Faculty: Faculty of Science	
Department: service courses unit	**Program: Bachelor's**
Academic year:	**Semester:**

Course Plan

First: Course Information

Course No. 0300103	***Course Title: Statistics and Probability***	***Credit Hours:* 3**
Prerequisite:	***Section No.:***	***Lecture Time:***
Type Of Course:	☐ ***Obligatory Faculty Requirement*** ☐ ***Elective University Requirement*** ☐ ***Obligatory University Requirement*** ☐ ***Faculty Requirement*** ☐ ***Course Elective Specialty Requirement*** ■ ***Obligatory Specialization requirement***	
Type of Learning:	☐ ***Blended Learning (2 Face-to-Face + 1Asynchronous***	

Second: Instructor's Information

Name:	***Academic Rank:***	
Office Number:	***Phone Number:***	***Email:***
Office Hours:		

Third: Course Description

Descriptive Statistics, data presentation. Measures of central deviation (The Arithmetic Mean, Harmonic Mean, Geometric Mean, Median, Mode and Quartiles). Measures of Variation (The range, Variance and Standard Deviation, Cofficient of variation, Cofficient of skewness). Techniques of Counting: (Multiplication rule, Permutations and Combinations). Laws of Probability Probability of union and intersection events, Conditional Probability and independence, Bayes Theorem. Random variables, Probability Distribution function, Expectation and Variance. Binomial, Poisson, Geometric, Hypergeometric and Normal distributions. Inference about mean, and the Difference between two means: Estimation of the Mean, Confidence intervals, Estimation of Differences Between two Means. Hypothesis testing.

Fourth: Course Objectives

• To provide students a deeper understanding about the statistical data its types, collection, interpretation and analysis of data.
• Learn and use the concepts of theory of Probability.
• To provide students, the knowledge of Discrete and Continuous Probability distribution and their applications in computer engineering.
• To enable the students to learn and apply the tools for curve fitting via Linear Regression and Correlation.

Fifth: Learning Source

Main Reference:	Principal of Applied Statistics		
Author: Fleming M. C.	***Issue No.:*** **8th Edition**	***Publication Year*: 1982**	
Additional Sources and Websites:	Modern elementary statistics		
Teaching Type:	■ ***Classroom*** ☐ ***Laboratory*** ☐ ***Workshop*** ☐ ***MS Teams*** ☐ ***Moodle***		

Sixth: Learning Outcomes

Level descriptor according to (JNQF)	**CILOs Code**	**CILOs**	**Associated PILOs Code** Choose one PILO for each CILO*	**Assessment method**** Choose at least two methods	**Scores out of 100** State the total score identified for each CILO
Knowledge	K1	To identify and understand the basic principles, components and measurements in statistics that used to describe data, and to recognize the essential tools (such as Tables, Graphs and Diagrams) used for this description.	PK1, PK3	Mid Exam, Final Exam, Assignment	10
	K2	To understand and recognize the basic principles of probability including the laws for unions, intersections, and complementation, Bayes theorem and use these principles in problem solving situations.	PK1, PK3, PK4	Mid Exam, Final Exam, Assignment	10

	K3	Understand the definitions of discrete, continuous, and joint random variables, and identify the corresponding distribution functions and marginal and joint density functions and related mean, variance, covariance…etc.	PK1, PK3	Mid Exam, Final Exam, Assignment	10
Skills	S1	To create frequency tables for data and display and interpret the corresponding graphs and diagrams, and to calculate the measures of central tendency and spread of data.	PS2, PS1	Mid Exam, Final Exam, Assignment	15
	S2	To solve problems that involve principles of probability, and to calculate probabilities using Conditional probability, Rule of total probability and Bayes' theorem, and to compute the mean, variance and covariance of random variables.	PS2, PS3	First Exam, Second Exam, Final Exam, Assignment	15
	S3	To be able to find or approximate one distribution function from the other, and be able to find the marginal density and distribution functions from the joint density function.	PS1, PS2	First Exam, Second Exam, Final Exam, Assignment	15
Competencies	C1	*Engage students in solving problems to build deep thinking*	PC3	First Exam, Second Exam, Final Exam, Assignment	12
	C2	*Discussion of how to practically apply the theorems and skills development partnership and cooperation to work in a spirit of collective action.*	PC1	First Exam, Second Exam, Final Exam, Assignment	13

***Refer to document ( ) and page 2 in document ( )**
**** Refer to document ( )**
****80% of the students must achieve the minimum acceptable percentage or higher for each CILO**

