هيئة تقويم التعليم والتدريب
Education & Training Evaluation Commission

Course Specifications

Course Title:	Applied Statistics
Course Code:	453 Stat
Program:	B. Sc. in Mathematics
Department:	Mathematics
College:	Science
Institution:	Jazan University

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A. Course Identification

1. Credit hours:
2. Course type **a.** University ☐ College ☐ Department ☑ Others ☐ **b.** Required ☑ Elective ☐
3. Level/year at which this course is offered: Level 7/Year 4
4. Pre-requisites for this course (if any)**:** Stat 352
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**	60	100%
2	**Blended**		
3	**E-learning**		
4	**Distance learning**		
5	**Other**		

7. Contact Hours (based on academic semester)

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

B. Course Objectives and Learning Outcomes

1. Course Description

This course is designed to provide students with

- **Parametric Estimation**: Point estimation, intervals estimation, maximum value of error in estimation, sample size estimation, confidence intervals estimation for population mean in large samples size (small sample size), confidence interval estimation for proportion of population, confidence intervals estimation for variance and standard deviation, confidence interval estimation for difference of two populations means in large samples size (small sample size), confidence intervals estimation for difference between two mean in dependent populations, confidence intervals estimation for difference of two proportions, confidence intervals estimation for ratios of two normal populations variances.

- **Hypotheses Testing**: Testing the population mean (large and small sample), testing the population proportion, testing the population variance or standard deviation, testing the difference between two means (large and small sample), testing the difference between two proportions, testing the ratio of two variances, testing the pair samples.

- **Chi-Square Tests**: Chi-square test of goodness-of-fit, Chi-square tests of independence and homogeneity.

- **Analysis of Variances**: One-way analysis of variances for fixed variables, complete random design analysis, two-way analysis of variances for fixed variables, complete randomize block design, two-way analysis of variance, the model of the impact of two factors and several levels and interaction between them.

- **Regression and Correlation**: Statistical inference about regression factors, coefficient of association and coefficient of contingency, coefficient of determination, multiple linear regression, multiple and partial correlation, transformations in linear regression.

- **Non-parametric Statistics**: Sign test, Wilcoxon signed rank test, Mann- Whiteny test, Kruskal-Wallis test, Run test.

2. Course Main Objective

After finishing the course, the student is expected to be familiar with the following:

- Application of statistics for solving different problems.
- Statistical methods for data analysis.
- Deep knowledge of statistics.
- Some software in Applied statistics.

3. Course Learning Outcomes

	CLOs	Aligned PLOs
1	**Knowledge and Understanding**	
1.1	Distinguish mathematical concepts relevant to Parametric estimation, Hypotheses testing, Regression and correlation, Chi-square tests, Analysis of variances, Nonparametric Statistics.	K1
1.2	Explain required notations and concepts in Parametric estimation, Hypotheses testing, Regression and correlation, Chi-square tests, Analysis of variances, Nonparametric Statistics.	K3
2	**Skills :**	
2.1	Apply aspects relevant to Parametric estimation, Hypotheses testing, Regression and correlation, Chi-square tests, Analysis of variances, Nonparametric Statistics.	S1
2.2	Compute rates/quantities and Approximate Solutions in Parametric estimation, Hypotheses testing, Regression and correlation, Chi-square tests, Analysis of variances, Nonparametric Statistics..	S2
2.3	Solve mathematical problems using critical thinking and problem solving in Parametric estimation, Hypotheses testing, Regression and correlation, Chi-square tests, Analysis of variances, Nonparametric Statistics.	S4
3	**Values:**	
3.1	Cultivate a mathematical attitude and nurture the interest.	V1
3.2	Inculcating values and ethics in thought, expression and deed.	V3

C. Course Content

No	List of Topics	Contact Hours
1	Parametric estimation	5
2	Hypotheses testing,	5
3	Regression and correlation	5
4	Chi-square tests	5
5	Analysis of variances	5
6	Nonparametric Statistics.	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	Distinguish mathematical concepts relevant to Parametric estimation, Hypotheses testing, Regression and correlation, Chi-square tests, Analysis of variances, Nonparametric Statistics.	Lectures, Web based work, Classroom discussions.	Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
1.2	Explain required notations and concepts in Parametric estimation, Hypotheses testing, Regression and correlation, Chi-square tests, Analysis of variances, Nonparametric Statistics.	Lectures, Web based work, Classroom discussions.	Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
2.0	**Skills**		
2.1	Apply aspects relevant to Parametric estimation, Hypotheses testing, Regression and correlation, Chi-square tests, Analysis of variances, Nonparametric Statistics.	Lectures, problem solving, Web based work, Classroom discussions	Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
2.2	Compute rates/quantities and Approximate Solutions in Parametric estimation, Hypotheses testing, Regression and correlation, Chi-square tests, Analysis of variances, Nonparametric Statistics..	Lectures, problem solving, Web based work, Classroom discussions	Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
2.3	Solve mathematical problems using critical thinking and problem solving in Parametric estimation, Hypotheses testing, Regression and correlation, Chi-square tests, Analysis of variances, Nonparametric Statistics.	Lectures, problem solving, Web based work, Classroom discussions	Written exam (Problem solve, MCQ, true/false, Proof, Short answer), Quizzes, Assignments
3.0	**Values**		
3.1	Cultivate a mathematical attitude and nurture the interest.	Group work, problem solving, web based work	Assignments
3.2	Inculcating values and ethics in	Group work, problem	Assignments

Code	Course Learning Outcomes	Teaching Strategies	Assessment Methods
	thought, expression and deed	solving, web based work	

2. Assessment Tasks for Students

#	Assessment task*	Week Due	Percentage of Total Assessment Score
1	Homework	3	5%
2	First exam.	6	20%
3	Second exam.	12	20%
4	Homework	14	5%
5	Final exam.	16	50%

***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 :
Each group of students assigned to a member of staff who will be available for help and academic guidance office hours at specific hours on daily basis. At least be available 8 hours per week.

F. Learning Resources and Facilities

1.Learning Resources

Required Textbooks	Bluman, A. G. (2007). Elementary Statistics a Step by Step Approach, 7th Edition, McGraw-Hill.
Essential References Materials	- مبادئ الإحصاء و الاحتمالات تأليف د. عدنان بري وآخرون ، الطبعة الثالثة 1997م. - مفاهيم لطرق التحليل الإحصائي تأليف محمود هندي و خلف سلمان، مكتبة الرشد، الطبعة الثالثة 2007م. - الاسهام في الاحصاء التطبيقي تأليف د.نادر شعبان السواح, الدار الجامعية-الاسكندرية
Electronic Materials	Web sites dedicated to Applied Statistics available on the internet.
Other Learning Materials	

2. Facilities Required

Item	Resources
Accommodation (Classrooms, laboratories, demonstration rooms/labs, etc.)	Classroom, Computer Lab.
Technology Resources (AV, data show, Smart Board, software, etc.)	Data show; Smart Board; Statistics Software
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, Peer and program leader	Indirect (Course Evaluation Survey)- Indirect peer evaluation
Assessment	Students, Program assessment committee	Direct/ Indirect
Extent of achievement of course learning outcomes	Instructor	Direct/Indirect
Quality of learning resources	Students, Faculty members	Indirect

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	**Board Of Mathematics Department**
Reference No.	**12th Meeting Of The Board Of Mathematics Department 1441-1442**
Date	**14/6/1442 A. H.; 27/1/2021 A. D.**