



Ministry of Higher Education and
Scientific Research - Iraq
Northern Technical University
College of Oil and Gas Techniques
Engineering-Kirkuk
Department of Fuel and Energy
Techniques Engineering



نموذج وصف المادة الدراسية

Module Information			
معلومات المادة الدراسية			
Module Title	Engineering Statistics		Module Delivery
Module Type	Core learning activity		<input checked="" type="checkbox"/> Theory <input checked="" type="checkbox"/> Lab <input type="checkbox"/> Tutorial <input type="checkbox"/> Practical <input type="checkbox"/> Seminar
Module Code	FEK204		
ECTS Credits	4.00		
SWL (hr/sem)	100		
Module Level	2	Semester of Delivery	2
Administering Department	FEK	College	COGTEK
Module Leader	Bayan Hikmat Saffie	e-mail	bayan.hikmat@ntu.edu.iq
Module Leader's Acad. Title	Assistant Lecturer	Module Leader's Qualification	M.Sc.
Module Tutor	Name (if available)	e-mail	E-mail
Peer Reviewer Name	Name	e-mail	E-mail
Scientific Committee Approval Date	01/06/2023	Version Number	1.0

Relation with other Modules			
العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	Semester	
Co-requisites module	None	Semester	

Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Aims أهداف المادة الدراسية	<ol style="list-style-type: none">1. Understand the basic principles of probability and statistics, emphasizing applications in engineering and science.2. Understand the basic principles of probability and statistics, emphasizing applications in engineering and science.3. Understand the basic principles of probability and statistics, emphasizing applications in engineering and science.4. . Understand the basic principles of probability and statistics, emphasizing applications in engineering and science.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none">1. Identify modern concepts of statistics, emphasizing applications to quality engineering and improvement, process capability and control and reliability assessment.2. Demonstrate the use of statistical software tools to solve problems.3. Employ statistical methods to perform statistical quality control, design of experiments and reliability analysis.
Indicative Contents المحتويات الإرشادية	This module provides basic background about statistic science which is needed in many other engineering modules such as surveying, numerical analysis, geographic information system and applications, engineering economics, etc

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	The main strategy that will be adopted in delivering this module is to encourage students' participation in the exercises, while at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple experiments involving some sampling activities that are interesting to the students.
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Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	82	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2, 12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	Midterm Exam	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	82	Structured SWL (h/w) الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	68	Unstructured SWL (h/w) الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	150		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to Statistic:
Week 2	Graphical methods for describing Quantitative Data: An Introduction to Descriptive Statistics, frequency distribution, relative frequency, Computer Exercises: Pie chart, Histogram, steam and leaf, dot plot.
Week 3	Graphical methods for describing Quantitative Data: An Introduction to Descriptive Statistics, frequency distribution, relative frequency, Computer Exercises: Pie chart, Histogram, steam and leaf, dot plot.
Week 4	Graphical methods for describing Quantitative Data: An Introduction to Descriptive Statistics, frequency distribution, relative frequency, Computer Exercises: Pie chart, Histogram, steam and leaf, dot plot.
Week 5	Numerical methods for describing quantitative data: Measures of Central Tendency: arithmetic mean, median, variance, standard deviation, and mode, Measures of Relative Standing: percentiles and quartiles, Methods of detecting outliers (Range)
Week 6	Numerical methods for describing quantitative data: Measures of Central Tendency: arithmetic mean, median, variance, standard deviation, and mode, Measures of Relative Standing: percentiles and quartiles, Methods of detecting outliers (Range)
Week 7	Numerical methods for describing quantitative data: Measures of Central Tendency: arithmetic mean, median, variance, standard deviation, and mode, Measures of Relative Standing: percentiles and quartiles, Methods of detecting outliers (Range)
Week 8	Numerical methods for describing quantitative data: Measures of Central Tendency: arithmetic mean, median, variance, standard deviation, and mode, Measures of Relative Standing: percentiles and quartiles, Methods of detecting outliers (Range)
Week 9	Types of Random Variables: Discrete Random Variables, Continuous Random Variables
Week 10	Types of Random Variables: Discrete Random Variables, Continuous Random Variables
Week 11	Normal Distributions and Interval Tests: Introduction to the normal distribution. Testing for a normal distribution. Sampling Distributions, Estimation using Confidence Intervals
Week 12	Normal Distributions and Interval Tests: Introduction to the normal distribution. Testing for a normal distribution. Sampling Distributions, Estimation using Confidence Intervals
Week 13	Normal Distributions and Interval Tests: Introduction to the normal distribution. Testing for a normal distribution. Sampling Distributions, Estimation using Confidence Intervals

Week 14	Normal Distributions and Interval Tests: Introduction to the normal distribution. Testing for a normal distribution. Sampling Distributions, Estimation using Confidence Intervals
Week 15	Statistical Inference and Significance Testing; Introduction to Estimation, Types of Estimates,
Week 16	Statistical Inference and Significance Testing; Introduction to Estimation, Types of Estimates,

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: Numerical methods for describing quantitative data:
Week 2	Lab 2: Types of Random Variables
Week 3	Lab 3: Normal Distributions and Interval Tests
Week 4	Lab 4: Statistical Inference and Significance Testing
Week 5	Lab 5: Statistical Inference and Significance Testing

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	David M. Levine, Patricia P. Ramsey, & Robert K. Smith. Applied Statistics for Engineers and Scientists: Using Microsoft Excel & Minitab. Prentice-Hall, 2001	Yes
Recommended Texts	Douglas C. Montgomery, Design and Analysis of Experiments, 7 Edition, Wiley, July 2008.	No
Websites	https://hama-univ.edu.sy/newsites/agricultural/wp	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks (%)	Definition
Success Group (50 - 100)	A - Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.