Republic of Iraq - Ministry of Higher Education and Scientific Research
University of Mosul
Bachelor's degree in Statistics and Informatics (First cycle)
Four years (Eight semesters) - 240 ECTS credits - 1 ECTS = 25 hr
Program Curriculum (2024 - 2025)

جمهورية العراق - وزارة التعليم العالي والبحث العلمي
جامعة الموصل
بكالوريوس في علوم الاحصاء والمعلوماتية (الدورة الأولى)
أربع سنوات (ثمانية فصول دراسية) - ٢٤٠ وحدة اوربية - كل وحدة اوربية = ٢٥ ساعة
المنهاج الدراسي للعام ٢٠٢٤-٢٠٢٥

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
UGI	One	1	STAT101	Elementary Statistics I	مبادئ الإحصاء I	English	3	1			2		3	93	82	175	7.00	C	
		2	STAT102	Calculus I	تفاضل وتكامل I	English	3	1			2		3	93	82	175	7.00	B	
		3	STAT103	Basic Programming	اساسيات البرمجة	English	2		2				3	63	87	150	6.00	B	
		4	STAT104	Linear Algebra	جبر خطي	English	2				2		3	63	87	150	6.00	B	
		5	UOM104	Democracy & Human Rights	الديمقراطية وحقوق الإنسان	Arabic	2						3	33	17	50	2.00	B	
		6	UOM101	Arabic Language	اللغة العربية	Arabic	2						3	33	17	50	2.00	B	
						Total	14	2	2	0	6	0	18	378	372	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
UGI	Two	1	STAT107	Elementary Statistics II	مبادئ الإحصاء II	English	3	1			2		3	93	82	175	7.00	C	
		2	STAT108	Calculus II	تفاضل وتكامل II	English	3	1			2		3	93	82	175	7.00	B	
		3	STAT109	Demography	إحصاء سكاني	English	2				2		3	63	87	150	6.00	C	
		4	STAT110	MATLAB programming	برمجة بلغة ماتلاب	English	2		2				3	63	62	125	5.00	B	
		5	UOM103	Computer	الحاسوب	English	1		2				3	48	27	75	3.00	B	
		6	UOM102	English Language	اللغة الانكليزية	English	2						3	33	17	50	2.00	B	
						Total	13	2	4	0	6	0	18	393	357	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
UGII	Three	1	STAT201	Probability I	الاحتمالية I	English	3				2		3	78	72	150	6.00	C	
		2	STAT202	Sampling Theory I	نظرية المعاينة I	English	3				2		3	78	72	150	6.00	C	
		3	STAT203	Numerical Analysis I	تحليل عددي I	English	2		2				3	63	62	125	5.00	B	
		4	STAT204	Calculus III	تفاضل وتكامل III	English	2				2		3	63	62	125	5.00	B	
		5	STAT205	Data Base	قواعد بيانات	English	2		2				3	63	37	100	4.00	B	
		6	UOM2050	Crimes of the Baath Regime in Iraq	جرائم نظام البعث في العراق	Arabic	2						3	33	17	50	2.00	B	
		7	UOM2012	Arabic 2	اللغة العربية 2	Arabic	2						3	33	17	50	2.00	B	
						Total	16	0	4	0	6	0	21	411	339	750	30.00		

Level	Semester	No.	Module Code	Module Name in English	اسم المادة الدراسية	Language	SSWL (hr/w)						Exam hr/sem	SSWL hr/sem	USSWL hr/sem	SWL hr/sem	ECTS	Module Type	Prerequisite Module(s) Code
							CL (hr/w)	Lect (hr/w)	Lab (hr/w)	Pr (hr/w)	Tut (hr/w)	Semn (hr/w)							
UGII	Four	1	STAT206	Probability II	الاحتمالية II	English	3				2		3	78	72	150	6.00	C	
		2	STAT207	Sampling Theory II	نظرية معاينة II	English	3				2		3	78	72	150	6.00	C	
		3	STAT208	Numerical Analysis II	تحليل عددي II	English	2		2				3	63	62	125	5.00	B	
		4	STAT209	Time Series Analysis	تحليل السلاسل الزمنية	English	2	1			2		3	78	72	150	6.00	B	
		5	STAT210	Research Methodology	منهج البحث العلمي	Arabic	2						2	33	17	50	2.00	S	
		6	UOM2032	Computer 2	الحاسوب 2	English	1		2				3	48	27	75	3.00	B	
		7	UOM2022	English 2	اللغة الانكليزية 2	English	2						3	33	17	50	2.00	B	
						Total	15	1	4	0	6	0	20	411	339	750	30.00		



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MODULE DESCRIPTION FORM

Module Information					
Module Title	**Arabic Language**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UOM101**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	UGI		**Semester of Delivery**	1	
Administering Department	STAT		**College**	CSM	
Module Leader	م.م. مروة عدنان اسماعيل		**e-mail**	Marwa-Adnan@uomosul.edu.iq	
Module Leader's Acad. Title	Assistant Lecturer		**Module Leader's Qualification**	MSc.	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	11/06/2023		**Version Number**	1.0	

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

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Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1- التعرف على الكلام العربي: من ناحية تعريفة، أقسامه، الى علامات كل قسم منه. 2- معرفة الجملة العربية واقسام الجملة العربية والجمل الاسمية والجمل الفعلية 3- التعرف على حركات الاعراب: سواء كانت اصلية او فرعية 4- معرفة الطالب بالعفل العربي: من حيث الصحة والاعلال 5- معرفة الطالب الفعل العربي من حيث اللزوم والتعدي 6- معرفة لطالب الفعل العربي من حيث الزمن 7- طرق كتابة العدد وتذكرة وتأنيثه 8- معرفة علامات الترقيم في الكلام 9- تعلم قواعد رسم الهمزة 10- التعرف على طريقة كتابة التاء المربوطة، والمبسوطة 11- قل ولا تقل: الأخطاء الشائعة لدى المتكلمين والكتاب 12- معرفة ماهو الأسلوب الخبري، 13- معرفة ماهو الأسلوب الانشائي، 14- تعلم مهارات لغوية: تنمية الذوق اللغوي، وتحسين الأسلوب لدى المتعلمين
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- ان يعرف الطالب الكلام العربي: من ناحية تعريفة، اقسامة، الى علامات كل قسم منه. 2- ان يتعلم الطالب الجملة العربية واقسام الجملة العربية والجمل الاسمية والجمل الفعلية 3- التعرف على حركات الاعراب: سواء كانت اصلية او فرعية 4- ان يعرف الطالب العفل العربي: من حيث الصحة والاعلال 5- ان يتعلم الطالب الفعل العربي من حيث اللزوم والتعدي 6- معرفة الطالب الفعل العربي من حيث الزمن 7- معرف الطالب طرق كتابة العدد وتذكرة وتأنيثه 8- معرفة الطالب لعلامات الترقيم في الكلام 9- ان يتعلم الطالب قواعد رسم الهمزة 10- معرف الطالب على طريقة كتابة التاء المربوطة، والمبسوطة 11- قل ولا تقل: الأخطاء الشائعة لدى المتكلمين والكتاب 12- التعرف على الأسلوب الخبري، 13- معرفة ماهو الأسلوب الانشائي، 14- التعلم على مهارات لغوية: تنمية الذوق اللغوي، وتحسين الأسلوب لدى المتعلمين
Indicative Contents المحتويات الإرشادية	1- التعرف على الكلام العربي: من ناحية تعريفة، أقسامه، الى علامات كل قسم منه[ساعه 2] 2- معرفة الجملة العربية واقسام الجملة العربية والجمل الاسمية والجمل الفعلية، ساعه 2 3- التعرف على حركات الاعراب: سواء كانت اصلية او فرعية، ساعه 2 4- معرفة الطالب بالعفل العربي: من حيث الصحة والاعلال، ساعه 2 5- معرفة الطالب الفعل العربي من حيث اللزوم والتعدي، ساعه 2 6- معرفة لطالب الفعل العربي من حيث الزمن، ساعه 2 7- طرق كتابة العدد و تذكرة وتانيثه، ساعه 2 8- معرفة علامات الترقيم في الكلام، ساعه 2

	9- تعلم قواعد رسم الهمزة، ساعه 2 10- التعرف على طريقة كتابة التاء المربوطة، والمبسوطة، ساعه 2 11- قل ولا تقل: الأخطاء الشائعة لدى المتكلمين والكتاب ، ساعه 2 12- معرفة ماهو الأسلوب الخبري، ساعه 2 13- معرفة ماهو الأسلوب الانشائي، ساعه 2 14- تعلم مهارات لغوية: تنمية الذوق اللغوي، وتحسين الأسلوب لدى المتعلمين، ساعة 2

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	الإستراتيجية الرئيسية التي سيتم تبنيها في تقديم هذه الوحدة هي تشجيع الطلاب على المشاركة على المشاركة في الكلام العربي وكتابته بالصورة الصحيحة، مع تحسين مهارات التفكير النقدي وتوسيعها في نفس الوقت. سيتم تحقيق ذلك من خلال الفصول والبرامج التعليمية التفاعلية ومن خلال النظر في أنواع التجارب البسيطة التي تتضمن بعض أنشطة أخذ العينات التي تهم الطلاب.

Student Workload (SWL)
الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**50**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	15% (15)	5, 10 and 12	LO #1, #2 and #10, #11
	Assignments	3	15% (15)	2,5 and 12	LO #3, #4 and #6, #7
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	1hr	10% (10)	7	LO #1 - #7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

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Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	الكلام العربي: تعريفة، أقسامه، وعلامات كل قسم.
Week 2	الجملة العربية: تعريفها، اقسامها: الاسمية والفعلية
Week 3	حركات الاعراب: اصلية، فرعية
Week 4	الفعل العربي: من حيث الصحة والاعلال
Week 5	الفعل العربي من حيث اللزوم والتعدي
Week 6	الفعل العربي من حيث الزم
Week 7	مراجعة وامتحان
Week 8	العدد: تذكرة، وتأنيثه
Week 9	علامات الترقيم في الكلام
Week 10	قواعد رسم الهمزة
Week 11	التاء المربوطة، والمبسوطة
Week 12	قل ولا تقل: الأخطاء الشائعة لدى المتكلمين والكتاب
Week 13	الأسلوب الخبري
Week 14	الأسلوب الإنشائي
Week 15	مهارات لغوية: تنمية الذوق اللغوي، وتحسين الأسلوب لدى المتعلمين
Week 16	امتحان نهاية الفصل

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	ين ذريل، عدنان " اللغة والأسلوب دراسة" الطبعة الثانية، 2006	No
Recommended Texts	بحيري، سعيد حسن، "الاساس في فقه اللغة العربية"، 2000	No
Websites		

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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.

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MODULE DESCRIPTION FORM

Module Information					
Module Title	**Basics Programming**			**Module Delivery**	
Module Type	**Basic**			☒Theory ☒Lecture ☒Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code	**STAT103**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level		UGI	**Semester of Delivery**		1
Administering Department		STAT	**College**	CSM	
Module Leader	Shyma Shakeeb Mohammd		**e-mail**	shymshak@uomosul.edu.iq	
Module Leader's Acad. Title		Assistant Lecturer	**Module Leader's Qualification**		MSc.
Module Tutor	Husham Y. A. Alameen		**e-mail**	hisham.alameen@uomosul.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date		10/06/2023	**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 Objectives أهداف المادة الدراسية	The objective is to learn the student the fundamental of programming through practical application using the C++ programming language. In this course, students will learn about: The basic programming and OOPs concepts. Creating C++ programs, Tokens, expressions and control structures in C++. Arranging same data systematically with arrays. Classes and objects in C++. Constructors and destructors in C++. Files management and templates in C++. Handling exceptions to control errors.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	After completing this course, the student will have acquired basic information in the science of computer programming through the following outcomes for learning this module, and these outcomes are: 1. Understand tokens, expressions, and control structures. 2. Explain arrays and strings and create programs using them. 3. Describe and use constructors and destructors. 4. Understand and employ file management. 5. Demonstrate how to control errors with exception handling. 6. Use functions and pointers in C++ program. 7. Describe OOPs concepts.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A – Introduction C++ and Basic programming</u> Understanding Language Features, history, covers C++ statements and expressions, constants, variables, operators, and how to control execution flow in applications. Exploring C++ Types, describes C++ built-in types, aggregated types, type aliases, initializer lists, and conversion between types. Rules of C++ programming, structure of C++ program, C++ Tokens (Identifiers, Keywords, Constants, Operators, Special characters), C++ data types (Basic, Derived, User defined). Console I/O statements (cin, cout), programs to perform various calculations, programs to implement various operators. [15 hrs] Arrays and Control statements: definition, advantages, array types, single dimension, double dimension, declaration, accessing array data, implementation of array operations. Conditional control statements, if-else,

	switch-case, loops, while, do while, for. Implementing programs on conditional & loops, break, continue, go to keywords. [15 hrs] Part B – Functions and Object-oriented programming Gives a thorough description of the fundamental characteristics of the object-oriented C++ programming language. In addition, students are introduced to the steps necessary for creating a fully functional C++ program. Many examples are provided to help enforce these steps and to demonstrate the basic structure of a C++ program. [15 hrs] Describes how to declare and call standard functions. This will also teach students to use standard classes, including standard header files. In addition, students work with string variables for the first time in this topic. Explains the use of streams for input and output, with a focus on formatting techniques. Formatting flags and manipulators are discussed, as are field width, fill characters, and alignment. [7 hrs] Introduces operators needed for calculations and selections. Binary, unary, relational, and logical operators are all examined in detail. Also, describes the statements needed to control the flow of a program. These include loops with while, do-while, and for; selections with if-else, switch, and the conditional operator; and jumps with goto, continue, and break. [15 hrs]

