Module (Course Syllabus) Catalogue 2022-2023

College/ Institute	**Erbil Technology College**
Department	**Construction and Materials Technology Engineering**
Module Name	**Introduction to Statistics**
Module Code	**IST241**
Degree	**Technical Diploma** ☐ **Bachler** ☑ **High Diploma** ☐ **Master** ☐ **PhD** ☐
Semester	**5st Semester**
Qualification	**MSc.**
Scientific Title	**Assist. Lecturer**
ECTS (Credits)	**4**
Module type	**Prerequisite** ☐ **Core** ☐ **Assist.** ☑
Weekly hours	**3 hours**
Weekly hours (Theory)	**(3) hr Class** / **(168) Total hrs Workload**
Weekly hours (Practical)	**(0) hr Class** / **(0) Total hrs Workload**
Number of Weeks	**14**
Lecturer (Theory)	**Lawin Dhahir Hayder**
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Lecturer (Practical)	**-**

E-Mail & Mobile NO.	**-**
Websites	
Course Description	Statistics are important in many fields of engineering such as how to collecting data and facts about the phenomenon to obtain data, uses the charts, Graphical presentation, there is different statistical methods and practical applications statistical analysis to solve various problems & using Statistical SPSS program. SPSS is important program for students in civil engineering, it helps students organize information in tables, use different applications on them & Microsoft power point to presentations & seminars for your final project.
Course Objectives	▪ Learn the concept of statistics to collect data to get the digital data or descriptive by accuracy for a particular phenomenon, ▪ Learn the hypothesis specific and organizing, tabulating the data. this data is sorted every phenomenon in the form of the group, to classified on the basis using the statistical relationships. ▪ Present data to the Graphical presentation. There are many ways to graph data, histograms, frequency polygon, bar chart. ▪ Using statistical laws and their practical applications by Measure of Central Tendency, Measures of dispersion General rules in probability (Combinations, Permutation), Basic concepts of probability & Correlation Simple linear regression. ▪ How to extract the numerical values, meanings and interpretations to get the results. ▪ Using the statistical inferential deals with the forecasting estimation, conclusions, results by visual diagrams & SPSS program to do the project & presentation the seminar by Microsoft office power point.
Student's Obligation	Students must attend all lectures. They also do quick daily exams. Furthermore, they are required to do their homework and duties that will be assigned to them. They must do seminars and projects. Finally, they must pass the final and midterm exam.
Required Learning Materials	During lecturing the data show is used for showing lecture notes using power point program while the white board is used for explanation and solving problems and using software to analysis data.

	Task		Weight (Marks)	Due Week	Relevant Learning Outcome
Evaluation	Paper Review				
	Assignments	Homework	14%		
		Class Activity	2%		
		Report			
		Seminar	8%		
		Essay			
		Project	8%		
	Quiz		4%		
	Lab.				
	Midterm Exam		24%		
	Final Exam		40%		
	Total		100%		

Specific Learning Outcome:	**At the end of course, participants should be able to:** 1- Introduce the statistics and how to collecting data and facts about the phenomenon, the Process of data collection, through the field sources or historical sources then organizing & tabulating present data to the Graphical presentation, histograms, frequency polygon, bar chart, … 2- Organize & tabulate the data for facilitates the process of analysis to using the Frequency Distribution Table. 3- Use the practical applications by Measure of Central Tendency, Measures of dispersion, standard deviation and variance. 4- Use General rules in probability (Combinations, Permutation) & Basic concepts of probability 5- Apply on binomial, normal, T- distribution …. 6- Use the statistical relationships statistical laws, to extract the numerical values, meanings and interpretations to find the Correlation, Simple linear regression to get the results. different statistical methods and practical applications statistical analysis to solve various problems by using Statistical SPSS program, to do the project & presentation the seminar by Microsoft office power point.
Course References:	1) Michael J. Crawley, "statistics an introduction using R ", imperial college London, UK, 2005. 2) Willian Navidi, "statistics for engineers & scientists ", 2011. 3) Jessica Mutts, 2010, Mind on Statistics, University of California, Irvine, Fourth Edition. 4) Murray R Spiegle, “Theory and Problems of Statistics” McGrawHill Book Company,1972. 5) SPSS: Stats Practically Short and Sample, 2009, Sidney Tyrell and bookboon.com, ISBN 978-87-7681-474-8, 1st sedition. 6) د.محمود المشهداني هرمز حنا واميير " الاحصاء " بغداد جامعة 1989. 7) عوض مال مراد " الاحصاء اساسيات و البدايه دار 2008.

Course Topics (Theory)	Week	Learning Outcome
Introduction of description and inferential statistics Pictorial description of data & data classification.	1	
Frequency distribution & cumulative frequency Distribution	2	
Histogram, frequency polygon	3 & 4	
Measure of Central Tendency	5,6 & 7	
Measures of Dispersion	8 & 9	
Probabilities of simple & compound events	10	
Permutations & Combinations	11	
Binomial distribution ,poisons distribution & normal distribution	12	
t-distribution & F- distribution	13 & 14	

Questions Example Design

Q1// *(25 Marks)*

Suppose you have the following data for which type of car students at a college drive?

Ford, Chevy, Honda, Toyota, Toyota, Nissan, Kia, Nissan, Chevy, Toyota, Honda, Chevy, Toyota, Nissan, Ford, Toyota, Nissan, Mercedes, Chevy, Ford, Nissan, Toyota, Nissan, Ford, Chevy, Toyota, Nissan, Honda, Porsche, Hyundai, Chevy, Chevy, Honda, Toyota, Chevy, Ford, Nissan, Toyota, Chevy, Honda, Chevy, Saturn, Toyota, Chevy, Chevy, Nissan, Honda, Toyota, Toyota, Nissan.

- Find relative frequency distribution of the data?
- Draw a bar graph of the data?

Q2// a- consider the set (3, 11, 12, 19, 22, 23, 24, 25, 27, 29, 35, 36, 37, 45, and 49) range of class equal to (10) determine the skwness?
(15 Marks)

b- If the sample space S = A U B, P (A) = 0.8, and P (B) = 0.5 find P (A ∩ B)? *(5 Marks)*

Q3// Determining spot speed characteristics from a set of spot speed data mentioned, data collected on an urban (60-m Ring Road) in Erbil City during a spot speed study below: so determine all of them for input data:

1.The mean spot speed
2.The rang of spot speed
3.The variance of spot speed
4.The standard deviation of spot speed
5.The coefficient of variance of spot speed
6.The frequency of polygon if length (range) of class equal to 5 (normal or not normal distribution)

Input data 37 51 55 65 42 40 55 60 42 47 35 58 59 48 42 56 59 42 53 65 65

(30 Marks)

Q4// *a-* Define qualitative data with giving examples. *(5 Marks)*

b- What is the difference between Descriptive statistics and Inferential statistics according to their form of final result? *(10 Marks)*

c- What are the common types of bias in survey? *(10 Marks)*

Extra notes:

External Evaluator

Assistant Professor
Dr. Saad Khalis Essa