



## Module (Course Syllabus) Catalogue 2023-2024

College/ Institute	Khabat Technical Institute	
Department	Information Technology	
Module Name	Statistics	
Module Code	STA202	
Degree	Technical Diploma <input checked="" type="checkbox"/>	Bachler <input type="checkbox"/>
	High Diploma <input type="checkbox"/>	Master <input type="checkbox"/> PhD <input type="checkbox"/>
Semester	Two	
Qualification	MSc	
Scientific Title	Assistant Professor	
ECTS (Credits)	6	
Module type	Prerequisite <input type="checkbox"/>	Core <input checked="" type="checkbox"/> Assist. <input type="checkbox"/>
Weekly hours	6 hr	
Weekly hours (Theory)	(2) hr Class	(55) Total hrs Workload
Weekly hours (Practical)	(4) hr Class	(95) Total hrs Workload
Number of Weeks	12	
Lecturer (Theory)	Hemn Othman Salih	
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Websites	<a href="https://moodle.epu.edu.iq/course/view.php?id=2277">https://moodle.epu.edu.iq/course/view.php?id=2277</a>	

# Course Book

<p><b>Course Description</b></p>	<p>This course offers lecture and online interaction to provide a foundation in statistics concepts. The statistics is the Science of collection, presentation, analysis, and reasonable interpretation of data.</p> <p>Statistics presents a rigorous scientific method for gaining insight into data. For example, suppose we measure the weight of 100 patients in a study. With so many measurements, simply looking at the data fails to provide an informative account. However statistics can give an instant overall picture of data based on graphical presentation or numerical summarization irrespective to the number of data points. Besides data summarization, another important task of statistics is to make inference and predict relations of variables.</p>
<p><b>Course objectives</b></p>	<p>The educational Objectives of this Course are:</p> <ol style="list-style-type: none"> <li>1. You will be prepared for more advanced courses in multiple regression and analysis of variance.</li> <li>2. .You will learn and appreciate the sensation of quantification.</li> <li>3. .We will help each other so that no one will fail.</li> <li>4. Make skills in probability equation's solving</li> <li>5. Beside the theoretical part, there will be practical part that includes the training on the SPSS program.</li> </ol> <p>This subject will give the students the ability to make a match with other subject in future like the Cryptography and Security tasks.</p>
<p><b>Student's obligation</b></p>	<p>Students are asked to do mandatory the following duties during the 12 weeks of the semester:</p> <ol style="list-style-type: none"> <li>1- Quiz.</li> <li>2- Homework.</li> <li>3- Seminars.</li> <li>4- Semester report.</li> <li>5- Lab. activity.</li> </ol>
<p><b>Required Learning Materials</b></p>	<p>The use of the following methods in the teaching process:</p> <ol style="list-style-type: none"> <li>1. Data Show</li> <li>2. Presentation</li> </ol>

	<ol style="list-style-type: none"> <li>3. Course book</li> <li>4. Lecturer Bound</li> <li>5. Patient Magic</li> </ol>
<b>Evaluation</b>	Homework, Class Activity, Report, Seminar, Quiz, Lab., Midterm Exam, Final Exam
<b>Specific learning outcome:</b>	<p>On successful completion of the course, the student will:</p> <ol style="list-style-type: none"> <li>1. <b>Distinguish types of studies and their limitations and strengths,</b></li> <li>2. <b>Describe a data set including both categorical and quantitative variables to support or refute a statement,</b></li> <li>3. <b>Apply laws of probability to concrete problems,</b></li> <li>4. <b>Perform statistical inference in several circumstances and interpret the results in an applied context,</b></li> <li>5. <b>Use mathematical tools, including calculus and linear algebra, to study probability and mathematical statistics and in the description and development of statistical procedures,</b></li> <li>6. <b>Use a statistical software package for computations with data,</b></li> <li>7. <b>Use a computer for the purpose of simulation in probability and statistical inference, and</b></li> </ol> <p><b>Communicate concepts in probability and statistics using both technical and non-technical language.</b></p>
<b>Course References:</b>	<p><b>1- Key references:</b></p> <p>2- Everything You Wanted to Know about Statistics but Were Afraid to Ask , Andrew L. Luna Director, Institutional Research, Planning, and Assessment, The University of North Alabama, <a href="mailto:alluna@una.edu">alluna@una.edu</a> , Phone: 256.765.4221</p> <p>3- <i>Essential Medical Statistics</i>. Kirkwood &amp; Sterne, 2<sup>nd</sup> Edition. 2003</p> <p>4- <i>Background to Statistics for Non-Statisticians</i>. Powerpoint Lecture. Dr. Craig Jackson , Prof. Occupational Health Psychology , Faculty of Education, Law &amp; Social Sciences, BCU. <a href="http://www.hcc.uce.ac.uk/craigjackson/Basic%20Statistics.ppt">www.hcc.uce.ac.uk/craigjackson/Basic%20Statistics.ppt</a>.</p> <p><b>5- Useful references:</b></p> <p>6- <a href="#">Notes 13.4 Mutually exclusive and Inclusive events.pdf</a></p>