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 types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
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 and 10	LO #1, #2 and #4
	Assignments	2	10% (10)	2 and 12	All
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	All
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Structure of Simple C++ Programs
Week 2	Fundamental Types: characters identifiers, variable declaration, constants.
Week 3	Operators for fundamental types: Binary Arithmetic Operators, Unary Arithmetic Operators, Relational Operators, Logical Operators.
Week 4	Arithmetic operations: converting arithmetic types, implicit type conversions, performing usual arithmetic type conversions, more type conversions.
Week 5	Arrays: defining arrays, initializing arrays, class arrays, multidimensional arrays, member arrays.
Week 6	Library files " header"
Week 7	Assign statements

Week 8	Conditional statements
Week 9	Control Flow: loops, the for statement, the while statement, the do-while statement, selections with if-else.
Week 10	Control Flow to complete: else-if chains, conditional expressions, selecting with switch, jumps with break, continue, and go to.
Week 11	The Standard Class string: defining and assigning strings, concatenating strings, comparing strings, inserting and erasing in strings, searching and replacing in strings, accessing characters in strings.
Week 12	Input and Output with Streams: streams, formatting and manipulators, formatted output of integers, formatted output of floating-point numbers, output in fields, output of characters.
Week 13	Functions: significance of functions in C++, defining functions, return value of functions, passing arguments, inline functions.
Week 14	Functions: default arguments, overloading functions, recursive functions.
Week 15	Strings, and Boolean values, formatted input, formatted input of numbers, unformatted input/output.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: An introduction to installing programs on a computer, C++ installation with its libraries.
Week 2	Lab 2: Characters identifiers
Week 3	Lab 3: Variables declaration
Week 4	Lab 4: Constants
Week 5	Lab 5: Arithmetic operations
Week 6	Lab 6: library files " header"
Week 7	Lab 7: Assign statement
Week 8	Lab 8: "if "conditional statements
Week 9	Lab 9: "if – else "conditional statements
Week 10	Lab 10: Array
Week 11	Lab 11:" for loop"

Week 12	Lab 12:"while loop"
Week 13	Lab 13: Functions
Week 14	Lab 14: Functions
Week 15	Lab 15: String

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Introduction to C++, Brian Gregor, Research Computing Services. Part 1	NO
Recommended Texts	How To Program, 2016, Pule & Harvey (10 Edition)	NO
Websites		

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.



Ministry of Higher Education and Scientific Research
University of Mosul
College of Computer Science and Mathematics
Statistics and Informatics

2025-2024

MODULE DESCRIPTION FORM

Module Information					
Module Title	**Calculus I**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**STAT102**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	UGI		**Semester of Delivery**	1	
Administering Department	STAT		**College**	CSM	
Module Leader	Dr. Heyam Abed Al-Majeed Hayawi		**e-mail**	he.hayawi@uomosul.edu.iq	
Module Leader's Acad. Title	Assistant Prof.		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Rehad Emad Slewa		**e-mail**	alshamany@uomosul.edu.iq	
Peer Reviewer Name			**e-mail**	E-mail	
Scientific Committee Approval Date	10/06/2023		**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 Objectives أهداف المادة الدراسية	The goal of this course is to help you understand the subject of calculus and demonstrate its fundamental role in various scientific fields, particularly in Statistics. Throughout the course, you will explore the two major concepts of calculus: the derivative and the integral, both of which have numerous practical applications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Understanding Calculus, sketch a graph of an equation, find the intercepts of a graph, and find the domain and range of a function. 2. Understanding the types of functions, such that one-to-one, even and odd, and trigonometric. Able to solve trigonometric equations. 3. Able to define limits and continuity of functions and effectively evaluate them, Understand the properties associated with limits. 4. Define the derivative as a generalization of the slope of the tangent line to a curve. Gain an understanding of convenient formulas that allow us to calculate the derivative of almost any function we encounter. Acquire knowledge of convenient rules for evaluating derivatives. 5. Being able to find the absolute maximum and minimum values of a given function and identify its extrema. 6. Learning how the fundamental theorem of calculus and how differentiation and integration are inverse operations of each other.

Indicative Contents المحتويات الإرشادية	**Part A - Preliminaries** Understanding the concept of limits; Evaluating limits algebraically and graphically; One-sided limits and infinite limits; Defining continuity and its properties; Identifying discontinuities and types of discontinuities. [18 hrs.] **Part B - Derivatives** Basic rules and techniques of differentiation; Derivatives of exponential, logarithmic, and trigonometric functions; Derivatives of exponential, logarithmic, and trigonometric functions; Applications of Differentiation (Optimization problems). [36 hrs.] **Part C - Fundamental Theorem of Calculus** Understanding the connection between differentiation and integration and evaluating definite integrals using the Fundamental Theorem of Calculus. [6 hrs.] **Part D - Integration** Antiderivatives and indefinite integrals; Definite integrals and their properties; Techniques of integration, including substitution and integration by parts; Applications of Integration, including Area under a curve and the average value of a function, the average value of a function. [30 hrs.]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Preparing Prerequisite Knowledge, begin each topic with real-world examples and applications to demonstrate the relevance and practicality of calculus to Encourage students to explore how calculus concepts are applied in various fields, such as statistics and computer science. Providing timely feedback on student work to identify, address errors, and reinforce learning through quizzes. Promoting collaborative learning by assigning problem-solving tasks. Encourage students to work together, explain concepts to their peers, and engage in collaborative problem-solving.

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Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	82	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	20% (20)	5, 12	LO #1- #4
	Assignments	4	10% (10)	3,6,10, and 13	LO #3, #4
	Report	1	10% (10)	13	All
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

Week	Material Covered
Week 1	A Preview of Calculus - Reviewing Graphs and Types of Functions.
Week 2	Review-Functions and Trigonometry
Week 3	Limits and continuity of functions
Week 4	Concept of Derivatives and the fundamental rules of Differentiation
Week 5	Product, Quotient, and Chain Rules
Week 6	Extrema on an Interval, Increasing and Decreasing Functions
Week 7	Concavity and Points of Inflection
Week 8	Mid-term Exam + Curve Sketching and Linear Approximations
Week 9	Applications-Optimization Problems
Week 10	Antiderivatives and Basic Integration Rules
Week 11	The Fundamental Theorem of Calculus
Week 12	Basic Rules and Techniques of Integration
Week 13	Differentiation and Integration of Exponential and Natural Logarithmic Functions
Week 14	The area under the region and between two curves.
Week 15	Volume-The Disk Method
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	مبادئ الرياضيات - التفاضل والتكامل، (1980)، علي عزيز علي وعبد الرزاق علي الحسوان وعادل زينل حسين	Yes
Recommended Texts	The Great Courses Study Workbook for Understanding Calculus Problems, Solutions, and Tips by Bruce H. Edwards, PhD Professor of Mathematics, University of Florida, 2010.	No
Websites		

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.



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College of Computer Science and Mathematics
Statistics and Informatics

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MODULE DESCRIPTION FORM

Module Information					
Module Title	**Calculus II**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**STAT108**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	UG1		**Semester of Delivery**	2	
Administering Department	STAT		**College**	CSM	
Module Leader	Dr. Heyam Abed Al-Majeed Hayawi		**e-mail**	he.hayawi@uomosul.edu.iq	
Module Leader's Acad. Title	Assistant Prof.		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Rehad Emad Slewa		**e-mail**	alshamany@uomosul.edu.iq	
Peer Reviewer Name			**e-mail**	E-mail	
Scientific Committee Approval Date	10/06/2023		**Version Number**	1.0	

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

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Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	The goal of this course is to the goal of this course is to further your understanding and appreciation of calculus as calculus I.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Being able to use the integration techniques such as integration by parts, trigonometric Substitution, and partial Fractions. 2. Gaining the ability to evaluate improper integrals where one of the limits of integration is infinite or not continuous. 3. Understanding the moments and centers of mass. Being able to find the balancing point of a planar area, or lamina. 4. Understanding the infinite series and their connection to the functions. 5. Defining infinite series is perhaps the most important topic in Calculus II. The concept of infinite series is based on sequences. 6. Being able to approximate a function with a polynomial to linear form. 7. Defining vectors and their properties.

Indicative Contents المحتويات الإرشادية	**Part A - Techniques of Integration** In this part, students learn various techniques to evaluate integrals more effectively. They explore methods such as integration by substitution, integration by parts, and trigonometric and hyperbolic substitutions. They also delve into partial fraction decomposition, which involves breaking down rational functions into simpler fractions. [42 hrs.] **Part B - Infinite Series** Infinite series plays a significant role in Calculus II. Students investigate the convergence and divergence of series and learn about important series, such as geometric series. Additionally, they encounter power series and Taylor series, which expand functions as infinite polynomials. [30 hrs.] **Part C - Vectors** Vectors and their properties are examined in this part. Students learn about vector operations, including addition, subtraction, and scalar multiplication. They explore the dot product and cross product, understanding their geometric and algebraic interpretations. [12 hrs.] **Part D - Moments, Centers of Mass** The students understand how to calculate moments using the cross-product and explore the concept of moments in different contexts. Students study the definition of the center of mass.[6 hrs.]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Preparing Prerequisite Knowledge, begin each topic with real-world examples and applications to demonstrate the relevance and practicality of calculus to Encourage students to explore how calculus concepts are applied in various fields, such as statistics and computer science. Providing timely feedback on student work to identify, address errors, and reinforce learning through quizzes. Promoting collaborative learning by assigning problem-solving tasks. Encourage students to work together, explain concepts to their peers, and engage in collaborative problem-solving.

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Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	82	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	15% (15)	5, 12	LO #1- #4
	Assignments	4	15% (15)	3,6,10, and 13	LO #3, #4
	Report	1	10% (10)	13	All
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		



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Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Week	**Material Covered**
Week 1	Basic Functions of Calculus and Limits.
Week 2	Trigonometric Integrals
Week 3	Integration by Parts,
Week 4	Integration by Trigonometric Substitution
Week 5	Integration by Partial Fractions
Week 6	applications of Integration methods
Week 7	Mid-term Exam + Improper Integrals
Week 8	Moments, Centers of Mass, and Centroids
Week 9	Sequences and Limits
Week 10	Infinite Series—Geometric Series
Week 11	Series, Divergence, and
Week 12	Taylor Polynomials and Approximations
Week 13	Power Series and Intervals of Convergence
Week 14	Vectors in the Plane
Week 15	The Dot Product of Two Vectors
Week 16	**Preparatory week before the final Exam**

2025-2024

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	NO	No
Recommended Texts	Understanding Calculus II: Problems, Solutions, and Tips, by Professor Bruce H. Edwards, University of Florida, 2013.	No
Websites		

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.

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MODULE DESCRIPTION FORM

Module Information معلومات المادة الدراسية					
Module Title	**Computer**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UOM103**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level	UGI		**Semester of Delivery**	2	
Administering Department	STAT		**College**	CSM	
Module Leader	Dr. Alla Abd AlStaar Hamoodat		**e-mail**	allahamoodat@uomosul.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Dr.	
Module Tutor	Dr. Alla Abd AlStaar Hamoodat		**e-mail**	allahamoodat@uomosul.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	10/06/2023		**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 Objectives أهداف المادة الدراسية	1. Improved Communication: Fast communication can help increase productivity, allow for better business decisions and facilitate company expansion into new regions or countries. The movement of information within organizations or companies has become instantaneous. Employees can easily transfer data across departments without any interruption. Tools such as email, electronic fax, mobile phones, and text messages enhance the movement of information data between employees, customers, and business partners or suppliers, allowing for greater connectivity across internal and external structures. 2. • Improved Communication: Fast communication can help increase productivity, allow for better business decisions and facilitate company expansion into new regions or countries. The movement of information within organizations or companies has become instantaneous. Employees can easily transfer data across departments without any interruption. Tools such as email, electronic fax, mobile phones, and text messages enhance the movement of information data between employees, customers, and business partners or suppliers, allowing for greater connectivity across internal and external structures. 3. Work: Streamlined workflow systems, shared storage, and collaborative workspaces can increase business efficiency and allow employees to process a greater level of work in a shorter period of time. Information technology systems can be used to automate routine tasks, to facilitate data analysis and to store data in a way that can be easily retrieved for future use. Technology can also be used to answer customer questions through email, in a real-time chat session, or through a phone routing system that connects the customer to an available customer service agent. 4. Cost Reduction and Economic Efficiency: Communication technology and social technology have made business promotion and product launch affordable. Many small businesses have found ways to use social technology to increase their brand awareness and get more customers for less. In business, factors such as operating cost play an important role in business development and growth. So when companies use information technology to reduce operating costs, the return on investment will increase, which will lead to business growth.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Enhancing the ability of information technology to adapt and respond to the multiple, renewable and constantly changing needs of all parties benefiting from the outputs of the information system, especially the university leaders in the researched university, and thus enables information technology to carry out its work efficiently and effectively. Predicting the studied phenomenon in the future by means of Box-Jenkins model. 2. Employing information technologies in the axes of the educational process worked to build a bridge of vital communication between faculty members and all sources of the educational process, and this necessarily means facilitating the teacher's task in delivering information to the student within an interactive technical environment, and information technologies provide multiple sources in order to obtain information Whether it is from sources within the

	university or from the Internet and the educational technologies it contains.
Indicative Contents المحتويات الإرشادية	Although the information technology specialization is one of the most demanded fields currently in all global markets, some specializations range from stagnant to saturated and required, so you should study the market well before choosing a specialization. But if you are looking for the best majors that have a future in the field of information technology, then they are as follows: Network security major in programming - software engineering - 3D printing - data science major - Artificial Intelligence - Computer Science - Aerospace Engineering

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 by Using appropriate teaching strategies and methods and teaching aids to develop thinking skills.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	12	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**75**		

