Department	General Studies Center	Major						
Course Name	Statistics and Probability	Course Code	STAT 301					
D		Credit Hours	3 CTH 4					
Prerequisites		CRH	L 3 P 1 T 0					
Course Description :								
This course is des	signed for students majoring in engi	ineering of techno	logy. Topics include:					
Counting Rules a	and Probability, Random variables,	Probability distri	bution, Simple linear					
regression and C	orrelation, Introduction to statistics	and Parameter I	Estimation.					
General Objectiv	re:							
• To give th	e students an understanding of stati	istics.						
• To learn s	ome commonly used statistical tech	niques.						
To apply t	these techniques in describing and a	nalyzing data.						
To use sta	tistics to solve different kind of prol	blems.						
To recogn	ize good statistical studies.							
To gain an	n appreciation for analytical skills.							
Detailed Objectiv	/es:							
Trainee will be	able to:	·····						
1 Determine	sample spaces and find the probab	anty of an event,	using classical probability					
- Find the n	robability of compound events usir	ng the addition ru	les					
- Find the p	robability of compound events, using the second events and the second events are second events and the second events are second events and the second events are second events	ng the multiplication	ion rules					
- Find the p	onditional probability of an event.	ig the multiplicati	ion ruics.					
- Find the to	otal number of outcomes in a seque	nce of events, usin	g the fundamental counting					
rule.	ľ	,	0 0					
- Find the n	umber of ways that r objects can be	e selected from n	objects, using the					
permutation	n rule.							
- Find the n	umber of ways that r objects can be	e selected from n	objects, without regard to					
order, using	g the combination rule.							
- Find the p	robability of an event, using the cou	inting rule.						
2 Find the n	nean, variance, standard deviation,	and expected valu	ie for a discrete and					
continuous	random variable.							
- Find the n	nean, variance, standard deviation,	and expected valu	e for a Moment generating					
function an	function and probability generating function.							
3 Find the n	3 Find the mean, variance, standard deviation for the variable of some distributions.							
- Find the e	- Find the exact probability for X successes in n trails of a binomial distribution.							
- ring probabilities for outcomes of variable, using Poisson distribution.								
- ruentity the properties of a uniformly distributed variable								
- Identify th	- Identify the properties of a exponential distribution.							
- Find prob	- Find probabilities for a exponentially distributed variable.							
- Identify the properties of a normal distribution.								
- Identify distributions as symmetric or skewed.								
- Find the area under the standard normal distribution, given various Z value.								
- Find probabilities for a normally distributed variable by transforming it into a standard								
normal distribution.								
- Find speci	fic data values for given percentage	s, using the stand	ard normal distribution.					

4-	- Find a prediction.
	- Compute the equation of the regression.
	- Draw a scatter plot for a of ordered pairs.
	- Compute the correlation coefficient.
5-	- Determine reasons for sampling.
	- Find sampling methods.
	- Find statistic for sampling distribution.
	- Find sampling distribution of sample means.
	- Find sampling distribution of variance.
	- Point Estimation.
	- Interval Estimation.
	- Confidence Interval Estimation.

Detailed of Theoretical Contents					
Hours			Contents	Assessment Tools	
12	Counting Rules and Probability:				
	• The Basic Principle of Counting, Permutations, Combinations. Quiz: 1				
	Random experiment, Sample space, Events, Axioms of Exam: 1 Eight Energy				
	probability. Final Exam				
	• Conditional probability and independence, Bayes theorem.				
	Textbook		(2006)		
		2	Sheldon Ross, "A FIRST COURSE IN PROBABILIT	'Y", 7 th Edition	
8	Random V	arial	oles:		
	• Discrete	and c	continuous Random variables, expected value,	Quiz: 2	
	variance	– pro	bability mass function and probability density	Exam: 1	
	function	•		Final Exam	
	 Moment generating function and probability generating function. 				
	Bain & Engelhardt, Introduction to Probability and Mathematical				
	Textbook	1	Statistics, Duxbury Press		
			2 G.M. El-Sayyad: Theory of probability, ۱۹۹۰، دار الأفاق – جده،		
12	Probability	distr	ibution:		
	One vari	able o	discrete probability distributions (Binomial,	Quiz: 3	
	Poisson)).		Exam: 2	
	One vari	able o	continuous probability distributions (Uniform,	Final Exam	
	Exponential, Normal).				
	Bain & Engelhardt, Introduction to Probability and Mathematical				
	Textbook	1	Statistics, Duxbury Press		
			2 G.M. El-Sayyad: Theory of probability, ۱۹۹۰، دار الأفاق – جده،		
8	Simple line	ar reg	gression and Correlation:	Quiz: 4	
	Prediction	on – R	Regression Analysis.	Exam: 2	
	Pearson's correlation coefficient and Spearman's rank Final Exam				
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Detailed of Theoretical Contents					
Hours	Contents Assessment Tools				
	1 Textbook 2		Bluman, "Elementary Statistics a Step by Step Approa (2006)	ch", 6th Edition	
			Larson & Farber, "Elementary Statistics: Picturing the World", 3rd Edition (2006)		
8	Introduction to statistics and Parameter Estimation:				
	Samplin Statistic	Sampling Theory - Sample Distribution Function - Samples and Statistics.Quiz: 5 Final Exam			
	Methods	ods of Estimation (Point, Interval) - Confidence Interval.			
	Textbook 1 Devore, Jay L., Probability and Statistics for Engineering and the Sciences, Eighth Edition 2 Bluman, "Elementary Statistics a Step by Step Approach", 6th Edition (2006)		ing and the		
			Bluman, "Elementary Statistics a Step by Step Approach", 6th Edition (2006)		

