

**Ministry of Higher Education and Scientific Research
Scientific Supervision and Scientific Evaluation Apparatus
Directorate of Quality Assurance and Academic Accreditation
Accreditation Department**



Academic Program and Course Description Guide

٢٠٢٤

Introduction:

The educational program is a well-planned set of courses that include procedures and experiences arranged in the form of an academic syllabus. Its main goal is to improve and build graduates' skills so they are ready for the job market. The program is reviewed and evaluated every year through internal or external audit procedures and programs like the External Examiner Program.

The academic program description is a short summary of the main features of the program and its courses. It shows what skills students are working to develop based on the program's goals. This description is very important because it is the main part of getting the program accredited, and it is written by the teaching staff together under the supervision of scientific committees in the scientific departments.

This guide, in its second version, includes a description of the academic program after updating the subjects and paragraphs of the previous guide in light of the updates and developments of the educational system in Iraq, which included the description of the academic program in its traditional form (annual, quarterly), as well as the adoption of the academic program description circulated according to the letter of the Department of Studies T 3/2906 on 3/5/2023 regarding the programs that adopt the Bologna Process as the basis for their work.

In this regard, we can only emphasize the importance of writing an academic programs and course description to ensure the proper functioning of the educational process.

Concepts and terminology:

Academic Program Description: The academic program description provides a brief summary of its vision, mission and objectives, including an accurate description of the targeted learning outcomes according to specific learning strategies.

Course Description: Provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the students to achieve, proving whether they have made the most of the available learning opportunities. It is derived from the program description.

Program Vision: An ambitious picture for the future of the academic program to be sophisticated, inspiring, stimulating, realistic and applicable.

Program Mission: Briefly outlines the objectives and activities necessary to achieve them and defines the program's development paths and directions.

Program Objectives: They are statements that describe what the academic program intends to achieve within a specific period of time and are measurable and observable.

Curriculum Structure: All courses / subjects included in the academic program according to the approved learning system (quarterly, annual, Bologna Process) whether it is a requirement (ministry, university, college and scientific department) with the number of credit hours.

Learning Outcomes: A compatible set of knowledge, skills and values acquired by students after the successful completion of the academic program and must determine the learning outcomes of each course in a way that achieves the objectives of the program.

Teaching and learning strategies: They are the strategies used by the faculty members to develop students' teaching and learning, and they are plans that are followed to reach the learning goals. They describe all classroom and extra-curricular activities to achieve the learning outcomes of the program.

Academic program description form

University name: University ofBaghdad.....

College/Institute: College ofSciences.....

Scientific Department: Department of Mathematics.....

Name of the academic or professional program: Mathematics Department

Academic Program

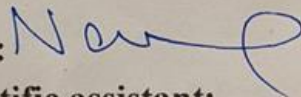
Name of final degree:Bachelor of Mathematics.....

Academic system: semester

Description preparation date: 10/1/2023

Date of filling the file: 3/28/2024

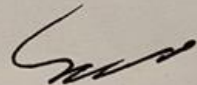
the signature :



Name of scientific assistant:

the date :

the signature :



Mohammed S. Hussein

Name of department head:

the date :



Check the file before

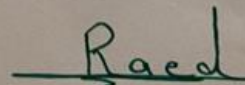
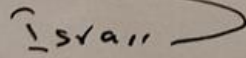
Division of Quality Assurance and University Performance

Name of the Director of the Quality Assurance and University Performance

Division:

the date

the signature



Authentication of the Dean

1. Program Vision

Raising the level of graduates of the Mathematics Department to contribute to the scientific and technical development of the country and to be among the ranks of distinguished and pioneering educational departments in academic achievement.

2. Program Mission

Enhancing the educational process in the Mathematics Department to reach the highest level of quality to graduate qualified students who are able to think logically and possess scientific research skills to meet the needs of the labor market.

3. Program Objectives

- Improving the quality of education to keep pace with the current technical development in international universities.
- Developing study plans at the bachelor's degree level to keep pace with scientific developments and the latest developments of the times.
- Qualifying cadres capable of dealing with advanced technologies and modern changes with all effectiveness and flexibility.
- Promoting scientific research in the field of mathematics, studying mathematical and statistical problems, and carrying out scientific research to find appropriate solutions to them, meeting the curricula needs of other departments in the college and universities.