Module Evaluation تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	2	10% (10)	5 and 10	All
	Assignments	2	10% (10)	2 and 12	All
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Getting to know the computer and the history of its stages of development - indicating the types of computers - installing the computer - defining the physical parts
Week 2	Data entry units and data output units to the computer - The central processing unit and its tasks
Week 3	Primary and secondary memories - Types of displays
Week 4	Software
Week 5	Computer operating systems
Week 6	Low-level languages and high-level languages
Week 7	Service application software
Week 8	Getting to know the Word program - How to open or run the program - Transforming the Word program interface - Word program menus.
Week 9	Home Toolbar - Home Page Insert Menu - Toolbar - Insert Menu - Page Layout
Week 10	Microsoft Excel - the most common uses of the Excel program - opening the Excel program - closing the Excel program - an explanation of the main toolbar of the Excel program
Week 11	Entering data in Excel program - how to navigate in a worksheet - inserting a function from the ready-made functions into a cell - examples - shading cells - clearing cells
Week 12	The basics of building a POWER POINT presentation - entering the program and the program interface - creating a new presentation
Week 13	Open a presentation file - save a presentation - insert a new slide - add shapes to the slide - slide margins - slide design - add animations to the slide
Week 14	Internet - services provided by the Internet - keywords, comprehensive search engines
Week 15	Create an E-mail
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Lab 1	Word applications
Lab 2	Applications on Excel
Lab 3	PowerPoint applications
Lab 4	E-mail applications

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Fundamentals of Information Technology	Yes
Recommended Texts	Glend Gay and Ronald B., "Information Technology", 3 rd Ed, CSEC,OUP Oxford,2019.	Yes
Websites		

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

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MODULE DESCRIPTION FORM

Module Information					
Module Title	**Democracy & Human Rights**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☐ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UOM104**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level		UGI	**Semester of Delivery**		1
Administering Department		STAT	**College**	CSM	
Module Leader	Fidaa Ziyad Hasan		**e-mail**	Fidaa-law@uomosul.edu.iq	
Module Leader's Acad. Title		Assistant Lecturer	**Module Leader's Qualification**		MSc.
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date		10/06/2023	**Version Number**		1.0

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

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Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. حث الطلبة على المشاركة الموضوعية في الحوار بأسلوب ينسجم مع أخلاق المجتمع العربي. 2. توضيح مفاهيم ومصطلحات حقوق الإنسان والديمقراطية للطلبة وتقريبها الى أذهانهم. 3. شرح وتبسيط الإعلانات العالمية والمواثيق الدولية وموقف النظام الساسي التي تتعلق بهذا الموضوع. 4. تعويد الطلبة على العمل في محيطهم في مجال حقوق الإنسان وتعريفهم على تجارب العالم فيه. 5. تدريب الطلبة على الكشف عن انتهاكات حقوق الإنسان وتوثيقها دون تحيّز ووفق منهج علمي قدر المستطاع. 6. تجذير فكرة قبول الآخر واحترام رأيه واحترام التعددية في النظام الساسي واستئصال نزعة الإقصاء وتهميش الرأي المخالف.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. تعريف الطالب بحقوق الانسان وحرياته الاساسية فضلا عن مبادئ الاساسية للديمقراطية 2. تمكين الطالب من ممارسة حقوقه بصورة فعالة من خلال التنمية الشاملة لشخصيته والاحساس بكرامتها واحترام حقوق الاخرين وحرياتهم الاساسية بما يتفق وقيم المجتمع الديمقراطي 3. جعل الطالب قادرا على التأثير بالأخرين تأثيرا ايجابيا بما يتسق ومبادئ حقوق الانسان 4. ترسيخ المعلومات النظرية في ذهن الطالب يتم من خلال ربط هذه المعلومات بما يجري من احداث وظواهر اجتماعية وسياسية واقتصادية وصولا الى الغاية المرجوة من تدريس هذه المادة. 5. عندما يتم طرح مفهوم الديمقراطية للطالب سيتبادر إلى الذهن فورا مفاهيم الحرية والعدل في الحقوق والواجبات والحياة الاجتماعية المسالمة حيث سيادة القانون وتساوي المواطنين وغير ذلك من مفاهيم وممارسات تعبر عن احترام حقوق الإنسان والمواطن بغض النظر عن فكرة ولونه وانتمائه فضلا عن تطوير مفهومه للحق السياسي وممارسته له وانعكاس ذلك في حياته الاجتماعية والسياسية على حد سواء والتطوير الفكري السياسي له في تمييز الانظمة السياسية واساليب ادارة الحكم السياسي
Indicative Contents المحتويات الإرشادية	يتضمن المحتوى الإرشادي ما يلي. الجزء أ - المفاهيم الأساسية لحقوق الانسان: ماهية حقوق الانسان، تعريفه، انواعه، مضامين حقوق الانسان، الاهمية، الخصائص، المميزات، الفئات، المعايير. [20 ساعة] الجزء ب - الواجبات: الواجبات المفروضة على ممارسة حقوق الانسان والقيود الواردة عليها. [20 ساعة] الجزء ج - ضمانات حقوق الانسان: الضمانات الجنائية الدولية لحماية حقوق الانسان (الموضوعية – الاجرائية). انتهاكات حقوق الانسان – المخدرات –الابتزاز الالكتروني – الاحتيال الالكتروني – الإبادة الجماعية. [35 ساعة]

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	1. تتمحور الاستراتيجيات الخاصة بحقوق الانسان في ثلاثة امور اساسية: 2. الاستراتيجية العامة: تعريف الطالب الجامعي بماهية حقوق الإنسان من وجهات نظر عالمية وإنسانية وعلمية ودينية وبشكل موضوعي بعيداً عن التأثيرات السياسية والفكرية والمذهبية ...الخ 3. الاستراتيجية الخاصة هو السعي لإحداث تغيير في سلوك الطالب بما يتوافق مع الهدف العام من خلال توجيه الانتباه إلى المضامين الحقيقية لحقوق الإنسان وأبعادها القانونية ودراسة الإعلانات والمواثيق

	الدولية، وتأثير الخروقات الفاضحة لتلك القواعد والتي تمس بحياة الناس أو كرامتهم سيما وأنّ حقوق الإنسان هي شمولية ولكافة المجتمعات الإنسانية.. اما الاستراتيجيات الخاصة في الديمقراطية في امريين: 1. الاستراتيجية العامة: تعريف الطالب الجامعي بماهية النظام الديمقراطي من وجهات نظر عالمية وإنسانية وعلمية ودينية وبشكل موضوعي بعيداً واهمية التأثيرات السياسية والفكرية على آلية وعمل النظام السياسي واستقلاليه الحكم السياسي 2. الاستراتيجية الخاصة هو السعي لإحداث تغيير في طريقة تفكير الطالب بما يتوافق مع الهدف العام من خلال توجيه الانتباه إلى المضامين الحقيقية للنظام الديمقراطي وفوائده التي سوف تنعكس على المجالات الاقتصادية والاجتماعية فضلا عن اهمية دور الارادة العامة في توجيه دفه الحكم من خلال ممارسة الحقوق السياسية.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	50		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	20% (20)	5 and 10	All
	Assignments	2	10% (10)	2 and 12	All
	Report	1	10% (10)	13	All
Summative assessment	**Midterm Exam**	1	10% (10)	7	All
	Final Exam	2	50% (50)	16	All
Total assessment			100% (100 Marks)		

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Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	(ماهية حقوق الانسان،) تعريفه، انواعه، مضامين حقوق الانسان،
Week 2	(ماهية حقوق الانسان)، الاهمية، الخصائص، المميزات، الفئات، المعايير
Week 3	مراحل تطور حقوق الانسان التاريخية والحديثة
Week 4	خصائص حقوق الانسان الاساسية (الحرية والمساواة) (الحرية)
Week 5	خصائص حقوق الانسان الاساسية (الحرية والمساواة) (المساواة)
Week 6	حقوق بعض الفئات الخاصة في ظل القانون الدولي 1 (الطفل – المرأة- المرضى – السجين – أسري الحرب)
Week 7	حقوق بعض الفئات الخاصة في ظل القانون الدولي 2 (الطفل – المرأة- المرضى – السجين – أسري الحرب)
Week 8	حقوق بعض الفئات الخاصة في ظل القانون الدولي 3 (الطفل – المرأة- المرضى – السجين – أسري الحرب)
Week 9	الضمانات العامة لحقوق الانسان في القانون الوطني والدولي –القانون الوطني
Week 10	الضمانات العامة لحقوق الانسان في القانون الوطني والدولي –القانون الدولي
Week 11	نشأة الديمقراطية وماهية الحكم الديمقراطي
Week 12	مبادئ واركان الحكم الديمقراطي وخصائص الحكم الديمقراطي
Week 13	صور الحكم الديمقراطي 1 (المباشر –شبه المباشر – غير المباشر)
Week 14	صور الحكم الديمقراطي 2 (المباشر –شبه المباشر – غير المباشر)
Week 15	الحقوق السياسية للفرد في إطار النظام الديمقراطي وانواعها
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	حقوق الانسان والديمقراطية في القانون الدولي للمؤلف د. محمد يونس الصايغ	Yes
Recommended Texts	حقوق الانسان والديمقراطية للمؤلف د. حميد حنون خالد حقوق الانسان للمؤلف رياض عزيز هادي حقوق الانسان للمؤلف والديمقراطية د. ماهر صبري كاظم المركز القانوني للطفل في القانون الدولي د. فاطمة شحاته زيدان القانون الدولي الانساني د. نزار العنبكي	No
Websites		

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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.



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MODULE DESCRIPTION FORM

Module Information معلومات المادة الدراسية					
Module Title	**Demography**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**STAT109**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	UGI		**Semester of Delivery**	2	
Administering Department	STAT		**College**	CSM	
Module Leader	Dr. Noor Nawzat Ahmed		**e-mail**	nooalior@uomosul.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Dr. Noor Nawzat Ahmed		**e-mail**	nooalior@uomosul.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	10/06/2023		**Version Number**	1.0	

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

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Module Aims, Learning Outcomes and Indicative Contents

أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	Preparing the student to work in various statistics departments so that he begins collecting and disseminating demographic, social, and mathematical information in a scientific manner
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. The student learns to study social and medical data related to the population because they are the source of all economic and non-economic activities, whether cultural, social, health, etc., and that these activities are linked and affect each other. 2. .2The student will learn how to obtain demographic data and methods for detecting and correcting errors to which demographic data are exposed. 3. .3The student will learn how to conduct a census and population survey, as well as be able to make population predictions 4. .4The student must master the composition and analysis of routine life tables, clinical tables, and calculation of life expectancy rates 5. .5Calculate severity metrics and analyze survival data
Indicative Contents المحتويات الإرشادية	1. .1Introduction to population statistics, sources of population data, types of population societies, calculating demographic indicators, and calibrating rates (13 hours) 2. .2Methods for detecting errors in demographic data and methods for revising demographic data (12hr) 3. .3Population forecasting (12hr) 4. .4Construct and analyze usual and clinical life tables (12hr) 5. .5Calculating life rates and measures of the relationship between life factors, relative risk, its types and rates, and analyzing survival data and survival patterns. (14hr)

Learning and Teaching Strategies

استراتيجيات التعلم والتعليم

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Strategies	The main strategy to be adopted is to encourage students to learn how to obtain and analyze demographic data and to expand and refine their critical thinking skills through lectures and through reports that the students will prepare.

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	1	10% (10)	5 and 10	LO #1, #2 and #4
	Assignments	4	20% (20)	2 and 12	LO #3, #4 and #5
	Report	1	10% (10)	13	LO #3, and #4
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	All
	Final Exam	3hr	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	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

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Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction of Demography- Sources of Population Data
Week 2	Benefits of Statistical Demography
Week 3	Age, gender, and economic composition of the population
Week 4	Population pyramid
Week 5	Demographic indicators and the rates on which studies are based
Week 6	Methods of adjusting rates
Week 7	Study of data evaluation, age and gender composition, and detection of errors related to demographic data
Week 8	Methods for refining demographic data
Week 9	Matching mathematical functions for population forecasting
Week 10	Building regular life schedules
Week 11	Construct clinical life tables - Analysis of life tables
Week 12	Life rates - Measures of the relationship between life factors
Week 13	Relative risk, its types and rates - Midterm Exam
Week 14	Relative risk, its types and rates
Week 15	Analysis of survival data and survival pattern
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	"DEMOGRAPHY"- lecture node- UNIVERSITY OF AGRICULTURE, ABEOKUTA COLLEGE OF NATURAL SCIENCES DEPARTMENT OF STATISTICS	No
	الاحصاء الديموغرافي/عبد الحسين الزيني	Yes
Recommended Texts		No
Websites	Introduction to Demography / www.population-europe.eu	

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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.



