اعتماد
NCAAA

T4

2020

Course Specifications

Course Title:	Applied Statistics 2
Course Code:	SAT 304
Program:	B.Sc Mathematics
Department:	Mathematics Department
College:	College of Science
Institution:	Majmaah University

VISION 2030
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA

تميز
NCSEE

مسار
MASAR

اعتماد

قياس

www.etec.gov.sa

Table of Contents

A. Course Identification

1. Credit hours: 3(2+2)	

2. Course type

a. University ☐　College ☐　Department √　Others ☐

b. 　Required ☐　　Elective √

3. Level/year at which this course is offered: Elective

4. Pre-requisites for this course (if any)**:**

SAT 203

5. Co-requisites for this course (if any)**:**

6. Mode of Instruction (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	32	70%
2	Blended	9	20%
3	E-learning	4	10%
4	Distance learning		
5	Other		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	25
2	Laboratory/Studio	
3	Tutorial	15
4	Others (specify, Kefayat)	5
	Total	45

B. Course Objectives and Learning Outcomes

1. Course Description

This course covers the basic concepts of applied statistics. So the topics to will be covered are:

- An overview of statistics and Probability.
- Probability -value, how to compute it and how to use it.
- Inferences about μ with σ unknown: the t-distribution and the assumptions required to check in order to use it.
- Compare the mean of two populations for independent samples: using pooled variances *t*-test versus separate variances *t*-test.
- Compare the mean of two populations for paired data.
- Compare two population proportions.
- Using contingency table and the Chi-square test of independence.
- Using an *F*-test to compare the variances of two populations.
- Concepts related to linear regression models including, least squares method, correlation, Spearman's rank order correlation, inferences about the parameters in the linear regression model.

2. Course Main Objective

After studying this course, the student is supposed to be able to:

- How to calculate the probability value, and how to use it.
- How to inference about μ with an unknown sigma.
- How to compare Populations ratios and samples.
- Use the probability table to compare the two differences of the Populations.
- Apply different methods of reasoning around parameters in regression and linear correlation models-Use Statistical analysis software SPSS in, analysis and representation of data.
- Apply MINITAB program to statistically analyze of data and explain the results in statistical analysis.

3. Course Learning Outcomes

CLOs		Aligned PLOs
1	**Knowledge and Understanding**	
1.1		
1.2		
1.3		

	CLOs	Aligned PLOs
1...		
2	**Skills:**	
2.1	How to calculate the probability value, and how to use it.	S4
2.2	How to compare Populations ratios and samples.	
2.3		
2...		
3	**Values:**	
3.1	How to inference about μ with an unknown sigma.	C1
3.2	Use the probability table to compare the two differences of the Populations.	
3.3	Apply different methods of reasoning around parameters in regression and linear correlation models.	
3.4	Use Statistical analysis software SPSS in, analysis and representation of data.	C3
3.5	Apply MINITAB program to statistically analyze of data and explain the results in statistical analysis.	
3...		

C. Course Content

No	List of Topics	Contact Hours
1	An overview of statistics and Probability. Probability -value, how to compute it and how to use it.	3
2	Inferences about μ with σ unknown: the t-distribution and the assumptions required to check in order to use it.	4
3	How to compare the mean of two populations for independent samples: using pooled variances t-test versus separate variances t-test.	4
4	How to compare the mean of two populations for paired data. How to compare two population proportions.	8
5	Using contingency table and the Chi-square test of independence.	8
6	Using an F-test to compare the variances of two populations.	8
7	Understanding concepts related to linear regression models including, least squares method, correlation, Spearman's rank order correlation, inferences about the parameters in the linear regression model.	10
Total		45

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**		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
1.1			
1.2			
…			
2.0	**Skills**		
2.1	The students should be able to know how to calculate the probability value, and how to use it.	Direct teaching: Lectures. Differentiation Aimed teaching: Discovery and oral questions. Indirect teaching: Peer Learning.	• Homework • Quiz • Midterms • Final Exams
2.2	The students should be able to know how to compare populations ratios and samples.	Directteaching: Lectures. Aimed teaching: Discovery and oral questions. Indirect teaching: Peer Learning.	• Homework • Quiz • Midterms • Final Exams
…			
3.0	**Values**		
3.1	How to inference about μ with an unknown sigma.	Direct teaching: Lectures. Aimed teaching: Discovery and oral questions. Indirect teaching: Cooperative Learning.	• Homework • Quiz • Midterms • Final Exams
3.2	Use the probability table to compare the two differences of the Populations.	Direct teaching: Lectures. Aimed teaching: Discovery and oral questions. Indirect teaching: Cooperative Learning.	• Homework • Quiz • Midterms • Final Exams
3.3	Apply different methods of reasoning around parameters in regression and linear correlation models.	Direct teaching: Lectures. Aimed teaching: Discovery and oral questions. Indirect teaching: Cooperative Learning.	• Homework • Quiz • Midterms • Final Exams

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
3.4	Use Statistical analysis software SPSS in, analysis and representation of data.	Direct teaching: Lectures. Aimed teaching: Discovery and oral questions. Indirect teaching: Cooperative Learning.	Homework
3.5	Apply MINITAB program to statistically analyze of data and explain the results in statistical analysis.	Direct teaching: Lectures. Aimed teaching: Discovery and oral questions. Indirect teaching: Cooperative Learning.	Homework

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Midterm 1	7th week	20%
2	Midterm 2	11th week	20%
3	Homework	Through of semester	5%
4	Quizzes	Through of semester	10%
5	Electronic Test	13th week	5%
6	Final exam	End of semester	40%
7			

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:

1) 4-office hours per week in the lecturer schedule.

2) The contact with students by e-mail and website.

3) Activation of the virtual classrooms and academic guidance via Black Board LMS.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	An Introduction to Statistical Methods and Data Analysis. Ott, R. L. and Longnecker. Cengage Learning. 2016. ISBN 13: 978- -1-305-26947 7, ISBN 10: 1- 305-26947-0
Essential References Materials	

Electronic Materials	http://ocw.mit.edu/courses/electrical
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	- Classroom with capacity of 30-students. - Computer Lab of Mathematics Department
Technology Resources (AV, data show, Smart Board, software, etc.)	Mathematical software packages like SPSS, MINITAB.
Other Resources (Specify, e.g. if specific laboratory equipment is required, list requirements or attach a list)	https://www.khanacademy.org/math/statistics-probability

G. Course Quality Evaluation

Evaluation Areas/Issues	Evaluators	Evaluation Methods
Effectiveness of teaching and assessment	Students/ internal committee	Direct (Students evaluation electronically organized by Deanship of registration and admission)/ Verification of students' papers
Extent of achievement of course learning outcomes	Staff members (Peer Reviewer)	Indirect (Frequent meetings consultation among the teaching staffs)
Quality of learning resources	Staff members (course coordinators)	Direct (Meeting between course coordinators and the tutors)

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	Mathematics Department
Reference No.	
Date	