4. Program accreditation

Does the program have program accreditation? From which side? both

5. Other external influences

Is there a sponsor for the program: No

6. Program structure

comments *	percentage	Study unit	Number of courses	Program structure
	13.20	12	7	Enterprise requirements
	_____	_____	_____	College requirements
	86.80	137	46	Department requirements
	_____	_____	1	summer training
				Other

7. Program description				
Credit hours		Name of the course or course	Course or course code	Year/level
	4	Advanced calculus and integration	MA201	The second phase Chorus 1
	4	Number theory	MA202	
	4	Blurry	MA204	
	4	Linear algebra 1	MA203	
	4	Statistics and probability 1	MA205	
	4	Computer (3)	MA206	
2	4	M. Computer (3)		
	1	English	MAEL2	
	1	Crimes of the former Bath Party	UoB2105	
	4	Statistics and probability 2	MA211	The second phase Chorus 2
	4	Linear algebra 2	MA209	
	4	Linear Programming(2)	MA210	
	4	Statement theory	MA208	
2	4	Computer(4)	MA212	
		M. Computer(4)		
	4	Solutions of differential equations	MA207	
2	4	Numerical Analysis (1)	MA301	
	4	M. Numerical analysis (1)		
	4	Mathematical Analysis (1)	MA303	
	4	Partial differential equations	MA302	
	2	Mathematical	MA304	

		statistics (1)		
	4	Optimization	MA305	
	4	Gebrzmer	MA306	
	1	English language3	MAEL3	
2	4	Numerical analysis (2)	MA307	Chorus 2 third level
	4	M. Numerical analysis (2)		
	4	Mathematical Analysis (2)	MA309	
	4	Chaos Theory	MA308	
	4	Mathematical statistics (2)	MA310	
	4	Arithmetic groups	MA311	
	4	Episodes1	MA312	
	4	Episodes (2)	MA401	Chorus 1 The fourth stage
	4	Theory of differential equations	MA402	
	4	Topology (1)	MA404	
2	3	Encryption	MA405	
	2	English	EN407	
	2	M. Encryption	LMA405	
	2	The project	PMA406	
		Student activity	PHE408	
	4	Nodal analysis(2)	MA406	Chorus 2 The fourth stage

		4	Mathematical modeling	MA410	
		4	Topology (2)	MA407	
		4	Functional analysis	MA408	
		4	Mechanics of connections	MA409	
		2	The project	PMA	
			Student activity	PHE	

8. Expected learning outcomes of the programme

Knowledge

The skills and experiences that a student acquires while undergoing training or a study plan. You certainly know that the skills added to the student are through the efforts of the teacher, who sets the goals for each lesson and uses methods to achieve these goals, thus honing the student's skill.

A1- Developing his analytical capabilities to reach logical solutions to various problems
 A2- His ability to evaluate the academic program
 A3- Creating and organizing statistical tables
 A4- Identifying the basic characteristics of the nature of scientific material

Skills

The student chooses activities and tasks according to his inclinations and preparations for Achieving these goals. - Active cooperation between the student and the faculty member within the framework of Subsequent to the intended outcomes. - Self-evaluation and developing performance first and foremost in light of the rules a specific clear

B1 - The ability to listen effectively and contribute constructively to the discussion
 B2 - The ability to make decisions and bear responsibility
 B3 - The ability to self-discipline and the spirit of motivation
 B4- The ability to collect information from various sources

Value

Learning outcomes help to know what the student should learn and what he can do after completing the academic program he is enrolled in.

D1 - Developing the student's ability to dialogue and discuss.
 D2 - Developing the student's ability to deal with the Internet.
 D3 - Developing the student's ability to deal with multiple media.
 D4 - Developing the student's ability to deal with technical means

9. Teaching and learning strategies

strategically T And the teaching and learning methods adopted in implementing the program in general.

10. Evaluation methods

How to display scientific materials on projectors: Data Show, Explanation and clarification by the lecturer, via The internet And mini projects within Lectures-

11. The teaching staff

Faculty members

Preparing the teaching staff		Special requirements/skills (If any)		Specialization		Scientific rank
lecturer	angel			private	general	
nothing	52			Inverse problems	mathematics	A.M.D. Muhammad Sabah Hussein
				Pure/Algebra	mathematics	Mr. Dr. Abdul Rahman Hamid Majeed
				Applied/Fluid Mechanics	mathematics	Mr. Dr. Ahmed Mouloud Abdel Hadi
				Applied	mathematics	Mr. Dr. Raed Kamel Naji
				mathematics	mathematics	Mr. Dr. Bahar Hamad Ahmed
				Pure/Algebra	mathematics	Mr. Dr. And Khaled Hassan
				Pure/Algebra	mathematics	Mr. Dr. Sahira Mahmoud Yassin
				Pure/Algebra	mathematics	Mr. Dr. Nihad Salem Al- Muzaffar
				mathematics	mathematics	Mr. Dr. Buthaina