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MODULE DESCRIPTION FORM

Module Information					
Module Title	**Elementary Statistics I**			**Module Delivery**	
Module Type	**Core**			☒**Theory** ☒**Lecture** ☐**Lab** ☒**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	**STAT101**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	UGI		**Semester of Delivery**	1	
Administering Department	STAT		**College**	CSM	
Module Leader	Khairy Badal Rasheed		**e-mail**	Khairy-stat@uomosul.edu.iq	
Module Leader's Acad. Title	Lecture		**Module Leader's Qualification**	Msc.	
Module Tutor	Shaimaa Waleed Mahmood		**e-mail**	shaimaa.waleed@uomosul.edu.iq	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	10/06/2023		**Version Number**	1.0	

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

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Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- Give the learner the statistical skills that enable him to work in the fields of statistic, calculating measures of statistic. 2- The subject of statistics is a digital language and an art to express the variables and numbers accurately, and thus enables the student to benefit from this subject in the statistics and the programs that are important to him in most fields of life. 3- Statistics course aims to develop ways and means of thinking and how to deal with various problems. 4- Trying to think in sound ways and methods, specifically in solving problems and thus improving and developing society.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Understand the fundamental concepts and principles of statistics, including data types, measurement scales, and sampling methods. 2- Interpret and analyze data using descriptive statistical measures, such as measures of central tendency (mean, median, mode) and measures of variability (range, variance, standard deviation). 3- Apply probability theory to analyze and make predictions about uncertain events, including calculating probabilities and understanding the laws of probability. 4- Utilize basic principles of statistical inference to draw conclusions about a population based on sample data, including hypothesis testing and confidence intervals. 5- Apply appropriate statistical techniques for analyzing relationships between variables, including correlation analysis and simple linear regression. 6- Understand and interpret the results of statistical software output and graphical representations. 7- Communicate statistical findings and interpretations effectively, both orally and in written form. 8- Develop critical thinking and problem-solving skills in the context of statistical analysis and interpretation.
Indicative Contents المحتويات الإرشادية	1- familiarize students with the basics of statistics, its fields of application. 2- the statistical method in scientific research, methods of data collection. 3- classification and presentation for the purpose of obtaining the necessary information to make appropriate decisions and the possibility of using this data in prediction, in addition to developing students. 4- skills in research design method. 5- bringing the student to a level where he has the ability to interpret the results and turn them into a practical reality.

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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 types of simple experiments involving some sampling activities that are interesting to the students in the statistical methods.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ أسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	82	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	20% (20)	5 and 10	LO #1, #2 and #4
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Report	1	10% (10)	13	All
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		


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Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Definition and importance of statistics
Week 2	Statistical method in scientific research Statistical Notation Types of statistics
Week 3	Data types and methods of collection
Week 4	Types of Samples
Week 5	Frequency distributions (importance and types)
Week 6	Presentation of data Frequency distribution (Tabular presentation)
Week 7	Cumulative distribution
Week 8	Graphical presentation
Week 9	Measures of Central tendency for ungrouped data
Week 10	Measures of Central tendency for grouped data
Week 11	Properties of central tendency measures
Week 12	Measures of dispersion (variation) for ungrouped data Measures of dispersion (variation) grouped data
Week 13	Properties of dispersion measurements
Week 14	Pearson and spearman correlation
Week 15	Preparatory week before the final Exam
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Elementary Statistics (2007), Allan Bluman.	Yes
Recommended Texts	Basics of Statistics (1995), Jarkko Isolalo.	Yes
Websites		

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.



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College of Computer Science and Mathematics
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MODULE DESCRIPTION FORM

Module Information					
Module Title	**Elementary Statistics II**			**Module Delivery**	
Module Type	**Core**			☒Theory ☒Lecture ☐Lab ☒Tutorial ☐Practical ☐Seminar	
Module Code	**STAT107**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level		UGI	**Semester of Delivery**		2
Administering Department		STAT	**College**	CSM	
Module Leader	Khairy Badal Rasheed		**e-mail**	Khairy-stat@uomosul.edu.iq	
Module Leader's Acad. Title		Lecture	**Module Leader's Qualification**		Msc.
Module Tutor	Shaimaa Waleed Mahmood		**e-mail**	shaimaa.waleed@uomosul.edu.iq	
Peer Reviewer Name		Name	**e-mail**	E-mail	
Scientific Committee Approval Date		10/06/2023	**Version Number**		1.0

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



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Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- Give the learner the statistical skills that enable him to work in the fields of engineering, calculating probabilities and linear equations. 2- The subject of statistics is a digital language and an art to express the variables and numbers accurately, and thus enables the student to benefit from this subject in the engineering and arithmetic transactions that are important to him in most fields of life. 3- Statistics course aims to develop ways and means of thinking and how to deal with various problems. 4- Trying to think in sound ways and methods, specifically in solving problems and thus improving and developing society.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Understand the fundamental concepts and principles of statistics, including data types, measurement scales, and sampling methods. 2- Interpret and analyze data using descriptive statistical measures, such as measures of central tendency (mean, median, mode) and measures of variability (range, variance, standard deviation). 3- Apply probability theory to analyze and make predictions about uncertain events, including calculating probabilities and understanding the laws of probability. 4- Utilize basic principles of statistical inference to draw conclusions about a population based on sample data, including hypothesis testing and confidence intervals. 5- Apply appropriate statistical techniques for analyzing relationships between variables, including correlation analysis and simple linear regression. 6- Understand and interpret the results of statistical software output and graphical representations. 7- Communicate statistical findings and interpretations effectively, both orally and in written form. 8- Develop critical thinking and problem-solving skills in the context of statistical analysis and interpretation.
Indicative Contents المحتويات الإرشادية	1- familiarize students with the basics of statistics, its fields of application. 2- the statistical method in scientific research, methods of data collection 3- classification and presentation for the purpose of obtaining the necessary information to make appropriate decisions and the possibility of using this data in prediction, in addition to developing students. 4- skills in research design method. 5- bringing the student to a level where he has the ability to interpret the results and turn them into a practical reality.

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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 types of simple experiments involving some sampling activities that are interesting to the students in the statistical methods.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	82	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	5
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	20% (20)	5 and 10	LO #1, #2 and #4
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Report	1	10% (10)	13	All
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

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Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Multiple correlation coefficient
Week 2	Partial correlation coefficient
Week 3	Simple linear regression
Week 4	Multiple linear regression
Week 5	Testing of hypotheses
Week 6	Type one and two error
Week 7	Z –test (one sample)
Week 8	Z –test (two samples)
Week 9	t –test (one sample)
Week 10	t –test (two samples)
Week 11	t –test (paired samples)
Week 12	Confidence Intervals
Week 13	ANOVA{Analysis of variance (part 1) }
Week 14	ANOVA{Analysis of variance (part 1) }
Week 15	Preparatory week before the final Exam
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Elementary Statistics (2007), Allan Bluman.	Yes
Recommended Texts	Basics of Statistics (1995), Jarkko Isolalo.	Yes
Websites		



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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.



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MODULE DESCRIPTION FORM

Module Information					
Module Title	**English Language I**			**Module Delivery**	
Module Type	**Basic**			☒**Theory** ☒**Lecture** ☐**Lab** ☐**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	**UOM102**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level	UGI		**Semester of Delivery**	2	
Administering Department	STAT		**College**	CSM	
Module Leader	Hajer Akram Jasim Ali		**e-mail**	hajerakram@uomosul.edu.iq	
Module Leader's Acad. Title	Asst. lecturer		**Module Leader's Qualification**	MSc.	
Module Tutor	None		**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	11/06/2023		**Version Number**	1.0	

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


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Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. To be able to speak English fluently and accurately. 2. To think in English and then speak. 3. To be able to talk in English. 4. To be able to compose freely and independently in speech and writing. 5. To be able to read books with understanding.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. To address grammar issues that students encounter in their daily speech, writing, reading, and listening 2. To address the issue of grammatical errors that affect effective communication 3. To improve your reading skills through the practice of vocabulary enrichment, reading comprehension exercises, speed reading strategies, written responses, discussions, and reflections 4. Recognize the structure and organization of paragraphs, 5. Use strategies to think critically about reading and use appropriate technology to enhance reading comprehension, reading speed, and vocabulary development 6. Develop writing skills.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Introduction: about new headway pre-intermediate plus [1 hrs] Tenses: past-present-future, wh- questions. Vocabulary- using a bilingual dictionary, reading (communication). Everyday English (social expressions) [9 hrs] Grammar: Review about tenses, Present tenses, have and have got. Vocabulary: about (daily life), listening and match between verb and nouns. Practices about simple present and present continuous, Reading: about living in the USA. Social expressions about every day English. [8 hrs] Past tenses, simple past and past continuous, practice, Reading and listening, regular and irregular verbs. Vocabulary: about N.- V.- Adj. endings. Everyday English (time expressions). [6hrs] Grammar: the quantities, also about Something/someone/somewhere, practices. Reading: about markets, practices. [6 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in developing the four skills: The skill of speaking, The skill of reading, The skill of writing, The skill of listening, Also, it enables the students for the use grammar correctly,

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Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	33	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	17	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**50**		

Module Evaluation

تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	20% (20)	4,9 and 11	LO #1, #2 and #5
	Assignments	2	10% (10)	2,10 and 13	LO #3, #4 and #6
	Report	1	10% (10)	13	LO #1, #4
Summative assessment	**Midterm Exam**	1hr	10% (10)	7	LO #1 - #5
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Reading passage: Are You Getting Enough Sleep?
Week 2	• Building Vocabulary • Doing exercises: A • Words to remember Ask Students (According to attendance list) to write a short paragraph or report related to their field and use technical terminologies to enhance their English within their major
Week 3	• Reading passage: Mika's Homestay in London. • Students would explain their assignments about their major.
Week 4	• Building Vocabulary • Doing exercises: A-B • Words to remember

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	Ask Students (According to attendance list) to write a short paragraph or report related to their field and use technical terminologies to enhance their English within their major.
Week 5	• Reading passage: It's Not Always Black and White. • Students would explain their assignments about their major.
Week 6	• Building Vocabulary • Doing exercises: A • Words to remember Ask Students (According to attendance list) to write a short paragraph or report related to their field and use technical terminologies to enhance their English within their major.
Week 7	• Reading passage: Helping Others. • Students would explain their assignments about their major. •
Week 8	• Building Vocabulary • Doing exercises: A • Words to remember Ask Students (According to attendance list) to write a short paragraph or report related to their field and use technical terminologies to enhance their English within their major.
Week 9	• Reading passage: Generation Z: Digital Nations. • Students would explain their assignments about their major.
Week 10	• Building Vocabulary • Doing exercises: A-B • Words to remember Ask Students (According to attendance list) to write a short paragraph or report related to their field and use technical terminologies to enhance their English within their major.
Week 11	• Reading passage: How to Be a Successful Businessperson. • Students would explain their assignments about their major.
Week 12	Mid-term Exam.
Week 13	• Building Vocabulary • Doing exercises: A • Words to remember Ask Students (According to attendance list) to write a short paragraph or report related to their field and use technical terminologies to enhance their English within their major.
Week 14	• Reading passage: The Growth of Urban Farming. • Students would explain their assignments about their major.
Week 15	• Building Vocabulary • Doing exercises: A-B • Words to remember Ask Students (According to attendance list) to write a short paragraph or report related to their field and use technical terminologies to enhance their English within their major.
Week 16	**Preparatory week before the final Exam**

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Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Select Readings Teacher-approved readings for today's students pre-intermediate 2nd Ed. By: Linda Lee + Eric Gundersen	Yes
Recommended Texts	Select Readings Elementary	Yes
Websites	https://www.libgen.is/search.php?req=select+readings+pre-intermediate&open=0&res=25&view=simple&phrase=1&column=def	

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.



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MODULE DESCRIPTION FORM

Module Information					
Module Title	**Linear Algebra**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**STAT104**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	UGI		**Semester of Delivery**	1	
Administering Department	STAT		**College**	CSM	
Module Leader	Hyllaa Anas Abdul-Majeed		**e-mail**	hyllaa.77@uomosul.edu.iq	
Module Leader's Acad. Title	Professor		**Module Leader's Qualification**	MSc.	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	10/06/2023		**Version Number**	1.0	

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

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Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- The student discusses vector spaces and related abstract concepts. 2- The student is familiar with the algebraic concepts and terminology of matrices and determinants and inverses, and uses creative thinking in the use of elementary transformation methods. 3-Learn about systems of linear equations and their applications. 4-Recognize the basis and dimension of vector spaces.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Algebraic operations on matrices and calculating determinants. 2- Solve linear systems. 3 - Learn about vector spaces and algebraic operations on them. 4- Self-learning method 5- One of the most important outputs is building a base for the student to move to the basic stages of subjects in which matrices and linear equations are the basis. 6- Encourage the student to look at books and extract information from them
Indicative Contents المحتويات الإرشادية	Part (1) - Definition of matrix, its types, algebraic operations on matrices and determinants, methods of finding the determinant and their properties. [13 hours] Part (2) - inverse and methods of finding the inverse of a matrix and its properties. [11 hours] Part (3) - Linear Equations and Methods for Solving Linear Equations. [14 hours] Part (4) - rank of matrix, The canonical form and equivalent matrices, and rank relation with equations. [14 hours] Part (5) - Latent roots, vectors, algebraic operations on vectors, linear composition, distance and Euclidean length. [11 hours]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: 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 types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4

Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	87	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
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	20% (20)	3 and 8	LO #1and #2
	Assignments	2	10% (10)	2 and 12	LO #1, #2 and#4
	Report	1	10% (10)	13	LO #4, #5and#6
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #2
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Definition of matrices and types
Week 2	Algebraic processes on matrices
Week 3	Determinants, Determinant solution methods
Week 4	properties of the determinant
Week 5	Mid-term Exam + Inverse matrix using the matrices method (the adjoint of matrix)
Week 6	Inverse matrix using Gaussian deletion method
Week 7	The properties of the inverse matrix
Week 8	Linear equations, Methods of solving linear equations in the case of m = n
Week 9	Method of matrices to solve linear equations in the case of m> n
Week 10	rank of matrix, The canonical form

Week 11	equivalent matrices, Relationship of ranks and linear equations m>n
Week 12	Mid-term Exam + Relationship of ranks and linear equations m=n
Week 13	Latent roots of order (2x2), (3x3)
Week 14	Vector and Algebraic processes on vector, Euclidean length and Euclidean distance
Week 15	Linear Composition
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	الجبر الخطي، عبد المجيد حمزة ولميعة باقر	Yes
Recommended Texts	Elementary and Intermediacies Algebra (2)—Mark Dugopolski	No
Websites		

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.



