



Course Specifications

Course Title:	THEORY OF STATISTIC (2)
Course Code:	STAT 419
Program:	Statistics
Department:	Statistics and Operations Research
College:	Science
Institution:	King Saud University

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A. Course Identification

1. Credit hours:	3(2+2+0)
2. Course type	
a.	University <input type="checkbox"/> College <input type="checkbox"/> Department <input checked="" type="checkbox"/> Others <input type="checkbox"/>
b.	Required <input checked="" type="checkbox"/> Elective <input type="checkbox"/>
3. Level/year at which this course is offered:	Level 7/Year 4
4. Pre-requisites for this course (if any):	STAT 340
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	3	100%
2	Blended		
3	E-learning		
4	Distance learning		
5	Other		

7. Contact Hours (based on academic semester)

No	Activity	Contact Hours
1	Lecture	40
2	Laboratory/Studio	20
3	Tutorial	20
4	Others (specify)	20
	Total	100

B. Course Objectives and Learning Outcomes

1. Course Description	Confidence interval & Parametric testing methods and properties.									
2. Course Main Objective	The aim of this course and the main learning outcomes for students enrolled in the course: 1- Review the confidence interval methods using pivotal quantity. 2- Review the methods and properties of testing hypothesis of parameters.									
3. Course Learning Outcomes										
	<table border="1"> <thead> <tr> <th></th> <th>CLOs</th> <th>Aligned PLOs</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Knowledge and Understanding</td> <td></td> </tr> <tr> <td>1.1</td> <td>Understand the elements of the testing hypothesis problem under investigation.</td> <td></td> </tr> </tbody> </table>		CLOs	Aligned PLOs	1	Knowledge and Understanding		1.1	Understand the elements of the testing hypothesis problem under investigation.	
	CLOs	Aligned PLOs								
1	Knowledge and Understanding									
1.1	Understand the elements of the testing hypothesis problem under investigation.									

CLOs		Aligned PLOs
1.2	Use mathematics in testing hypothesis.	
1.3	Make the suitable type of Testing Hypotheses among various techniques in the field.	
2	Skills :	
2.1	Demonstrate capability of choosing the appropriate statistical inference for a particular application	
2.2	Formulate significant research questions, use appropriate statistical inference method, and interpret the results.	
2.3	Read, evaluate, and interpret numerical, statistical and general scientific information.	
2.4	Comparing things should always be performed.	
2.5	Reaching the appropriate conclusions from the used analysis.	
3	Values:	
3.1	Short cut computation methods were illustrated in the class.	

C. Course Content

No	List of Topics	Contact Hours
1	Pivotal Quantity PQ- Confidence Interval (C.I) by PQ	8
2	C.I Of scale and location parameters using sufficient statistics	4
3	Approximating C.I as the sample size is large	4
4	Testing Hypotheses- Type I and Type II errors	4
5	Neymann-Person Lemma - Most Powerful test (MPT)	4
6	MPT - Exponential family- Monotone likelihood ratio (MLR)	4
7	Bayes Test (B)	4
8	Min Max Test (MM)	4
9	Composite hypothesis Uniformly Most Powerful Test (UMPT)	8
10	Generalized Likelihood Ratio Test (GLR)	4
11	Confidence interval test	4
12	Sequential Likelihood Ratio Test(SLRT)	8
Total		60

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	Understand the elements of the testing hypothesis problem under investigation.	1-Textbook 2-References 3-Notes 4-Tutorial discussions	Mid-term exams Home works Final Exam Projects
1.2	Use mathematics in testing hypothesis.		
1.3	Make the suitable type of Testing Hypotheses among various techniques in the field.		

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
2.0	Skills		
2.1	Demonstrate capability of choosing the appropriate statistical inference for a particular application		
2.2	Formulate significant research questions, use appropriate statistical inference method, and interpret the results.		
2.3	Read, evaluate, and interpret numerical, statistical and general scientific information.		
2.4	Comparing things should always be performed.		
2.5	Reaching the appropriate conclusions from the used analysis.		
3.0	Values		
3.1	Short cut computation methods were illustrated in the class.		

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Home works	weekly	10%
2	First mid-term exam I	6	25%
3	Second mid-term exam II	12	25%
4	Final exam	16	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 :

(include amount of time teaching staff are expected to be available each week)

- 5 hours/ week.
- Communications by e- mail.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	1. Introduction to Mathematical Statistics. Last Ed, by Hogg, McKean, and Craig, Prentice Hall. 2. Introduction to Theory of Statistics by A. Mood, F. Graybill & B. Boes. McGraw Hill; Last Ed Principals of Statistical Inference (Jalal Al Sayad) (5990) – للنشر المريح دار الرياض.
Essential References Materials	Lectures' Notes.

Electronic Materials	Encouraging students to obtain related information from the Internet.
Other Learning Materials	<ul style="list-style-type: none"> Lectures' Notes. Power point presentations and other handouts posted on the course web site.

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Computer room (Zoom).
Technology Resources (AV, data show, Smart Board, software, etc.)	<ul style="list-style-type: none"> Data show Smart Board
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
Effectiveness of teaching	Students	Indirect (Survey)
Quality of learning resources	Students	Indirect (Survey)
Achievement of course learning outcomes	Faculty	Direct (Written exam)

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	Dr. Yusra Tashkandy
Reference No.	26357
Date	2/5/2021