Detailed of Practical Contents				
Hours	Contents Assessment Tools			
4	Counting Rules and Probability:			Quiz: 1
	Factoria	• Factorials, Permutations, and Combinations.		
	Construe	cting a	a Relative Frequency Distribution.	Final Exam
	3 Textbook 4		Bluman, "Elementary Statistics a Step by Step Approa (2006)	ach", 6th Edition
			Ezz, " DISCOVERING STATISTICAL ANALYSIS & BOOTSTRAP BY USING IBM-SPSS ", 1 st Edition (2013)	
2	Random variables:Image: Second se		Quiz: 2 Exam: 1 Final Exam	
	Textbook	3	Bluman, "Elementary Statistics a Step by Step Approach", 6th Edition (2006) Ezz, " DISCOVERING STATISTICAL ANALYSIS & BOOTSTRAP BY USING IBM-SPSS ", 1 st Edition (2013)	
4	Probability	distr	ibution:	i
	 Binomial Distribution and Graph. Poisson Distribution. Normal Distribution. Exponential Distribution. 		Quiz: 3 Exam: 2 Final Exam	
	Textbook Bluman, "Elementary Statistics a Step by Step Approx (2006) 4 Ezz, " DISCOVERING STATISTICAL ANALYSIS of BY USING IBM-SPSS ", 1st Edition (2013)		& BOOTSTRAP	
			BY USING IBM-SPSS ", 1 st Edition (2013)	

Detailed of Practical Contents					
Hours	Contents Assessment Tools		Assessment Tools		
3	Simple line	linear regression and Correlation:			
	Scatter I	er Plot. Quiz			
	Prediction	on – R	egression Analysis.	Exam: 2	
	• Pearson	s corr	elation coefficient and Spearman's rank	Final Exam	
	correlati	on co	efficient.		
	Bluman, "Elementary Statistics a Step by Step Approach", 6th Edition				
	Toythook				
	I CALDOOK	_	Ezz, "DISCOVERING STATISTICAL ANALYSIS	& BOOTSTRAP	
		4	BY USING IBM-SPSS ", 1st Edition (2013)		
3	Introduction to statistics and Parameter Estimation:				
	• Sampling Theory - Sample Distribution Function - Samples and Quiz: 5				
	Statistic	Statistics . Final Exam			
	 Methods 	Methods of Estimation (Point , Interval) - Confidence Interval.			
	Bluman, "Elementary Statistics a Step by Step Approach", 6th Edition		ach", 6th Edition		
		3	(2006)		
	Textbook		Ezz, " DISCOVERING STATISTICAL ANALYSIS	& BOOTSTRAP	
		4	BY USING IBM-SPSS ", 1st Edition (2013)		

Textbooks	• Bluman, "Elementary Statistics a Step by Step Approach", 6th Edition (2006)
	• Sheldon Ross, "A FIRST COURSE IN PROBABILITY", 7 th Edition
	 Bain & Engelhardt, Introduction to Probability and Mathematical Statistics, Duxbury Press
	• G.M. El-Sayyad: Theory of probability, ۱۹۹۰ ، دار الآفاق – جده
	• Larson & Farber, "Elementary Statistics: Picturing the World", 3rd Edition (2006)
	• Devore, Jay L., Probability and Statistics for Engineering and the Sciences, Eighth Edition
	• Ezz, " DISCOVERING STATISTICAL ANALYSIS & BOOTSTRAP BY USING IBM-SPSS ", 1st Edition (2013)

List of Detailed Equipment for Laboratory, Workshop or Lab

No.	Laboratory name / workshop	Capacity of training	Human Resources with Certificate
1-	Computer lab	40	

Workshop / Lab of Computer				
No. Product's Name Quant				
1-	Computer devices.	40		
2-	SPSS program.	40		
3-	MINITAB program.	40		
4-	EXCEL program.	40		