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MODULE DESCRIPTION FORM

Module Information					
Module Title	**MATLAB programming**			**Module Delivery**	
Module Type	**Basic**			☒Theory ☒Lecture ☒Lab ☐Tutorial ☐Practical ☐Seminar	
Module Code	**STAT110**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	UGI		**Semester of Delivery**	2	
Administering Department	STAT		**College**	CSM	
Module Leader	Hyllaa Anas Abdul-Majeed		**e-mail**	hyllaa.77@uomosul.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	MSc.	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	10/06/2023		**Version Number**	1.0	

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

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Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية

Module Objectives أهداف المادة الدراسية	1. 1- Perform complex calculations very quickly 2. 2- Derivation of logarithms 3. 3- Simulation and design of various systems in all branches of science and industry 4. 4- Data analysis and exploration 5. 5- Drawing in two and three dimensions (2D-3D) 6. 6-solve problems that are difficult for the researcher to do in the usual ways
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Know the basic axioms of the MATLAB language. 2. The ability to operate the system and identify its windows. 3. The ability to write and implement simple programs. 4. The ability of the MATLAB program to perform mathematical operations in vectors or matrices. 5. Identify ready-made instructions for solving problems or programming them. 6. The possibility of writing programs in the MATLAB language when the classical methods fail to solve them. 7. The possibility of solving problems in MATLAB language, including numerical solutions 8. Develop skill in dealing with programs similar to MATLAB. 9. Encourage the student to look at books and extract information from them 10. One of the most important outputs is building a basic base for the student to move to future stages of subjects in which probability theory is a basis.
Indicative Contents المحتويات الإرشادية	Part - Introduction to the MATLAB Introduction to the MATLAB program and the Windows program, clarifying some important instructions and commands, writing data in the program, matrices in the matlab program, and creating matrices based on the instructions. [12 hrs] Part - Create matrices in MATLAB Writing the matrix in the program, some instructions used in the matrix, creating a row, column, or vector matrix with consecutive elements, some other instructions for creating matrices finding the inverse, determinant, and rank of the matrix in matlab, and reshaping matrices. [12 hrs] Part – Algebraic operations in matlab Algebraic operations on matrices in matlab, matrix elevation, finding the square root of a matrix and also boolean signs in matlab. [12 hrs] Part - Boolean directives in MATLAB Using (and), (or) between arrays whose elements are (1,0), and how to write input and output statements. [12 hrs] Part - Writing programs in MATLAB language And how to write a simple program based on writing the program using (for -end), drawing in MATLAB, conditional cases (if-end), using dashes (for the end) and (if the end)

	together. [15 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in providing solutions to some of the problems that the student faces in solving them when they cannot be solved by classical methods, by programming these solutions to reach the best solution depending on the programming language, including the MATLAB language that is commonly used in scientific departments, including statistics, and in the applied fields of the market Work as well as gain skills in developing solutions by encouraging students to participate in exercises, while improving and expanding critical thinking skills at the same time. This will be achieved through classes and interactive educational programs by identifying the directives of the MATLAB language program and getting to know the system of the system so that the student acquires the skill in programming to benefit from in the field of his studies, primary and higher

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	15% (15)	3 and 9	LO #1, #2 AND #4, #5, #6
	Assignments	2	15% (15)	4 and 12	LO #3, #4 and #7
	Report	1	10% (10)	13	LO #9
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #10
	Final Exam	3hr	50% (50)	16	All

Total assessment	100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to the MATLAB program and the Windows program, clarification of some important instructions and commands, and writing data in the program
Week 2	Matrices in the MATLAB program, and methods of writing the matrix in the program
Week 3	Some instructions used in the matrix
Week 4	Creates a row, column, or matrix vector with consecutive elements, and Create matrices based on instructions
Week 5	Mid-term Exam + Some other instructions for creating matrices
Week 6	Finding the inverse, determinant, and rank of a matrix in MATLAB , and reshaping matrices
Week 7	Adding new elements to the matrix, deleting some elements of the matrix, and changing the values of some elements of the matrix and submatrix
Week 8	Algebraic operations on matrices in the MATLAB program, raising the matrix, finding the square root of the matrix and also logical signs in the MATLAB program
Week 9	Using (and), (or) between matrices whose elements are (1,0), and how to write input and output sentences
Week 10	loops, and how to write a simple program
Week 11	Writing the program using (for -end)
Week 12	Mid-term Exam +Drawing in MATLAB
Week 13	Conditional (if-end) cases
Week 14	Using the (for-end) and (if-end) conditionals together
Week 15	use loop(while-end)
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Lab 1: Introduction to MATLAB and its main windows and writing data in the program
Week 2	Lab 2: Application examples for Matrices in the MATLAB program, and methods of writing the matrix in the program
Week 3	Lab 3: Application examples for Some instructions used in the matrix

Week 4	Lab 4: Application examples for Creates a row, column, or matrix vector with consecutive elements, and Create matrices based on instructions
Week 5	Lab 5: Application examples for Some other instructions for creating matrices
Week 6	Lab 6: Application examples for Finding the inverse, determinant, and rank of a matrix in MATLAB, and reshaping matrices
Week 7	Lab 7: Application examples for Adding new elements to the matrix, deleting some elements of the matrix, and changing the values of some elements of the matrix and submatrix
Week 8	Lab 8: Application examples for Algebraic operations on matrices in the MATLAB program, raising the matrix, finding the square root of the matrix and also logical signs in the MATLAB program
Week 9	Lab 9: Application examples for Using (and), (or) between matrices whose elements are (1,0), and how to write input and output sentences
Week 10	Lab 10: Application examples for loops, and how to write a simple program
Week 11	Lab 11: Application examples for Writing the program using (for -end)
Week 12	Lab 12: Application examples for Drawing in MATLAB
Week 13	Lab 13: Application examples for Conditional (if-end) cases
Week 14	Lab 14: Application examples for Using the (for-end) and (if-end) conditionals together
Week 15	Lab 15: Application examples for use loop(while-end)

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts	"تطبيقات MATLAB الحلول العددية" ، ياسين احمد الشبول، 2004	Yes
Websites		

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.



Ministry of Higher Education and Scientific Research
University of Mosul
College of Computer Science and Mathematics
Statistics and Informatics

2025-2024

MODULE DESCRIPTION FORM

Module Information معلومات المادة الدراسية					
Module Title	**Probability I**			**Module Delivery**	
Module Type	**Core**			☒**Theory** ☒**Lecture** ☐**Lab** ☒**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	**Stat201**				
ECTS Credits	**7**				
SWL (hr/sem)	**175**				
Module Level	2		**Semester of Delivery**	1	
Administering Department	**STAT**		**College**	**CSM**	
Module Leader	Dr. Safwan Nathem Rashed		**e-mail**	safwan75nathem@uomosul.edu.iq	
Module Leader's Acad. Title	lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	23/06/2023		**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 Objectives أهداف المادة الدراسية	1. To develop the student's problem-solving skills by getting acquainted with sets theory and some of its basic theories and understanding its laws 2. Developing the student's abilities on counting methods to reach sets theory as well as the binomial expansion law 3. Developing skills in applying probability theory and understanding its axioms, its laws and application 4. Identify the random experiment and the accidents that will appear in the experiment in order to obtain a sample space 5. Learn about independent events and how to identify them, in addition to conditional probability and its connection to Bayes' theory 6. Provide a solid foundation for advanced work on probability and its applications, and is essential to understanding many applied fields
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Identify the axioms of probability theory and its basic theories 2. The possibility of proving the basic axioms of probability theory 3. Familiarize yourself with the statistical terminology in the probabilities view 4. Knowing the theory of sets and the sample space that arises from any experiment and its laws 5. Identifying the counting methods in determining the sample space of the sets theory as well as the expansion theory 6. The possibility of obtaining a sample space through any random experiment and the accidents that appear in the experiment 7. Knowing the axioms of probability theory and how to obtain the probability value according to the probability law 8. Applying probabilistic laws according to the axioms of sets theory and how to prove them 9. The possibility of distinguishing between independent and non-independent events 10. Identify conditional probability and build models and laws for any experiment 11. The possibility of using Bayes' theory and its application in fields with multiple

	accidents 12. The most important of the outputs is building a basic base for the student to move to the future stages of subjects in which the probabilistic theory is mainly dependent.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Part - Set Theory Introduction to probability theory, element, set operations, finite and countable sets, product sets, separation of sets. [23 hrs] Part - Counting methods Introduction to counting methods, basic counting principle, factorial symbol, tree drawing, permutations, combinations, ordered samples, binomial theorem. [18 hrs] Part - Introduction to probability theory An introduction to probabilities, types of probability, case and accident spaces, random empiricism, probability finding laws, finite sample space, equal probabilities space, probabilistic theories according to a priori sets. [23 hrs] Part - Conditional and independent probability Axioms of probability, independent and dependent probabilities, random processes, conditional probability, Bayes' theorem. [18 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in introducing this unit is to encourage students to participate in the exercises, while improving and expanding their critical thinking skills at the same time by getting acquainted with the theory of probability and random variables, in the first part and expanding the student's mind. This will be achieved through classes and interactive educational programs to learn about sets theory and counting methods for it, and through learning about random experiment and sample space in forming sets, as well as using basic probabilistic laws in application in its various forms, which will be the basis for the student for his future stages.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	82	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	10% (10)	5 and 14	LO #1-#4, #5-#8 and #9- #11
	Assignments	5	10% (10)	1 and 14	LO #1- #11
	Discussion	5	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #10 and #15
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

2025-2024

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction of the Probability and Basic set theory.
Week 2	Basic Set theory, definitions of set theory.
Week 3	Some Fundamental Theorems, Fundamental laws of set theory with theorems.
Week 4	Sequence and limits, with theorems.
Week 5	Mid-term Exam + Field and σ-Field and Power of the set.
Week 6	Techniques of Counting, Tree Diagrams and Arrangement
Week 7	Techniques of Counting, Permutations.
Week 8	Techniques of Counting, Combinations with theorems.
Week 9	Combinations and Binomial theorem and Multinomial Expansion.
Week 10	Mid-term Exam + Probability Introduction, Random Experiment, Events Kinds, Sample Space and Probability a law.
Week 11	Axiomatic Approach of Probability.
Week 12	Probabilistic models according to the basic laws of set theory with theorems.
Week 13	Independent events, Conditional Probability.
Week 14	Conditional Probability and Bayes law
Week 15	Mid-term Exam + Bayes' theorem.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week	There are no laboratories

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	1-Introduction to probability theory ,Dr.dhafir H. Rasheed,1999,2-nd edition ,Baghdad university 2-probability , Dr.kubais S. A Fahady Dr. Pirlanty J. shamoon, Ministry of Higher Education and Scientific Research University of Mosul	Yes
Recommended Texts	1- A first course in probability, Sheldon Ross, 2010, Eighth edition. 2- Probability, schume series	No
Websites	https://www.khanacademy.org/math/statistics-probability/random-variables-stats-library https://www.khanacademy.org/math/statistics-probability https://www.coursearena.io/topic/free-probability-theory-courses	

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.



Ministry of Higher Education and Scientific Research
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College of Computer Science and Mathematics
Statistics and Informatics

2025-2024

MODULE DESCRIPTION FORM

Module Information معلومات المادة الدراسية					
Module Title	**Probability II**			**Module Delivery**	
Module Type	**Core**			☒**Theory** ☒**Lecture** ☐**Lab** ☒**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	**Stat206**				
ECTS Credits	**6**				
SWL (hr/sem)	**175**				
Module Level	2		**Semester of Delivery**	2	
Administering Department	**STAT**		**College**	**CSM**	
Module Leader	Dr. Safwan Nathem Rashed		**e-mail**	safwan75nathem@uomosul.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	23/012/2024		**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 Objectives أهداف المادة الدراسية	1. Developing the student's problem-solving skills by identifying random, intermittent and continuous variables based on group theory. 2. Developing the student's abilities on counting methods to reach the probability mass function and study its properties, as well as the probability density function and study its properties. 3. Developing skills in finding the distribution function for each of the probability mass function and the probability density function based on random variables and distinguishing between functions. 4. Developing the student's role in benefiting from the generated functions and developing problem-solving skills through these functions. 5. Identify some of the distributions commonly used in various fields of operation, including intermittent and continuous ones. 6. To provide a solid foundation for advanced work on probabilities and their applications, essential to an understanding of many applied fields
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Important: Write at least 6 Learning Outcomes, better to be equal to the number of study weeks. 1. Recognize the axioms of obtaining discrete and continuous random variables and their basic theories related to group theory. 2. The possibility of obtaining the probability mass function as well as the probability density function. 3. The possibility of obtaining the distribution function for each of the probability mass function as well as the probability density function. 4. The possibility of obtaining functions generated from the mathematical expectation, variance, and moments, in addition to the function that generates moments, as well as the characteristic function. 5. Identifying some commonly used probability distributions in the fields of discrete and continuous applications. 6. The possibility of obtaining the functions that generate the discrete and continuous distributions. 7. One of the most important outputs is to build a basic base for the student to move to future stages of subjects in which probability theory is a basis.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part -</u> the Probabilities and The concept random variables. A simple review of group theory and probability finding, how to obtain random variables depending on the state space of the random experiment, discrete and continuous random variables. [23 hrs] <u>Part - Probability functions and the distribution function</u> Introduction to the probability function, how to obtain the probability mass function from discrete random variables, how to obtain the probability mass function from

	discrete random variables, studying the properties of the probability mass function as well as the probability density function, finding the distribution function for the probability mass function and the probability density function, studying the properties of the probability function distribution. [23 hrs] Part – Generating function Finding the mathematical expectation, variance, moments, and the moment-generating function as well as the characteristic function when the random variables are discrete and continuous. [18 hrs] Part - Some Probability Distributions Some discrete probability distributions, the uniform distribution, the Bernoulli distribution, the binomial distribution, the Poisson distribution, the geometric distribution, the hypergeometric distribution, and the negative binomial distribution. Some continuous probability distributions, the uniform distribution, the exponential distribution, the normal distribution, the gamma distribution, and the beta distribution. Finding the generating functions for each of the discrete and continuous probability distributions. [18 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	The main strategy that will be adopted in the introduction of this unit is to encourage students to participate in the exercises, while improving and at the same time expanding their critical thinking skills through the theory of probability and discrete and continuous random variables obtained drawing on the theory of groups from the first part Expanding the mental and mental mind for students. This will be achieved through classes and interactive educational programs to identify the quality of random variables and their intermittent and continuous probabilistic functions as well as the distribution function and study the characteristics of cases, with identification of finding functions generated from mathematical expectation, variance and moments with the moment-generating function, with identification of some common probability distributions discontinuous and continuous, as well as the use of basic probability laws in application in their various forms, which will be the basis for the student for his future stages.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	93	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	6
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	82	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	6
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**175**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	3	20% (20)	5 and 14	LO #1-#2, #3-#4 and #5- #6
	Assignments	4	10% (10)	1 and 14	LO #1, #6
	Discussion	2	5% (5)	Continuous	All
	Report	1	5% (5)	6,10 and 13	LO #6, #10 and #15
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