						Abdel Hassan Ahmed
				Applied/dynamic systems	mathematics	Mr. Dr. Azhar Abbas Majeed
				Algebra	mathematics	Mr. Dr. Alaa Abbas Aliwi
				Nodal analysis	mathematics	Mr. Dr. Qasim Abdul Hamid Jassim
				Pure/Dali analysis	mathematics	Mr. Dr. Iman Hassan Abboud
				Dali analysis	mathematics	Mr. Dr. Zeina Zaki is beautiful
				Dynamic systems	mathematics	Mr. Dr. Hassan Fadel Reda
				Applied	mathematics	Mr. Dr. Sadiq Naji Nasser
				Algebraic topology	mathematics	A.M.D. Muhammad Ghazi inside
				Counting	mathematics	A.M.D. Tasneem Hassan Kazem
				Zarephath	mathematics	A.M.D. Afraa Radi Sadiq
				Nodal analysis	mathematics	A.M.D. Heba Fawzi Sabaa
				mathematics	mathematics	A.M.D. Iman Ali is torment
				mathematics	mathematics	A.M.D. Meeting Zaki Hammadi
				Applied	mathematics	A.M.D. Dalia Khaled Bahloul
				mathematics	mathematics	A.M.D. Hoda Abdel Sattar Abdel Aoun

				mathematics	mathematics	A.M.D. Heba Abdullah Ibrahim
				Applied/ Operations research	mathematics	A.M.D. Iraq Tariq Abbas
				Zarephath	mathematics	A.M.D. Ali Abed Obaid
				Dynamic systems	mathematics	A.M.D. Sherine Rasoul Jawad
				Applied	mathematics	A.M.D. Rehab Nouri Shaalan
				Applied	mathematics	A.M.D. Ghadeer Jassim Mohammed
				Algebra	mathematics	A.M.D. Duraid Hamdi bracelets
				Dynamic systems	mathematics	M.D. Meet Jamil Khalil
				mathematics	mathematics	M.D. Sondos Badr Habib
				Zarephath	mathematics	M.D. Alaa Hussein Lafta
				Applied	mathematics	M.D. Saad Muhammad Ali Taher
				mathematics	mathematics	M.D. Rana Adnan Muhammad
				Applied	mathematics	M.D. Saima Abdel Sattar
				Applied	mathematics	M.D. Muhammad Alaa Abdel Amir
				Zarephath	mathematics	M.D. Heba Abdullah Ahmed

				Applied	mathematics	M.D. Hasna Faisal Muhammad Hussein
				Applied	mathematics	M.D. The banks of Raysan Faisal
					mathematics	M.D. Qasim Kazem Hamid
				Applied	mathematics	M.D. Farah Alaa Adnan
				Zarephath	mathematics	M.D. The time of Adel Rashid
				Applied	mathematics	M. Dina Sultan Ibrahim
				Zarephath	mathematics	M. Souad Naji Kazem
				Applied	mathematics	M. Saja Ghazi Muhammad
				Applied	mathematics	M. Alaa Walid Saleh
				Zarephath	mathematics	millimeter. Alia Aqeel Majeed
				Applied	mathematics	millimeter. Ali Abdel Kazem Rahima
				Zarephath	mathematics	millimeter. The banks of Fadel Majeed
				Applied	mathematics	millimeter. Zainab Muhammad Gouda

Professional development

Orienting new faculty members

Briefly describes the process used to orient new, visiting, full-time, and part-time faculty at the institution and department levels.

Professional development for faculty members

Briefly describe the academic and professional development plan and arrangements for faculty members such as teaching and learning strategies, assessment of learning outcomes, professional development, etc..