	7- <a href="http://ocw.tufts.edu/Content/1/lecturenotes/193325">http://ocw.tufts.edu/Content/1/lecturenotes/193325</a> 8- <a href="http://stattrek.com/AP-Statistics-1/Association.aspx?Tutorial=AP">http://stattrek.com/AP-Statistics-1/Association.aspx?Tutorial=AP</a> 9- <a href="http://udel.edu/~mcdonald/statcentral.html">http://udel.edu/~mcdonald/statcentral.html</a>	
<b>Course topics (Theory) Course topics (Practical): Implementation by computer (Excel and SPSS)</b>	<b>Week</b>	<b>Learning Outcome</b>
Statistics: introduction, definitions.	1	Descriptive & Inferential Statistics A Taxonomy of Statistics
Statistical Measurements: Central Measures.	2	Mean Mode Median
Statistical Measurements: Measures of Dispersion	3	Range Mean Deviation Standard deviation Variance Coefficient of variation Standard Error
Graphical data presentation	4	Bar chart Scatter plots Line graph Pie chart Histogram
Multiple Test	5	Single t-test, Paired t-test
T-test	6	Non-paired (grouped) t-test
Chi-square	7	Equation application
Correlation	8	Equation application
Simple linear regression	9	Equation application
F Test	10	Equation application CRD
F Test	11	Equation application RCBD
Simple linear model	12	Equation application

## Questions Example Design

### Theory:

Q)/ From the following data, (5, 90, 95, 85, 110, 100) find Abnormal values?

Q)/ From the following data, find Average of the student?

Lesson	Kurdish	Crop	Soil	Computer	Design	Landscape
Mark	60	90	50	64	71	55
Unit	8	4	4	6	4	4

Q) Find the Inter-Quartile Range from the table

Student Marks	Frequency
10 – 16	2
16 – 22	8
22 – 28	10
28 – 34	8
34 – 40	2

Q) from table below, Show incomes as (low, median and high) incomes

- Low income between (400 – 699)
- Median income between (700 – 900)
- High income > 900

Family No.	1	2	3	4	5	6	7	8	9	10
Incomes	1000	500	600	900	500	700	700	800	600	650

Q/Analysed the level of Protein from 6 samples of Wheat by using spectrophotometer and titration, does there is differences between this two methods or not?

If the t-table is (2.57)  $X_{i1}$  (10, 9, 10, 8, 6, 15),  $X_{i2}$  (6, 10, 5, 4, 5, 7).

Q / From the following data, find (15, 10, 20, 10, 25, 5)

- 1-  $S^2$       2- C.V      3- SE      4- Me      5- S

Q / Draw Types Relationships of Regression?

Q / The following data Calculate Correlation?

Statistics = x	10	25	28	18	15
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Science = y	14	30	23	20	18
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## Practical:

Q: The following data is relationship between the house price (\$) and the different areas of the houses. Your task is to find  $R^2$ , (b) and equation of regression in **MS-EXCEL**:

House area (Feet <sup>2</sup> )	1400	1600	1700	1875	1100	1550	2350	2450	1425	1700
House Price (1000\$)	245	312	279	308	199	219	405	324	319	255

Q: Create a cluster bar plot from the following data which show selling Coca-Cola, Pepsi, Fanta by different temperature for ten days by **SPSS**:

Temp. °C	14.2	16.4	11.9	15.2	18.5	22.1	19.4	25.1	23.4	18.1
Coca-Cola	141	159	120	149	165	178	168	183	180	163
Pepsi	152	175	130	170	184	196	186	205	200	179
Fanta	65	69	60	72	75	86	80	90	87	73

Q: Find Pearson correlation value form the following data by **MS-EXCEL**:

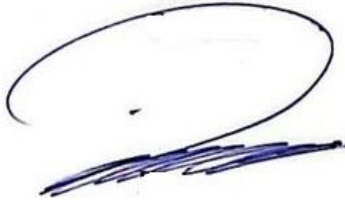
X= 3.5, 4.6, 5.5, 6.8, 7.9, 8.8, 9.7, 10.8, 11.6, 12.5

Y= 7, 8.3, 9.2, 10.5, 11.7, 12.9, 13.6, 14.8, 16.8, 19.2

Q: What mobiles are preferred by girls and boys, find out Chi-square value of the following data according to Goodness of Fit test by **SPSS**:

Gender	Samsung	iPhone
Men	307	484
Women	331	444

**Extra notes:**



Lecturer  
Dr. Ismail Anwer Said



Lecturer  
Asst. Prof. M. Hemn Othman Salih

**External Evaluator:**