2025-2024

	Material Covered
Week 1	Introduction in the Probabilities and The concept random variables.
Week 2	Probability mass function, Discrete random variable.
Week 3	Probability density function, Continuous random variable.
Week 4	Distribution function, discrete and continuous variables.
Week 5	Properties of mass and density functions for discrete and continuous variables.
Week 6	Properties of distribution functions for discrete and continuous variables.
Week 7	Mid-term Exam + Laws and notes on finding the probability value of functions of discrete and continuous random variables.
Week 8	Generating function, Mathematical Expectation and Variance with Properties.
Week 9	Mathematical Expectation and Variance of (p.m.f and p.d.f) for discrete and continuous variables.
Week 10	Generating function, Moment, Central Moment and Non-Central Moment.
Week 11	Moment Generating function and Characteristic function, discrete and continuous variables.
Week 12	Mid-term Exam + Some discrete probability distributions.
Week 13	Finding the generating functions for the discrete distributions
Week 14	Some continuous probability distributions.
Week 15	Mid-term Exam + Finding the generating functions for the continuous distributions
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered
Week	There are no laboratories

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	1-Introduction to probability theory ,Dr.dhafir H. Rasheed,1999,2-nd edition ,Baghdad university 2-probability , Dr.kubais S. A Fahady Dr. Pirlanty J. shamoon, Ministry of Higher Education and Scientific Research University of Mosul	Yes
Recommended Texts	1- A first course in probability, Sheldon Ross, 2010, Eighth edition. 2- Probability, schume series	No
Websites	https://www.khanacademy.org/math/statistics-probability/random-variables-stats-library https://www.khanacademy.org/math/statistics-probability https://www.coursearena.io/topic/free-probability-theory-courses	

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.



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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Sampling Theory I**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**STAT202**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	STAT		**College**	CSM	
Module Leader	Dr. Rikan Abdulazeez Ahmed		**e-mail**	rikan.ahmed@uomosul.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**		

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


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Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- To deepen understanding of sampling process and create students' awareness of the sampling methodology in mathematical researches. 2- cover sampling design and analysis methods that would be useful for research and survey 3- A well-designed sampling procedure ensures that we can summarize and analyze data with a minimum of assumptions and complications 4- Introducing students to the principles and methods of designing inference-based samples and clarifying the mathematical approach to them
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- define principal concepts about sampling 2- Explains the advantages of sampling 3- Lists the stages of sampling process 4- Categorizes and defines the sampling methods. 5- Apply the Simple Random Sampling (SRS) method. 6- Expresses sample select process on SRS. 7- Formulates and calculates the estimators of population mean, population total, population ratio of two variables, the percentage and the total number of units in the population that possess some characteristic. 8- Identifies and interprets confidence intervals via variance estimates of the estimators. 9- Estimates the convenient sample size for SRS method.
Indicative Contents المحتويات الإرشادية	• Basic concepts and definitions about sampling - Sampling methods- The sample selection process in simple random sampling- Simple estimation in simple random sampling [12 hrs] • Simple Random Sampling With Replacement or simply SRSWR sampling - Simple Random Sampling and Without Replacement or simply SRSWOR sampling - Pseudo Random Numbers (PRN)- Probability sampling -Qualitative random variable-Quantitative random variable [12 hrs] • experiments and surveys, steps in planning a survey; randomization approach to sampling and estimation, sampling distribution of estimator, expected values, variances, generalization of probability sampling; prediction approach, inadequacies of approach, decomposition of population total [12 hrs] • Under SRSWR sampling, while estimating population mean (or total) - The covariance between two sample means - The probability for any population unit to get selected in the sample at any particular draw is equivalent to inverse of the population size [12 hrs] • Simple random sampling with associated estimation and confidence interval methods- Estimating proportions - Ratio estimation [12 hrs] • Selecting sample sizes -Estimation of the sample size [12 hrs]

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 types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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)	4 and 12	LO #3, #4 and #6, #8
	Assignments	5	10% (10)	1 to 14	LO #2 - #7
	Discussions	5	10% (10)	5-10	All
	Report	1	10% (10)	13	LO #5, #8 and #9
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction-Elementary Definitions-Advantages of the Sampling Method- The Principal Steps in a Sample Survey
Week 2	Population and Unit-Finite and Infinite Populations-Probability Sampling-Alternatives to Probability

	Sampling
Week 3	Simple Random Sampling-Selection of a SRS-Definitions and Notation-Estimation of Population Mean and Variance
Week 4	Estimation of Population Covariance-Estimation of the Standard Error from a Sample-Confidence Limits
Week 5	Ratio Estimator for Population Ratio- Exact & Approximate Expression of Bias and Mean-Square Error
Week 6	Ratio Estimator for Population Mean & Total- Confidence Limits
Week 7	Mid-term Exam + Efficiency of the Ratio Estimator- Optimality of the Ratio Estimator
Week 8	Estimation of Population Proportion-Variances of the Sample Estimates-Confidence Limits
Week 9	Population Proportion Estimator for Population Mean & Total- Confidence Limits
Week 10	Classification into More than Two Classes
Week 11	Estimation of Sample Size to estimate the Population Mean-Population Total-Population Proportion
Week 12	Sample Size in Decision Problems
Week 13	Simple Random Sampling With Replacement- Estimation of the Population Mean and Variance
Week 14	Estimation of Population Proportion With Replacement sampling
Week 15	Comparison of the Designs with and Without Replacement
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)
المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Tillé, Yves. Sampling and estimation from finite populations. John Wiley & Sons, 2020.	Yes
Recommended Texts	Cochran, William G. *Sampling techniques*. John Wiley & Sons, 1977.	Yes
Websites	https://www.tandfonline.com/doi/abs/10.1198/tas.2007.s89?journalCode=utas20 Sampling Methods: Exercises and Solutions	

Grading Scheme
مخطط الدرجات


Ministry of Higher Education and Scientific Research
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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.



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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Sampling Theory II**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**STAT208**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	UGII		**Semester of Delivery**	4	
Administering Department	STAT		**College**	CSM	
Module Leader	Dr. Rikan Abdulazeez Ahmed		**e-mail**	rikan.ahmed@uomosul.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor			**e-mail**		
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date			**Version Number**		

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


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Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1- To deepen understanding of sampling process and create students' awareness of the sampling methodology in mathematical researches. 2- cover sampling design and analysis methods that would be useful for research and survey 3- A well designed sampling procedure ensures that we can summarize and analyze data with a minimum of assumptions and complications 4- Introducing students to the principles and methods of designing inference-based samples and clarifying the mathematical approach to them
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- Apply the Stratified Sampling method 2- Applies the simple estimation method in Stratified Sampling 3- Composes the optimum allocation of the sample size to stratum 4- Compares SRS and Stratified Random Sampling methods 5- Calculates required sample size for the estimators in Stratified Random Sampling 6- Applies the Ratio & Linear Regression Estimation method for Stratified Random Sampling 7- Apply the Systematic Sampling (SS) methods 8- Expresses sample select process on SS 9- Applies SS method to strata 10- Apply the Two Phase Sampling methods
Indicative Contents المحتويات الإرشادية	• Stratification and Stratified Random Sampling - What Is a Stratified Random Sample - How to Take a Stratified Random Sample - Why Stratified Sampling [12 hrs] • Population Parameters for Strata-Sample Statistics for Strata-Estimation of Population Parameters from Stratified Random Sampling [12 hrs] • Estimation of Population Parameters- Allocation of Sample to Strata-Proportional Allocation- Optimal Allocation-Construction of Stratum Boundaries and Desired Number of Strata [12 hrs] • Ratio & Regression Estimation in Stratified Random Sampling- Estimation with Mean & Totals Probabilities- Determination of Sample Size [12 hrs] • How To Take a Systematic Sample-Estimation of Population Characteristics-Variance of Estimates-Efficiency of Systematic Sampling [12 hrs] • Two-Phase Sampling for Estimation-Difference Method of Estimation-Procedure for construction of estimators of the total[12 hrs]

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 types of simple experiments involving some sampling activities that are interesting to the students.

Student Workload (SWL)

الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا

Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
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)	4 and 12	LO #3, #4 and #9, #10
	Assignments	5	10% (10)	1 to 14	LO #2 - #10
	Discussions	5	10% (10)	5-10	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	Stratified Sampling- Introduction-Definition of Stratified Sampling-Advantages of Stratified Sampling-Notation- Estimation Procedure
Week 2	Estimation of Population Mean- The Estimated Variance and Confidence Limits

Week 3	Optimum Allocation- Optimum Allocation for Fixed Cost- Optimum Allocation for Fixed Variance
Week 4	Neyman Optimum Allocation- Proportional Allocation- Relative Precision of Stratified Random and Simple Random Sampling
Week 5	Sampling for Stratified Proportions- Sampling for Stratified Proportions
Week 6	Estimation of Sample Size with Continuous Data- Estimation of Sample Size with Proportions
Week 7	Mid-term Exam + Ratio Estimates in Stratified Random Sampling- Separate Ratio Estimator
Week 8	Combined Ratio Estimator- Comparison Between the Separate and Combined Ratio Estimators- Optimum Allocation with a Ratio Estimate
Week 9	The Linear Regression Estimate- Regression Estimates with Preassigned *b*- Regression Estimates when *b* Is Computed from the Sample
Week 10	Large Sample Comparison with the Ratio Estimate and the Mean per Unit- Regression Estimates in Stratified Sampling
Week 11	Sampling- Introduction- Linear Systematic Sampling- Estimation of the Population Mean Systematic and Its Variance
Week 12	Comparison of Systematic with Stratified Random Sampling- Circular Systematic Sampling
Week 13	Two Phase Sampling - Introduction - Two Phase Sampling for Estimation
Week 14	Ratio Method of Estimation - Regression Method of Estimation
Week 15	Two-Phase Sampling for Stratification
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**
Required Texts	Tillé, Yves. Sampling and estimation from finite populations. John Wiley & Sons, 2020.	Yes
Recommended Texts	Cochran, William G. *Sampling techniques*. John Wiley & Sons, 1977.	Yes
Websites	https://www.tandfonline.com/doi/abs/10.1198/tas.2007.s89?journalCode=utas20 Sampling Methods: Exercises and Solutions	

Grading Scheme



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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.



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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Computer II**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UOM2032**				
ECTS Credits	**3**				
SWL (hr/sem)	**75**				
Module Level		UGI	**Semester of Delivery**		2
Administering Department		STAT	**College**		CSM
Module Leader	Manaf Hazim Ahmed		**e-mail**		Manaf.ahmed@uomosul.edu.iq
Module Leader's Acad. Title		Assistant Professor	**Module Leader's Qualification**		Ph.D.
Module Tutor			**e-mail**		@uomosul.edu.iq
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date		19/01/2025	**Version Number**		1.0

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	Computer I	**Semester**	

Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. To introduce fundamental concepts in networking, security, and troubleshooting, and their application in real-world scenarios. 2. To provide a comprehensive understanding of e-commerce technologies and their impact on modern business practices. 3. To explore the principles, techniques, and applications of artificial intelligence (AI) in various industries and everyday life. 4. To evaluate the societal, ethical, and future implications of AI technologies in the modern world.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Explain the structure, types, and security aspects of computer networks and identify common network threats. 2. Demonstrate knowledge of troubleshooting techniques for diagnosing and resolving hardware and software issues. 3. Analyze e-commerce systems, including electronic banking services, and their role in modern commerce. 4. Evaluate the characteristics, applications, and challenges of AI across industries and its influence on society and ethics.
Indicative Contents المحتويات الإرشادية	1. Networking and Security: Network types, components, basic security concepts, and understanding threats. 2. E-commerce: Online banking, mobile banking, and other electronic financial services. 3. Troubleshooting: Tools and techniques for addressing common computer hardware and software issues. 4. Artificial Intelligence: Definitions, history, key features, applications in industries (healthcare, education, finance, etc.), ethical challenges, and future trends.

