

	<p>Ministry of Higher Education and Scientific Research - Iraq Al-Mustaql University College of Sciences Cyber Security Science Department</p>	
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## MODULE DESCRIPTOR FORM

### نموذج وصف المادة الدراسية

<b>Module Information</b> معلومات المادة الدراسية			
<b>Module Title</b>	STATISTICS AND PROBABILITY		
<b>Module Type</b>	CORE		
<b>Module Code</b>	UOMU033013		
<b>ECTS Credits</b>	6		
<b>SWL (hr/sem)</b>	150		
<b>Module Level</b>	1	<b>Semester of Delivery</b>	1
<b>Administering Department</b>	Type Dept. Code	<b>College</b>	Type College Code
<b>Module Leader</b>	Mustafa Awadh	<b>e-mail</b>	<a href="mailto:mustafa.ameer.sabri@uomus.edu.iq">mustafa.ameer.sabri@uomus.edu.iq</a>
<b>Module Leader's Acad. Title</b>	Asst. Lecturer.	<b>Module Leader's Qualification</b>	M.Sc.
<b>Module Tutor</b>	None	<b>e-mail</b>	None
<b>Peer Reviewer Name</b>		<b>e-mail</b>	
<b>Review Committee Approval</b>		<b>Version Number</b>	1.0

<b>Relation With Other Modules</b> العلاقة مع المواد الدراسية الأخرى			
<b>Prerequisite module</b>	None		<b>Semester</b>
<b>Co-requisites module</b>	None		<b>Semester</b>

## Module Aims, Learning Outcomes and Indicative Contents

### أهداف المادة الدراسية ونتائج التعلم والمحفوظات الإرشادية

<b>Module Aims</b> أهداف المادة الدراسية	<ol style="list-style-type: none"> <li>1. Understand the laws of statistics and data distribution.</li> <li>2. Enable the student to transform large data into understandable shapes and illustrations, and to deduce statistical data.</li> <li>3. provide the students with details statistics and data population.</li> <li>4. Define and explain the basic of probabilistic metrics like event, outcome, trial, simple event, sample space, Venn Diagram ,tree diagram, and calculate the probability that an event will occur.</li> <li>5. Define and explain the basic of statistical measurements like Data Organization, variation, of central tendency.</li> <li>6. Express the concepts and principal of counting techniques (factorial , combination ) and the basic principles of Probability Theory</li> <li>7. Solve the problems about permutation, combination and Binomial Theorem.</li> </ol>
<b>Module Learning Outcomes</b> مخرجات التعلم للمادة الدراسية	<ol style="list-style-type: none"> <li>1. provide the students with details Probability and its theories and how apply them on game theory.</li> <li>2. Enable the student to transform large data into understandable shapes and illustrations, and to deduce statistical data</li> <li>3. Express the concept of probability and its features. Explain the concept of a random event, addition and multiplication probabilities laws .</li> <li>4. Understand the laws of statistics and data distribution</li> <li>5. Express the concepts of factorial and the basic principal of counting. Solve the problems about permutation, combination and Binomial Theorem.</li> <li>6. enable the students with knowledge of the problems and solutions that may face in future and depend on probability theory to solve them</li> </ol>
<b>Indicative Contents</b> المحتويات الإرشادية	<p><u>Part A - statistic</u></p> <p>1-Population, samples, type of samples, Random variables discrete variable, continuous variable, Data Organization. [4]</p> <p>2- frequency distribution, histogram [8]</p> <p>3- Measurement of central tendency - mean, median, mode. [6].</p> <p>4- measurements of variation -standard deviation, variance.[6]</p> <p>5- Coefficient of variation, Correlation and Regression. [8]</p> <p><u>Part b – probability.</u></p> <p>1- Probability Theory -sample space, events, rules of probability. [4]</p>

	<p>2- Venn Diagram, tree diagram, probability theorems -Addition theorem.[4]</p> <p>3- Multiplication theorem.[4]</p> <p>4- Combinations ,Conditional probability[4]</p> <p>5- Bayes theorem, Independent of events, Discrete Probability distributions.[4]</p> <p>6- Binomial distribution, Multinomial distribution.[4]</p> <p>7- Poisson distribution, Continuous Probability Distributions-Uniform distribution.[4]</p> <p>8- Normal distribution, Exponential distribution[4].</p>
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### Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

Strategies	<p>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 examples involving some sampling activities that are interesting to the students.</p>
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### Student Workload (SWL)

الحمل الدراسي للطالب

<b>Structured SWL (h/sem)</b> الحمل الدراسي المنتظم للطالب خلال الفصل	93	<b>Structured SWL (h/w)</b> الحمل الدراسي المنتظم للطالب أسبوعيا	6
<b>Unstructured SWL (h/sem)</b> الحمل الدراسي غير المنتظم للطالب خلال الفصل	57	<b>Unstructured SWL (h/w)</b> الحمل الدراسي غير المنتظم للطالب أسبوعيا	4.5
<b>Total SWL (h/sem)</b> 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	6% (10)	5, 10	LO #2,4, and 5
	Assignments	2	4% (10)	2, 12	LO # 2 and 5
Summative assessment	Midterm Exam	1 hr	20% (10)	7	LO # 1-5
	Final Exam	2hr	70% (50)	16	All
Total assessment		100% (100 Marks)			

## Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Material Covered	
<b>Week 1</b>	Population ,samples , type of samples, Random variables discrete variable, continuous variable, Data Organization.
<b>Week 2</b>	frequency distribution, histogram
<b>Week 3</b>	measurement of central tendency - mean ,median, mode.
<b>Week 4</b>	measurements of variation -standard deviation, variance ,coefficient of variation
<b>Week 5</b>	Probability Theory -sample space, events ,rules of probability, Venn Diagram.
<b>Week 6</b>	tree diagram, probability theorems -Addition theorem.
<b>Week 7</b>	Mid-term Exam
<b>Week 8</b>	Multiplication theorem.
<b>Week 9</b>	Counting techniques :Factorial, Permutations, Combinations ,Conditional probability
<b>Week 10</b>	Bayes theorem, Independent of events, Discrete Probability distributions.
<b>Week 11</b>	Binomial distribution, Multinomial distribution.
<b>Week 12</b>	Poisson distribution, Continuous Probability Distributions-Uniform distribution.
<b>Week 13</b>	Normal distribution, Exponential distribution.
<b>Week 14</b>	Correlation and Regression.
<b>Week 15</b>	<b>Preparatory Week</b>
<b>Week 16</b>	<b>Final Exam</b>

## Learning and Teaching Resources

مصادر التعلم والتدريس

Text	Available in the Library?
<b>Required Texts</b>	<ol style="list-style-type: none"> <li>1. Probability and statistics, theory and applications, Gunnar Blom</li> <li>2. Probability and statistics for engineers, Richard L. Scheaffer</li> <li>3. Statistics: theories and applications, Joseph Inungo, 2006.</li> <li>4. Introductory Statistics , Ronald J. Wonnacott</li> </ol>

<b>Recommended Texts</b>	Introduction to Statistics and Data Analysis	No
<b>Websites</b>	<a href="https://www.spss.org/cms/lib/MN01910242/Centricity/Domain/859/Statistics%20Textbook.pdf">https://www.spss.org/cms/lib/MN01910242/Centricity/Domain/859/Statistics%20Textbook.pdf</a>	

**APPENDIX:**

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