Seventh: Course Structure

Lecture Date	Intended Teaching Outcomes (ILOs)	Topics	Teaching Procedures*	Teaching Methods***	References***
	K1.	Data Collection, Survey, Types of data, Sampling techniques	Face-to-Face	Lectures, cooperative learning and discussion	Pages of the book, recorded lecture, video
	K1	Data Collection, Survey, Types of data, Sampling techniques	Face-to-Face	Lectures, cooperative learning and discussion	Pages of the book, recorded lecture, video
	K1. C1	Activity	Asynchronous	Lectures, cooperative learning and discussion	Pages of the book, recorded lecture, video
	K1. S1	Data representation: Dot Diagrams, Stem – and – Leaf Displays, Frequency Distributions	Face-to-Face	Lectures, cooperative learning and discussion	Pages of the book, recorded lecture, video
	K1. S1	Data representation: Dot Diagrams, Stem – and – Leaf Displays, Frequency Distributions	Face-to-Face	Lectures, cooperative learning and discussion	Pages of the book, recorded lecture, video
	K1, S1, C1, C2	Activity	Asynchronous	Lectures, cooperative learning and discussion	Pages of the book, recorded lecture, video
	K1. S1	Graphical Presentations.	Face-to-Face	Lectures, cooperative learning and discussion	Pages of the book, recorded lecture, video
	K1. S1	Measures of Location (The Mean, Median, Mode, Percentiles and Quartiles)	Face-to-Face	Lectures, cooperative learning and discussion	Pages of the book, recorded lecture, video
	K1, S1, C1	activity	Asynchronous	Lectures, cooperative learning and discussion	Pages of the book, recorded lecture, video
	K1. S1	Measures of Location (The Mean, Median, Mode, Percentiles and Quartiles) Activity	Face-to-Face	Lectures, cooperative learning and discussion	Pages of the book, recorded lecture, video
	K1. S1	Measures of Variation (The range, Variance, Standard Deviation)	Face-to-Face	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K1. S1	Measures of Variation (The range, Variance, Standard Deviation)	Asynchronous	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K2, S2	Techniques Of Counting, Permutations,	Face-to-Face	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video

	K2, S2	Techniques Of Counting, Combinations..	Face-to-Face	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K2, S2	Techniques Of Counting, Activity	Asynchronous	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K2,	Sample Space and Events, Axioms of Probability	Face-to-Face	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K2, S2	Conditional Probability	Face-to-Face	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K2, S2	Conditional Probability Activity	Asynchronous	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K2, S2	Independence, Multiplication rule, Bayes Theorem.	Face-to-Face	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K2, S2	Independence, Multiplication rule, Bayes Theorem.	Face-to-Face	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K3	Distribution and Expectation of Random Variables,	Asynchronous	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K3, S3	Independence, Multiplication rule, Bayes Theorem.	Face-to-Face	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K3, S3	Independence, Multiplication rule, Bayes Theorem. Activity	Face-to-Face	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K3, S3	Independent Random Variables, Functions of Random Variables	Asynchronous	Lecture	Pages of the book, recorded lecture, video
	K3, S3	Discrete Random Variables	Face-to-Face	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K3, S3	Discrete Random Variables Activity	Face-to-Face	lecture	Pages of the book, recorded lecture, video
	K3, S3	Central Limit Theorem, Multinomial Distribution	Asynchronous	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K3, S3	The Estimation of	Face-to-Face	Lecturing,	Pages of the book, recorded

		Means, The Estimation		discussion and solving problems	lecture, video
	K3, S3	The Estimation of Means,	Face-to-Face	Lecture	Pages of the book, recorded lecture, video
	K3, S3	Differences Between Means	Asynchronous	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K3, S3	the Ratio of Two Variances Activity	Face-to-Face	Lecture	Pages of the book, recorded lecture, video
	K3, S3	Test Concerning Means, Test Concerning Differences Between means	Face-to-Face	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K3, S3	Test Concerning Means, Test Concerning Differences Between means	Asynchronous	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K3, S3	Means, Test Concerning Variance	Face-to-Face	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K3, S3	Regression Analysis	Face-to-Face	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K3, S3	Regression Analysis	Asynchronous	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K3, S3	Regression Analysis Activity	Face-to-Face	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K3, S3	Pearson's Correlation Coefficient	Face-to-Face	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K3, S3	Pearson's Correlation Coefficient	Asynchronous	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video
	K3, S3	Pearson's Correlation Coefficient Activity	Face-to-Face	Lecturing, discussion and solving problems	Pages of the book, recorded lecture, video

* Learning procedures: (Face-to-Face, synchronous, asynchronous). * * Teaching methods: (Lecture, video…..). ** * Reference: (Pages of the book, recorded lecture, video….).

Eighth: Assessment methods

Methods	Online Learning	Blended Learning	Face-To-Face Learning	Measurable Course (ILOs)
First Exam	0	0	0	
Second Exam	0	0	0	
Mid-term Exam	0	30	0	
Participation	0	0	0	
Asynchronous Activities	0	20	0	
Final Exam	0	50	0	

Methods	Direct Teaching	K1	K2	K3	S1	S2	S3	C1	C2
mid Exam	**30**	**10**	**6**		**8**	**4**		**2**	
Final Exam	**50**	**2**	**6**	**12**	**4**	**8**	**12**	**6**	
Assignment	**20**				**3**	**3**	**3**	**4**	**7**
Total	**100**	**12**	**12**	**12**	**15**	**15**	**15**	**12**	**7**

Ninth: Course Policies

- All course policies are applied on all teaching patterns (online, blended, and face-to-face Learning) as follows:
  a. Punctuality.
  b. Participation and interaction.
  c. Attendance and exams.
- Academic integrity: (cheating and plagiarism are prohibited).

Approved by:	Name	Date	Signature
Head of Department			
Faculty Dean			