12. Acceptance criterion

It is required for the student applying for admission to the master's program **Must have a bachelor's degree or its equivalent from an accredited university**

13. The most important sources of information about the program

Direct guidance through workshops in the Department of Quality Assurance and University Performance at the university and college, and the information available in the description form with its explanations attached by the university. -Websites of Iraqi and foreign universities -Workshops held by the Ministry of Higher Education in addition to the Ministry's standards

14. Program development plan

Following up on scientific development through scientific research and contacting international, Arab and local universities with the corresponding specialization via the Internet

مخطط مهارات البرنامج

Outputs Learning required from the program												اساسي أم اذ	name The decision	CodeThe decision	the year / the level
القيم				المهارات				المعرفة							
C4	C3	C2	C1	B4	B3	B2	B 1	A4	A3	A2	A1				
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Calculus (1)	MAT1101	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Foundations of mathematics (1)	MAT1102	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Finite mathematics	MAT1103	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Physical Mathematics (1)	MAT1104	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Computer 1	UoB1101	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Arabic	UoB1102	
*	*	*	*	*	*	*	*	*	*	*	*				
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Calculus (2)	MAT1215	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Foundations of mathematics (2)	MAT1216	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Financial Mathematics	MAT1217	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Physical Mathematics (2)	MAT1218	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Democracy and human rights	UoB1203	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	English language (1)	UoB1204	
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Advanced calculus and integration	MA201	
*	*	*	*	*	*	*	*	*	*	*	*	my choice	Number theory	MA202	
*	*	*	*	*	*	*	*	*	*	*	*	my choice	Blurry	MA204	

*	*	*	*	*	*	*	*	*	*	*	*	Basic	Linear algebra 1	MA203
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Statistics and probability 1	MA205
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Computer topics (3)	MA206
*	*	*	*	*	*	*	*	*	*	*	*	Basic	English	MAEL2
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Statistics and probability 2	MA211
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Linear algebra 2	MA209
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Linear Programming(2)	MA210
*	*	*	*	*	*	*	*	*	*	*	*	my choice	Statement theory	A208
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Computer(4)	MA212
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Ordinary differential equations	MA207
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Numerical Analysis (1)	MA301
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Mathematical Analysis (1)	MA303
*	*	*	*	*	*	*	*	*	*	*	*	my choice	Partial differential equations	MA302
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Mathematical statistics (1)	MA304
*	*	*	*	*	*	*	*	*	*	*	*	my choice	Optimization	MA305
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Algebrasmar	MA306
*	*	*	*	*	*	*	*	*	*	*	*	Basic	English language3	MAEL3

*	*	*	*	*	*	*	*	*	*	*	*	Basic	Numerical Analysis (2)	MA307
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Mathematical Analysis (2)	MA309
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Chaos Theory	MA308
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Mathematical statistics (2)	MA310
*	*	*	*	*	*	*	*	*	*	*	*	my choice	Arithmetic groups	LMA311
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Episodes1	MA312
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Episodes (2)	MA402
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Nodal analysis(1)	MA401
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Episodes (2)	MA402
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Ordinary differential equations	MA403
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Topology (1)	MA404
*	*	*	*	*	*	*	*	*	*	*	*	my choice	Encryption	MA405
*	*	*	*	*	*	*	*	*	*	*	*	Basic	English	EN407
*	*	*	*	*	*	*	*	*	*	*	*	my choice	Student activity	1PHE
*	*	*	*	*	*	*	*	*	*	*	*	Basic	The project	PMA406
*	*	*	*	*	*	*	*	*	*	*	*	Basic	Nodal analysis(2)	MA406
*	*	*	*	*	*	*	*	*	*	*	*	my choice	Mathematical modeling	MA410
*	*	*	*	*	*	*	*	*	*	*	*	my choice	Student activity	2PHE

*	*	*	*	*	*	*	*	*	*	*	*	Basic	Topology (2)	MA407
*	*	*	*	*	*	*	*	*	*	*	*	my choice	Functional analysis	MA408
*	*	*	*	*	*	*	*	*	*	*	*	my choice	Mechanics of connections	MA409

- Please situation Signal in Squares the interview For outputs Learning Individuality from the program Submissive To strengthen

