



Course Specifications

Course Title:	PROBABILITY AND STATISTICS FOR ENGINEERS
Course Code:	STAT 324
Program:	Statistics
Department:	Statistics and Operations Research
College:	College of Science
Institution:	King Saud University

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A. Course Identification

1. Credit hours 4
2. Course type a. University <input type="checkbox"/> College <input type="checkbox"/> Department <input type="checkbox"/> Others <input checked="" type="checkbox"/> b. Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered: first year
4. Pre-requisites for this course (if any): None
5. Co-requisites for this course (if any): None

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom		
2	Blended		
3	E-learning		
4	Distance learning	2	100%
5	Other		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	30
2	Laboratory/Studio	
3	Tutorial	30
4	Others (specify)	
	Total	60

B. Course Objectives and Learning Outcomes

1. Course Description

This course covers the basic tools for the collection, analysis, and presentation of data in all areas of engineering.

2. Course Main Objective

The purpose of the course is to give students of engineering sciences the knowledge to use statistical and probabilistic methods when dealing with the data that is frequently encountered in the fields of engineering. This student will be able to understand these data correctly and then deal with them in the best way.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	Knowledge and Understanding	
1.1	define the principal concepts about statistics and probability rules.	K1

CLOs		Aligned PLOs
1.2	Define the random variables and their probability distribution.	K3
1.3	Knowledge of sampling distribution of the some important sample statistics.	K2
1.4.	Knowledge of principals of estimation, estimation of some important population parameters and apply hypothesis testing via some of the statistical distributions.	K4
2	Skills :	
2.1	Analysis of mechanical and electrical problems	S2
2.2	interpreting and communicating the results of statistical analysis	S3
3	Values:	
3.1	Apply the theoretical foundations of probability theory and distribution theory	C1
3.2	Interpret statistical analysis results in engineering area	C2

C. Course Content

No	List of Topics	Contact Hours
1	Introduction to Statistics and Data Analysis	1
2	Probability	3
3	Random variables and probability distributions	3
4	Mathematical expectation	3
5	Some Discrete Probability Distributions	3
6	Some Continuous Probability Distributions	3
7	Fundamental Sampling Distributions and Data Descriptions	4
8	One- and Two-Sample Estimation Problems	5
9	One- and Two-Sample Tests of Hypotheses	5
Total		30

D. Teaching and Assessment

1. Alignment of Course Learning Outcomes with Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.0	Knowledge and Understanding		
1.1	<ul style="list-style-type: none"> Develop the knowledge about the role of statistics to reduce the efforts that scientific studies do for reducing data without loss its important information. Basic principles of probability and random variable 	Tutorial sessions should follow the material taught in lectures.	Written Exam
1.2	<ul style="list-style-type: none"> Familiarity with basic notions of probability and probability distributions. Testing hypothesis: z and t tests; confidence intervals. 	Tutorial sessions should follow the material taught in lectures.	Written Exam
2.0	Skills		
2.1	Students were encouraged to do questions by themselves	Examples, and Solved Problems.	Written Exam
2.2	Description of the interpersonal skills and capacity to carry responsibility to be developed: <ul style="list-style-type: none"> Data description. Comparison. 	Examples, and Solved Problems	Written Exam

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	<ul style="list-style-type: none"> Analysis. Deduction.		
...			
3.0	Values		
3.1	Conduct descriptive and inferential statistical analyses that are appropriate to different basic study designs used in different areas of engineering.	Examples, and Solved Problems.	Written Exam
3.2	Describe and apply basic concepts of probability, random variables, and commonly used statistical probability distributions.	Examples, and Solved Problems.	Written Exam
3.3	Distinguish among the different measurement scales or types of variables	Examples, and Solved Problems.	Written Exam

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	First Exam	8	30%
2	Second Exam	12	50%
3	Final Exam	17	20%

*Assessment task (i.e., written test, oral test, oral presentation, group project, essay, etc.)

E. Student Academic Counseling and Support

Arrangements for availability of faculty and teaching staff for individual student consultations and academic advice :

For at least two hours a week, faculty and teaching staff are available to provide student consultations and academic advice.

F. Learning Resources and Facilities

1. Learning Resources

Required Textbooks	Walpole, R. E.; Myers, R. H.; Myers, S. L. and Ye, K., <i>Probability and Statistics for Engineers and Scientists</i> , 9th ed., Prentice Hall, 2012.
Essential References Materials	
Electronic Materials	
Other Learning Materials	Solutions to past exams

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration	

Item	Resources
rooms/labs, etc.)	
Technology Resources (AV, data show, Smart Board, software, etc.)	
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
The course objectives were clear to student at the beginning of the semester	Students	Direct
Course objectives are achieved at the end of the semester	Students	Direct
Student can solve problems related to my learning duties and assignments	Students	Direct
The course contributed to student's overall development.	Students	Direct

Evaluation areas (e.g., Effectiveness of teaching and assessment, Extent of achievement of course learning outcomes, Quality of learning resources, etc.)

Evaluators (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

Assessment Methods (Direct, Indirect)

H. Specification Approval Data

Council / Committee	Course instructor: Habib Ismail
Reference No.	
Date	05/02/2021