topics on the application of statistics and probability in engineering fields which should be submitted and presented by week 13.	10 %
Test	There will be test after week 12 that covers Chapters 7-10.	15 %
Final Exam	The final exam will be conducted after week 15 that covers all the chapters started from Chapter 1 to Chapter 11.	30 %

ESSENTIAL READINGS: (Journals, textbooks, website addresses etc.)

Textbook:

- Probability & Statistics for Engineers and Scientists/ Walpole, Myers, Myers and Ye / 8th Edition.
  Publisher: Prentice Hall, Upper Saddle River, NJ 07458
  ISBN: 0-13-187711-9

Other References:

- Applied Statistics and Probability for Engineers/ Douglas C. Montgomery, George C. Runger/3rd edition
  ISBN 0-471-20454-4 (acid-free paper)
- Engineering Statistics Fifth Edition/Douglas C. Montgomery,George C. Runger,Norma Faris Hubele /5th edition
  ISBN-13 978- 0-470-63147-8
- Statistics for Engineers and Scientists/ William Navidi/3rd edition
  ISBN 978-0-07-337633-2
- Probability and Statistics for Engineers and Scientists/ Anthony Hayter /4th edition.
  ISBN-13: 978-1-111-82704-5
  ISBN-10: 1-111-82704-4
- OpenIntro Statistics/ Paperback/2nd edition
  ISBN: 1478217200
- Probability and Statistics for Engineering and the Sciences /JAY DEVORE/8th edition
  ISBN-13: 978-0-538-73352-6
  ISBN-10: 0-538-73352-7

COURSE POLICY *(including plagiarism, academic honesty, attendance etc)*

Attendance Policy:

Students are expected to attend each class for the entire semester. Students are responsible for material present in lectures. Only students with official KUST absence, family crises, and illness are excused from class. Three occasions of lateness count as one absence. The student who misses 10 percent of the classes will be placed on probation.

Make up Policy:

Since all examination are announced in advance, zero grade will be given to any missed examination unless a student's has an acceptable reason, such as illness, for not being able to take the examination during all those days when the examination was announced.

Academic Dishonesty:

Any type of dishonesty (Plagiarism, Copying another's test or home-work, etc) will Not be tolerated. Students found guilty of any type of academic dishonesty are subject to failure in this course, plus further punishment by the University Consul.

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Course calendar: Please check the academic calendar for Fall 2015

Week	Beg/End Dates	Topics (Chapters)	Assessment tool	Outcomes
1	Feb 28th – Mac 3rd, 2016	**Introduction to Engineering Statistics**	**N/A**	Outcome #1
2	Mac 6th – 10th , 2016	**Statistics descriptive and data analysis** • **Measures of location** • **Measures of variability**	**N/A**	Outcome #1
3	Mac 13th – 17th , 2016	**Statistics descriptive and data analysis (Cont'd)** • **Graphical Method**	**Quiz # 1** **Assignment # 1**	Outcome #1 And Outcome #2
4	Mac 27th – 31st , 2016	**Probability** • **Sample Space** • **Events**	**N/A**	Outcome #3
5	April 3rd – April 7th , 2016	**Probability (Cont'd)** • **Probability of an event** • **Multiplicative Rule**	**Quiz # 2,** **Assignment # 2**	Outcome #3
6	April 10th – 14th , 2016	**Random Variables and Discrete Probability Distributions** • **Random Variable** • **Discrete Probability Distribution**	**N/A**	Outcome #4
7	April 17th – 21st , 2016	**Continuous Probability Distributions** • **Continuous Random Variables** • **Probability Density Function**	**Quiz # 3** **Assignment # 3**	Outcome #4
April 19th – 25th , 2016 Midterm Exam				
8	May 2nd – May 5th , 2016	**Simple Linear Regression and Correlation** • **Regression Analysis** • **Linear Regression Analysis**	**N/A**	Outcome #5
9	May 8th – 12th , 2016	**Simple Linear Regression and Correlation (Cont'd)** • **Estimating the Coefficients** • **Least Square Method**	**Assignment # 4** **Quiz # 4**	Outcome #5
10	May 15th – 19th ,2016	**Fundamental Sampling Distributions and Data Descriptions** • **Random Samples** • **Normal Population Distribution**	**N/A**	Outcome #5
11	May 22nd – 26th ,2016	**Fundamental Sampling Distributions and Data Descriptions (Cont'd)**	**Test**	Outcome #5

		• **Developing Sample Distribution** • **Central Limit Theorem**		
12	May 22th – June 2nd -2016	**Hypothesis Testing** • **Hypothesis Testing** • **Level of Significance**	**Assignment #5**	Outcome #2 And Outcome #5
13	June 5th – 9th ,2016	**Hypothesis Testing (Cont'd)** • **Error in Testing** • **Decision Making**	**Project Submission and Project Presentation Quiz # 5**	Outcome #2 And Outcome #5
14	June 12th – 16th , 2016	**Hypothesis Testing (Cont'd)** • **Testing of Population Mean** • **Statistical Inference about Two Populations**	**N/A**	Outcome #2 And Outcome #5
15	June 19th – 23rd, 2016	**Review Week**	**N/A**	
June 24th – 30th ,2016 Final Exam				