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 by Using appropriate teaching strategies and methods and teaching aids to develop thinking skills.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	12	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**75**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	All
	Assignments	2	10% (10)	2 and 12	All
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	All
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		


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Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Security and Networking: what is a network? Types of networks. Basic network components.
Week 2	Security and networking: Network security Basics. Understanding network threats.
Week 3	E-commerce: Concepts of Electronic banking services includes inline banking: ATM and debit card services, Phone banking, SMS banking, electronic alert, Mobile banking.
Week 4	Computer Troubleshooting: Identifying and solving common hardware problems that computer users encounter.
Week 5	Computer Troubleshooting: Basic troubleshooting technique and tools for diagnosing and resolving issues.
Week 6	Introduction to AI: Definition of AI, History of AI, AI Techniques and Approaches.
Week 7	Introduction to AI: Key Characteristic of AI, Benefits of AI, Challenges and Ethical considerations.
Week 8	The Role of AI in Modern Smartphones: AI-Driven Mobile Technologies, Virtual Assistant (Siri, Google Assistant, Alexa)
Week 9	The Role of AI in Modern Smartphones: Adaptive Learning, Real-Time Translation Services.
Week 10	Applications and Tools of AI: Overview of AI applications in Various industries, Education and Healthcare.
Week 11	Applications and Tools of AI: Transportation, Marketing and Advertising.
Week 12	Applications and Tools of AI: Finance, Robotics and Automation Technologies.
Week 13	AI and Society: How AI affects social, AI and international relations, AI and future of humanity.
Week 14	Ethical Challenges in AI: AI ethics, privacy and surveillance, the impact of AI on the job market.
Week 15	The Future of AI: Future trends in AI, recent research and emerging technologies.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Lab 1	**Networking and Security Basics** • Set up basic network components (routers, switches, cables). • Simulate network threats and apply basic security measures (e.g., firewalls).
Lab 2	**Lab 2: Troubleshooting and E-commerce Applications** • Diagnose and resolve hardware and software issues using tools (e.g., faulty RAM, driver updates). • Simulate e-commerce workflows like online banking and mobile banking services.
Lab 3	**Lab 3: Introduction to AI Tools and Applications** • Experiment with basic AI tools (e.g., chatbots, image recognition apps). • Test AI features in smartphones (e.g., virtual assistants, adaptive learning, real-time translation).
Lab 4	**Lab 4: AI Ethics, Robotics, and Future Trends** • Debate ethical challenges (e.g., AI bias, privacy, job displacement). • Work with basic robotics kits or automation tools like Arduino. • Present research on emerging AI technologies. • **Objective**: Address ethical considerations, apply AI i

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts		
Recommended Texts	Graham Brown, David Waston, “Cambridge IGCSE Information and Communication Technology”, 3ed edition (2020) Alan Evans, Kendall Martin, Mary Anne Poatsy, “Technology in	Yes

	Action Complete" 16th edition (2020) Ahmed banafa, "Introduction to Artificial Intelligence (AI) ", 1st Edition (2024)	
Websites		

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
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Data Base**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**STAT210**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	UGII		**Semester of Delivery**	4	
Administering Department	STAT		**College**	CSM	
Module Leader	Dr. Najlaa Saad Ibrahim		**e-mail**	najlaa.s.a@uomosul.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Dr. Luma Akram Abdullah Ali		**e-mail**	luma.akram@uomosul.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	10/06/2023		**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 Objectives أهداف المادة الدراسية	1. The ability to interact with future systems. One of the most important goals of database design is to plan the database to allow modifications and improvements to it without the need to modify application programs or reorganize files. 2. Designing the data so that it is free of repetition and can be retrieved, modified and added to without the problems that can occur with the presence of repetition in it. 3. Reducing the total cost of storage requirements. 4. The physical and logical organization of data so that it can meet expected inquiries at the appropriate speed, as well as unplanned inquiries or to produce non-routine reports.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Focus on the way data is organized and not on special applications. 2. The ability to represent the natural structure of the data so that it reflects the logical relationships between the data. 3. Ensure that data can be shared among users for a variety of products. 4. Harmonization and compatibility with the current systems, so that the database system adopted by the facility must be consistent with the programs, data and procedures available at the facility. 5. Achieving interaction between multiple users and the database. 6. Achieving the logical coherence between the data distributed within the sub-files of the database. 7. Allowing users to build their personal opinion about the data without caring about the way the data is physically stored. 8. Allowing the database to evolve according to the needs of users.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following: Part A - Basic Concepts of Database Management System: Definition of databases, Purpose of database systems, Types of databases, Properties of databases, Database system applications, View of data and database languages. [10 hrs] Part B – The Relational Algebra and Relational Database Model: Definition of relationships and their importance and Types them. Definition of Algebraic Operators(Projection Operation, Selection Operation, Cartesian Multiplication and Join Operation).Definition of Set Operations(Union, Intersection,

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, computer labs, assignments, quizzes, and projects.
	difference and Division Operation).[24 hrs] Part C - Create an integrated database in Access: Create a database, configure tables, learn about the types and properties of fields, Identify the operations that can be performed on fields and records , specify a primary key for the table and work on relationships between tables (linking tables) and understanding referential integrity. Creating queries using the Query Wizard and designing queries. Creating forms through the use of several types of forms (form tool, blank form, multiple elements, form wizard, split form, datasheet) and using form design. Creating reports through reports using several types of reports (report tool, blank report, report wizard) and using report design, previewing reports through the use of several methods and printing reports.[26 hrs]

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	125		

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Module Evaluation
تقييم المادة الدراسية

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

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction to databases and characteristics them.
Week 2	History and applications of database System.
Week 3	Database users and administrators.
Week 4	Stages of developing databases.
Week 5	The concept of tables and data types and query them.
Week 6	Definition of relationships and their importance.
Week 7	Types of relationships between tables.
Week 8	Introduction to relational Algebra and Relational Database Model: Projection Operation
Week 9	Algebraic Operators: Selection Operation and the combination of the Selection Operation and Projection Operation.
Week 10	Algebraic Operators: Cartesian Multiplication.
Week 11	Algebraic Operators: Join Operation.
Week 12	Set Operations: Union.
Week 13	Set Operations: Intersection.
Week 14	Set Operations: difference.
Week 15	Set Operations: Division Operation.
Week 16	Preparatory week before the final Exam.

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	Create a database and create tables with different types of fields, in addition to controlling field properties.
Week 2	Apply operations taken theoretically to fields and records.
Week 3	Determine a primary key for the tables and create relationships between the two tables or more, such as a one-to-one relationship, a one-to-many relationship, and a many-to-many

	relationship, in addition to imposing referential integrity.
Week 4	Creating simple queries, a search query for duplicates, crosstab queries, and non-identical queries through one of the previously created tables.
Week 5	Creating queries using query design for linked tables and using the tab group for query design.
Week 6	Create forms using form tool, blank form, multiple elements, form wizard, split form and datasheet for each table to facilitate data entry.
Week 7	Creating forms using form design and using a group of tabs for designing forms by adding logos, backgrounds and other operations to the form.
Week 8	Generate reports using report tool, blank report and report wizard.
Week 9	Create reports using the report design, use the report design tab group, and report printing.

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts		
Recommended Texts	Adrien W. and Nelson E. “Database Design” by Hsoub Academy, v1.0, first edition. Aswad, Firas Muhammad and Lazim, Ali al-Hur “Databases” Abou Elela ,M. 'Microsoft Office 2010 Professional" ,	No
Websites		

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

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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.



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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Demography**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**STAT205**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	STAT		**College**	CSM	
Module Leader	Dr. Zinah Mudhar Albazzaz		**e-mail**	Zeenamudhar@uomosul.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Farah Abd AlGany		**e-mail**	farah.younus2244@uomosul.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	10/06/2023		**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 Objectives أهداف المادة الدراسية	تهيئة الطالب للعمل بدوائر الاحصاء المختلفة بحيث يتمكن من جمع ونشر المعلومات الديمغرافية والاجتماعية والاقتصادية والطبية بالأسلوب العلمي
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. ان يتعلم الطالب دراسة البيانات الاجتماعية والطبية ذات العلاقة بالسكان لكونهم مصدر كل النشاطات الاقتصادية وغير والاقتصادية من ثقافية واجتماعية وصحية وغيرها وان هذه النشاطات مرتبطة ويؤثر بعضها على بعض 2. ان يتعلم الطالب كيفية الحصول على البيانات الديمغرافية وطرق الكشف وتنقيح الاخطاء التي تتعرض لها البيانات السكانية 3. ان يتعلم الطالب كيفية اجراء التعداد والمسح السكاني وكذلك يتمكن من التنبؤ السكاني 4. ان يتقن الطالب تكوين وتحليل جداول الحياة الاعتيادية والجداول السريرية وحساب المعدلات الحياتية 5. حساب مقاييس الخطورة وتحليل بيانات البقاء على قيد الحياة
Indicative Contents المحتويات الإرشادية	1. عريف الاحصاء السكاني ومصادر البيانات السكانية وانواع المجتمعات السكانية وحساب المؤشرات الديمغرافية ومعايرة المعدلات (13hr) 2. طرق الكشف عن الاخطاء التي تعترض البيانات السكانية وطرق تنقيح البيانات السكانية (12hr) 3. التنبؤ السكاني (12hr) 4. بناء وتحليل جداول الحياة الاعتيادية والسريرية (12hr) 5. حساب المعدلات الحياتية ومقاييس العلاقة بين العوامل الحياتية, الخطورة النسبية وانواعها ومعدلاتها وتحليل بيانات البقاء على قيد الحياة و نمط البقاء. (14hr)

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	الاستراتيجية الرئيسية التي سيتم تبنيها هي تشجيع الطلاب على تعلم كيفية الحصول على البيانات الديمغرافية وتحليلها وتوسيع وصقل مهارات التفكير النقدي لديهم من خلال المحاضرات ومن خلال التقارير التي سيعدها الطلاب

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #4
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #5
	H.W.	2	10% (10)	4 and 12	All
	Report	1	10% (10)	13	LO #3, and #4
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	All
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	تعريف الاحصاء السكاني وبيان اهميته والتغيرات التي تطرأ على المجتمع والعوامل التي تنشأ منها
Week 2	مصادر البيانات السكانية
Week 3	انواع نماذج الهرم السكاني
Week 4	المؤشرات الديمغرافية والمعدلات التي يعتمد عليها بالدراسات
Week 5	طرق تقييس المعدلات
Week 6	دراسة تقييم بيانات التركيب العمري والنوعي وكشف الاخطاء التي تعترض البيانات السكانية
Week 7	طرائق تنقيح البيانات السكانية

Week 8	توفيق الدوال الرياضية للتنبؤ السكاني
Week 9	بناء جداول الحياة الاعتيادية
Week 10	بناء جداول الحياة السريرية
Week 11	تحليل جداول الحياة
Week 12	المعدلات الحياتية
Week 13	مقاييس العلاقة بين العوامل الحياتية
Week 14	الخطورة النسبية وانواعها ومعدلاتها
Week 15	تحليل بيانات البقاء على قيد الحياة ونمط البقاء
Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	الاحصاء الديموغرافي/عبد الحسين الزيني	Yes
Recommended Texts	التحليل السكاني الرياضي /عز الدين بن عامر	No
Websites		

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


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MODULE DESCRIPTION FORM

Module Information معلومات المادة الدراسية					
Module Title	**English Language**			**Module Delivery**	
Module Type	**Support**			☐ **Theory** ☒ **Lecture** ☐ **Lab** ☒**Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**UOM2022**				
ECTS Credits	**2**				
SWL (hr/sem)	**50**				
Module Level		UGI	**Semester of Delivery**		2
Administering Department		STAT	**College**	CSM	
Module Leader	**Zainab Qusay Ahmed Taqi**		**e-mail**	**Zainab.q@uomosul.edu.iq**	
Module Leader's Acad. Title		**Asst. lecturer**	**Module Leader's Qualification**		**Master**
Module Tutor			**e-mail**	@uomosul.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date		23/01/2025	**Version Number**		1.0

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



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Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. To be able to speak English fluently and accurately. 2. To think in English and then speak. 3. To be able to compose freely and independently in speech and writing. 4. To be able to read books with understanding
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. To address grammar issues that students encounter in their daily speech, writing, reading, and listening. 2. Recognize the structure of the sentence. 3. To address the issue of grammatical errors that affect effective communication 4. To improve your reading skills through the practice of vocabulary enrichment, reading comprehension exercises, speed reading strategies, written responses, discussions, and reflections 5. Develop writing skills.
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. Introduction: about new headway pre-intermediate plus [1 hrs] Tenses: past-present-future, wh- questions. Vocabulary- using a bilingual dictionary, reading (communication). Everyday English (social expressions) [9 hrs] Grammar: Review about tenses, Present tenses, have and have got. Vocabulary: about (daily life), listening and match between verb and nouns. Practices about simple present and present continuous, Reading: about living in the USA. Social expressions about every day English. [8 hrs] Past tenses, simple past and past continuous, practice, Reading and listening, regular and irregular verbs. Vocabulary: about N.- V.- Adj. endings. Everyday English (time expressions). [6hrs] Grammar: the quantities, also about Something/someone/somewhere, practices. Reading: about markets, practices. [6 hrs]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	- The main strategy that will be adopted in developing the four skills: - The skill of speaking. - The skill of reading. - The skill of writing. - The skill of listening. - Also, enables the students to use grammar correctly.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	32	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	2
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	18	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	1
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**50**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (15)	4,9 and 11	LO #1, #2 and #5
	Assignments	2	10% (15)	2,10 and 13	LO #3, #4 and #6
	Report	1	10% (10)	13	LO #1, #4
Summative assessment	**Midterm Exam**	1hr	10% (10)	7	LO #1 - #5
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		



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Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction: new headway pre-intermediate plus
Week 2	Grammar: Tenses, wh- questions, practices.
Week 3	Vocabulary- how to use a bilingual dictionary, reading about (communication)
Week 4	Everyday English (social expressions), listening, practices.
Week 5	Grammar: Present tenses, have and have got, practices.
Week 6	Vocabulary about (daily life), listening, and match between vocabularies, and practices.
Week 7	Mid-term Exam.
Week 8	simple present and present continuous, practices, reading about living in the USA.
Week 9	Social expressions about everyday English, practices.
Week 10	Grammar: simple past and past continuous tenses, and practices.
Week 11	Reading and listening, regular and irregular verbs, practices.
Week 12	Vocabulary: about N.- V.- Adj. endings, practices, Everyday English (time expressions), practices.
Week 13	Grammar: quantity (some, many, any, much, few,….), practice.
Week 14	Grammar: about Something/someone/somewhere, practices.
Week 15	Reading: about markets, practices.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Lab 1	None
Lab 2	None
Lab 3	None
Lab 4	None

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Headway pre-intermediate plus student's book. (John and Liz Soars)	Yes
Recommended Texts	Headway pre-intermediate plus work's book	Yes
Websites	https://7esl.com/	

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

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MODULE DESCRIPTION FORM

Module Information معلومات المادة الدراسية					
Module Title	**Numerical Analysis II**			**Module Delivery**	
Module Type	**Basic**			☒**Theory** ☐**Lecture** ☒**Lab** ☐**Tutorial** ☐**Practical** ☐**Seminar**	
Module Code	**STAT208**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	UGII		**Semester of Delivery**	4	
Administering Department	STAT		**College**	CSM	
Module Leader	Dr. Noorsal Ahmed Zeenalabiden		**e-mail**	zeennorsal@uomosul.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Nada Nazar Mohammed		**e-mail**	nada-nazar1984@uomosul.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	10/06/2024		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	This course provides an introduction to numerical methods used in statistics for solving mathematical problems that arise in various fields. It's a continuation of Numerical Analysis I. The course covers numerical differentiation, numerical integration, initial value problems for ordinary differential equations, and a quick glimpse on numerical solution of partial differential equations.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Perform numerical differentiation of functions. 2. Perform numerical differentiation of interpolants 3. Perform numerical integration of functions. 4. Perform numerical integration of interpolants. 5. Solve ordinary differential equations using appropriate numerical methods. 6. Solve partial differential equations using appropriate numerical methods.
Indicative Contents المحتويات الإرشادية	Part A – Numerical differentiation: Learning about backward, forward, and central approaches of finding derivative of functions. Additionally, finding the numerical derivatives of numerical interpolants [16 hrs.] Part B – Numerical integration: Approximating finite integrals of functions using trapezoidal rule, Simpson's rule, Romberg integration, and Gaussian integration. Double integrals and integration of interpolants are briefly interduce as well. [24 hrs.] Part C – Numerical solutions of ordinary differential equations: Euler's method, Runge-Kutta methods, second order ordinary differential equations. [12 hrs.] Part D – Numerical solutions of partial differential equations: Finite difference methods for elliptic, parabolic, and hyperbolic equations. Finite element methods for solving partial differential equations. [8 hrs.]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Type something like: 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, computer labs, weekly assignments, quizzes, and projects.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	3	5% (15)	6, 9, and 13	All
	Assignments	5	3% (15)	3, 5, 8, 11, and 12	All
	Lab.	1	10% (10)	13	All
Summative assessment	**Midterm Exam**	2hr	10% (10)	10	LO #1 - #4
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Numerical differentiation of functions using Forward, Backward, and Central divided differences approaches.
Week 2	Tylor's Expansion, Comparing accuracy of numerical differentiation approaches.
Week 3	High-order numerical differentiation

Week 4	Numerical differentiation of interpolants – Application on LaGrange interpolants
Week 5	Numerical integration - Trapezoidal rule.
Week 6	Numerical integration - Simpson's rule.
Week 7	Numerical integration - Romberg integration.
Week 8	Numerical integration – Gaussian integration.
Week 9	Numerical double integral.
Week 10	Numerical integration of interpolants - Newton-Cotes Quadrature Formula
Week 11	Numerical solutions of ordinary differential equations - Euler's method
Week 12	Numerical solutions of ordinary differential equations - Runge-Kutta methods
Week 13	Numerical solutions of second order ordinary differential equations
Week 14	Numerical methods for partial differential equations - Finite difference methods for elliptic, parabolic, and hyperbolic equations.
Week 15	Finite element methods for solving partial differential equations.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Lab1	Liner interpolation in MATLAB
Lab 2	Quadratic Interpolation in matlab
Lab 3	n-th Order Interpolation in MATLAB
Lab 4	Newton's Divided Difference Polynomial (NDDP) (Linear) in MATLAB
Lab 5	Newton's Divided Difference Polynomial (NDDP) (Quadratic) in MATLAB
Lab 6	Newton's Divided Difference Polynomial (NDDP) (n-th order polynomial) in MATLAB
Lab 7	Implementation of numerical differentiation in MATLAB.
Lab 8	Numerical differentiation of interpolants.
Lab 9	Implementation of numerical integration in MATLAB.
Lab 10	Numerical double integral.

Lab 11	Newton-Cotes Quadrature
Lab 12	Runge-Kutta method
Lab 13	Second order ordinary differential equations
Lab 14	Numerical methods for partial differential equations
Lab 15	Finite element methods for solving partial differential equations

Learning and Teaching Resources
مصادر التعلم والتدريس

	Text	Available in the Library?
Required Texts	Non	---
Recommended Texts	• Stoyan, Gisbert, and Agnes Baran. Elementary numerical mathematics for programmers and engineers. Basel, Switzerland: Springer International Publishing, 2016. • Conte, Samuel Daniel, and Carl De Boor. Elementary numerical analysis: an algorithmic approach. Society for Industrial and Applied Mathematics, 2017.	No
Websites	TBD	

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

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MODULE DESCRIPTION FORM

Module Information معلومات المادة الدراسية					
Module Title	**Time Series Analysis**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**STAT209**				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	UGII		**Semester of Delivery**	4	
Administering Department	STAT		**College**	CSM	
Module Leader	Dr. Najlaa Saad Ibrahim		**e-mail**	najlaa.s.a@uomosul.edu.iq	
Module Leader's Acad. Title	Assistant Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Rehad Emad Slewa		**e-mail**	alshamany@uomosul.edu.iq	
Peer Reviewer Name			**e-mail**		
Scientific Committee Approval Date	10/06/2024		**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 Objectives أهداف المادة الدراسية	1. Visualize the examples above the different behaviors of time associated with the random variable. Understanding these different temporal characteristics in any application is the goal of time series analysis. 2. Among the most important time series are those related to economic indicators and annual sales of companies in all aspects of their activities, education, population size, and the like. The change that occurs in the values of the time series variable or the values of its variables is a function of time that can be represented graphically 3. Using time series data to look ahead and predict future change through the facts of yesterday and today. 4. The use of time series in control systems, through which the production process is controlled and knowledge of whether the product conforms to the required specifications or not. Then the right decision can be taken and errors in the production process can be corrected. 5. Building software systems for electronic control of production processes and specifications.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Separating the components of the time series and knowing their interaction, impact and contribution to describing the phenomenon of the time series 2. Estimating the component of the linear and non-linear general trend in two ways, and how to remove the effect of the trend from the studied phenomenon. 3. Estimating seasonal, cyclical and random compounds and removing them from the studied phenomenon. 4. Addressing the non- stationary of the series and preparing it to build the model. 5. Building a statistical model, a time series model with one variable or multivariate, and interpreting its features through its relationship to the studied phenomenon, and extracting facts about the behavior of the data. 6. Predicting the studied phenomenon in the future by means of Box-Jenkins models
Indicative Contents المحتويات الإرشادية	Indicative content includes the following. <u>Part A - Basic Concepts of Time Series:</u> Definition of time series, the purpose of using series, types of series, mathematical models of time series, and analysis of regular and irregular main components. [10 hrs]

	Part B - Estimating of Regular and Irregular Main Compounds: Methods for measuring the linear and non-linear general trend and removing its effect from the studied phenomenon, measuring the seasonal, cyclical and random compounds and removing their effect, as well as using the Minitab program to implement the methods for estimating the four compounds presented [30 hrs]. Part C - Box Jenkins models: Studying the stationary of time series, non-stationary processing, and identifying correlation functions represented by autocorrelation and partial autocorrelation functions to determine model ranks and model building stages with application. [20 hrs]

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 by taking time series of a specific phenomenon and analyzing it using the Minitab program and predicting its future values..

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	78	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	5
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	72	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

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Module Evaluation
تقييم المادة الدراسية

		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	Quizzes	4	5% (20)	3, 5، 8 and 10	All
	Assignments	3	3% (9)	5, 8, and 11	All
	Discussion	2	3% (6)	9 and 12	All
	Report	1	10% (5)	13	All
Summative assessment	Midterm Exam	2hr	10% (10)	7	LO #1 - #6
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)
المنهاج الاسبوعي النظري

	Material Covered
Week 1	Introduction to time series, its applications, purpose and how to draw it
Week 2	Analysis of the main components of the time series
Week 3	Measuring the general linear trend by means of the Half Middle-Series Method
Week 4	Measurement of the general linear trend by least squares method
Week 5	Measurement of the general non-linear trend by the method of curves of the second and third order
Week 6	Measurement of the general non-linear trend by semi-logarithmic equation method
Week 7	Removing the effect of the general linear and non-linear trend
Week 8	Measuring seasonal changes in the ratio method to the general average
Week 9	Measuring seasonal changes in a way relative to the general trend and removing its effect
Week 10	Measuring cyclical changes in a way relative to the general trend and removing its effect
Week 11	Measuring random changes and excluding removing its effect

Week 12	Time series stationary and non- stationary treatment
Week 13	Stages of building Box-Jenkins models
Week 14	The first-order and p-order autoregressive model
Week 15	First-order and q-order moving averages model
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	al-Mashhadani, M. H. & Eifan M.M.” From the methods of statistics (indices and time series)”	Yes
Recommended Texts	Box, G., Jenkins, G., Reinsel ,G. and Ljung G.," Time Series Analysis Forecasting and control", Copyright Year: 2016. Liu, L.,"Time Series Analysis and Forecasting ", Copyright Year: 2006. Wei , W.S. " Time Series Analysis : Univariate and Multivariate Methods ", Copyright Year: 1990	No
Websites		


Ministry of Higher Education and Scientific Research
University of Mosul
College of Computer Science and Mathematics
Statistics and Informatics

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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.



Ministry of Higher Education and Scientific Research
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MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Calculus III**			**Module Delivery**	
Module Type	**Basic**			☒ **Theory** ☒ **Lecture** ☐ **Lab** ☒ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**STAT204**				
ECTS Credits	**5**				
SWL (hr/sem)	**125**				
Module Level	UGII		**Semester of Delivery**	3	
Administering Department	STAT		**College**	CSM	
Module Leader	Dr. Khalida Ahmed Mohammed		**e-mail**	khalida@uomosul.edu.iq	
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Dr. Noorsal Ahmed Zeenalabiden		**e-mail**	zeennorsal@uomosul.edu.iq	
Peer Reviewer 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 Objectives أهداف المادة الدراسية	The aim of the Calculus III course is to provide students with an advanced understanding of multivariable calculus and its applications. Building upon the knowledge gained in previous calculus courses, this course aims to develop students' ability to analyze and solve problems involving functions of several variables, multiple integrals, vector calculus, and applications in various fields.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1. Provide students with advanced concepts in calculus and their applications. 2. Develop students' ability to solve problems using multivariable calculus techniques. 3. Demonstrate a solid understanding of multivariable functions, including limits, continuity, and partial derivatives 4. Understand the geometric interpretation of vectors in three-dimensional space. 5. Apply vector operations such as dot product, cross product, and vector projections. 6. Identify critical points, local extrema, and saddle points of multivariable functions.

Indicative Contents المحتويات الإرشادية	**Part A - Linear Differential Equations** The part on Linear Differential Equations covers fundamental concepts and techniques related to linear differential equations. Students will study first-order differential equations, including separable equations, exact equations, and linear equations. The course explores second-order linear differential equations, focusing on homogeneous and non-homogeneous equations with constant coefficients. [20 hrs.] **Part B - Partial derivatives, and differentiability.** The course focuses on understanding the gradient vector and directional derivatives, enabling students to analyze the behavior of multivariable functions. [20 hrs.] **Part C - Directional Derivatives and Gradients** The part focuses on understanding the gradient vector and directional derivatives, enabling students to analyze the behavior of multivariable functions. It further extends to multiple integrals, encompassing double and triple integrals, and their applications in computing areas, volumes, center of mass, and moments of inertia. [20 hrs.]

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Preparing Prerequisite Knowledge, begin each topic with real-world examples and applications to demonstrate the relevance and practicality of calculus to Encourage students to explore how calculus concepts are applied in various fields, such as statistics and computer science. Providing timely feedback on student work to identify, address errors, and reinforce learning through quizzes. Promoting collaborative learning by assigning problem-solving tasks. Encourage students to work together, explain concepts to their peers, and engage in collaborative problem-solving.

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Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	63	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	62	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	4
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**125**		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	15% (15)	5, 12	LO #1- #4
	Assignments	4	15% (15)	3,6,10, and 13	LO #3, #4
	Report	1	10% (10)	13	All
Summative assessment	**Midterm Exam**	2hr	10% (10)	8	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

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Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
Week	**Material Covered**
Week 1	Differential Equations—Growth and Decay
Week 2	Extracting the Differential Equations
Week 3	Linear Differential Equations: Properties and Operations
Week 4	Applications of Differential Equations
Week 5	A Visual Introduction to 3-D Calculus, and Functions of Several Variables
Week 6	Limits, Continuity, and Partial Derivatives
Week 7	Partial Derivatives—One Variable at a Time, Total Differentials and Chain Rules
Week 8	Mid-term Exam + Extrema of Functions of Two Variables
Week 9	Applications to Optimization Problems
Week 10	Vectors and the Dot Product in Space
Week 11	Directional Derivatives and Gradients
Week 12	Lagrange Multipliers—Constrained Optimization
Week 13	Applications of Lagrange Multipliers
Week 14	Iterated Integrals and Area in the Plane
Week 15	Double Integrals and Volume

Week 16	**Preparatory week before the final Exam**

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	NO	No
Recommended Texts	Understanding Multivariable Calculus: Problems, Solutions, and Tips, by Professor Bruce H. Edwards, University of Florida, 2013.	No
Websites		

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks %**	**Definition**
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