Course description model

.١	nameThe decision				
Advanced Calculus					
.٢	CodeThe decision				
MA201					
.٣	the chapter / the year				
First semester/2023-2024					
.٤	Preparation dateThis description				
10/1/2023					
5. shapes the audience Available					
My presence					
6.number hours Academic (total)/Number of units (total)					
4/60					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Dr. Meet ZakiEmail: iqaa.hummady@sc.uobaghdad.edu.iq					
Name: Dr. Dalia KhaledEmail: dahlia.khaled@sc.uobaghdad.edu.iq					
.٨ اهداف المقرر					
Encouraging research programs and participating in scientific conferences and seminars			اهداف المادة الدراسية		
Achieving quality and academic accreditation•					
.٩ استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> • Managing the lecture in a way that indicates the importance of time • Assigning the student some group assignments • Websites and electronic classes 					الاستراتيجية
.١٠ بنية المقرر					
الأسبوع	الساعات	مخرجات التعلم المطلوبة	اسم الوحدة او الموضوع	طريقة التعلم	طريقة التقييم
the first	4	Three-dimension coordinate system	Three-dimension coordinate system	Lectures	General questions and discussion
the second	4	Equation of lines	Equation of lines in two or three dimensions	Lectures	General questions and discussion
the third	4	The vectors	The vectors and dot product	Lectures	General questions and discussion
the fourth	4	The vectors	The vectors of cross	Lectures	General

questions and discussion		product			
General questions and discussion	Lectures	The equation of planes in 3 dim.	The equation of planes	4	Fifth
General questions and discussion	Lectures	The quadrate surfaces in three dim. With application	The square surface	4	VI
General questions and discussion	Lectures	Definitions of function of several variables and some examples	Functions of several variables	4	Seventh
Annie's test	Lectures	The vector function	The vector function	4	VIII
General questions and discussion	Lectures	Limits, continuous	Functions of several variables	4	Ninth
Monthly exam	Lectures	Interpretations of partial derivatives	Partial derivative	4	The tenth
General questions and discussion	Lectures	Higher order partial derivatives	Partial derivative	4	eleventh
General questions and discussion	Lectures	Tangent planes and linear approximations and normal lines	Application of Partial derivative	4	twelveth
General questions and discussion	Lectures	Relative minimum of maximum points	Application of Partial derivative	4	Thirteenth
General questions and discussion	Lectures	Double integral of Triple integrals over general regions	Multiple integrals	4	fourteenth
General questions and discussion	Lectures	Exam		4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorial And reports etc	
مصادر التعلم والتدريس ١٢ .	
Calculus and analytic geometry (Thomas) 2018 Advanced Calculus Schaum Series 2017	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Calculus (Anton, Bivens, Davis)	المراجع الرئيسية (المصادر)
The most important books and special sources on advanced calculus available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير)
<ul style="list-style-type: none"> Discreet websites. Virtual library. Library locations in some international universities 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

nameThe decision	. ١
Number theory	
CodeThe decision	. ٢
MA202	
the chapter / the year	. ٣
First semester/2023-2024	
Preparation dateThis description	. ٤
10/1/2023	
5. shapes the audience Available	
My presence	
6.number hours Academic (total)/Number of units (total)	
2/60	
7. Name of the course administrator(If more than one name is mentioned)	
Name: Dr. Ali Abed ObaidEmail: ali.abd@sc.uobaghdad.edu.iq	
aName: Dr. Saima Abdel Sattar Email: seemaa.a@sc.uobaghdad.edu.iq	
.٨ اهداف المقرر	
<p>Πρεπαρινγ γραδυατεσ σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το τη δεπελοπμεντ οφ τη χουντ ρμ•</p> <p>Μεετινγ τη νεεδσ οφ τη εδυχατιον σεχτορ ωιτη ηηηηηθ θυαλιφιεδ χαδρεσ</p> <p>Ενχουραγινγ διστινγυσισηεδ πεοπλε το ωορκ ιν τη δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	<p>اهداف المادة الدراسية</p>
.٩ استراتيجيات التعليم والتعلم	
<ul style="list-style-type: none"> • Managing the lecture in a way that indicates the importance of time • Assigning the student some group assignments • Websites and electronic classes 	<p>الاستراتيجية</p>
.١٠ بنية المقرر	

طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and discussion	Lectures	Properties of integral numbers, ordering principle, partially ordered set and well-ordered set	Integers	4	the first
General questions and discussion	Lectures	Theorems and examples	First principle of mathematical induction and second principle of mathematical induction	4	the second
General questions and discussion	Lectures	Basical Rule, Binomial Theorem	The binomial coefficients	4	the third
General questions and discussion	Lectures	The division algorithm	Fibonacci numbers	4	the fourth
General questions and discussion	Lectures	Least common multiple and their applications	The greatest common viewer	4	Fifth
General questions and discussion	Lectures	Theorems and examples	The Euclidean Algorithm	4	VI
General questions and discussion	Lectures	Back substitution, blankship method	Linear combination	4	Seventh
Annie's test	Lectures	Concepts of diophantin equations and examples	Diophantin equations	4	VIII
General questions and discussion	Lectures	Composite numbers	Prime numbers	4	Ninth
Monthly exam	Lectures	Applications and their properties	Fundamental theorem of Arithmetic	4	The tenth
General questions and discussion	Lectures	Grible eratosthen lemma of prime numbers	Euclid's theorem	4	eleventh
General questions and discussion	Lectures	Fermat method	Fermat and merchant numbers	4	twelveth
General questions and discussion	Lectures	Theorems of congruent numbers	Congruent numbers	4	Thirteenth
General questions and discussion	Lectures	Some of congruent numbers	Congruent numbers	4	fourteenth
General questions and discussion	Lectures	Euler theoem, Fermat theorem	Chinese Remainder theorem	4	Fifteenth

تقييم المقرر ١١ .
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorial And reports etc

مصادر التعلم والتدريس ١٢.	
KH Rosen, Elementary Number Theory and its Applications, 8th edition, Addison-Wesley, 2015.	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Introduction to Number Theory - Professor Dr. Faleh Al-Dosari - First Edition 2007	المراجع الرئيسة (المصادر)
The most important books and special sources on number theory available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)
Discreet websites.	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

nameThe decision	. ١				
Blur					
CodeThe decision	. ٢				
MA204					
the chapter / the year	. ٣				
First semester/2023-2024					
Preparation dateThis description	. ٤				
10/1/2023					
5. shapes the audience Available					
My presence					
6.number hours Academic (total)/Number of units (total)					
2/60					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Dr. Buthaina Abdul HusseinEmail: buthaina.a@sc.uobaghdad.edu.iq					
Name Dr. Zeina Zaki Email: zina.z@sc.uobaghdad.edu.iq					
. ٨ اهداف المقرر					
<p>Πρεπαρινι γραδυατες σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το της δεπελοπμεντ οφ τη χουντ ρη•</p> <p>Μεετινι της νεεδσ οφ της εδυχατιον σεχτορ ωιτη ηηηλψ θυαλιφιεδ χαδρες</p> <p>Ενχουραγινι διστινγιυσιηεδ πεοπλε το ωορκ ιν της δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	<p>اهداف المادة الدراسية</p>				
. ٩ استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> • Managing the lecture in a way that indicates the importance of time • Assigning the student some group assignments • Websites and electronic classes 	الاستراتيجية				
. ١٠ بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع

General questions and discussion	Lectures	Definitions of crisp sets, intersection, union, complement sets	The Crisp sets	4	the first
General questions and discussion	Lectures	Directed and undirected graph	Fuzzy set theory	4	the second
General questions and discussion	Lectures	Definitions and examples	Fuzzy set theory	4	the third
General questions and discussion	Lectures	Expanding concepts of fuzzy sets	Fuzzy set theory	4	the fourth
General questions and discussion	Lectures	Basic set – theoretic operations for fuzzy sets	Fuzzy set theory	4	Fifth
General questions and discussion	Lectures	Convex fuzzy sets	Fuzzy set theory	4	VI
General questions and discussion	Lectures	Cardinality of fuzzy set	Fuzzy set theory	4	Seventh
Annie's test	Lectures	Expansion of fuzzy sets	Fuzzy set theory	4	VIII
General questions and discussion	Lectures	Fuzzy relation on sets	Fuzzy relation and composition	4	Ninth
Monthly exam	Lectures	Fuzzy matrix	Fuzzy relation and composition	4	The tenth
General questions and discussion	Lectures	Operations on fuzzy matrices	Fuzzy relation and composition	4	eleventh
General questions and discussion	Lectures	Fuzzy relation matrix	Fuzzy relation and composition	4	twelveth
General questions and discussion	Lectures	Operation of fuzzy relation	Fuzzy relation and composition	4	Thirteenth
General questions and discussion	Lectures	Composition of fuzzy relation	Fuzzy relation and composition	4	fourteenth
General questions and discussion	Lectures	Properties of fuzzy relation	Fuzzy relation and composition	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc	
مصادر التعلم والتدريس ١٢ .	
Fuzzy Sets and Fuzzy Techniques by Joakim Lindblad 2017	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Dubois and Henri Prade (2015), Fuzzy Sets and Systems: Theory and Applications, Reading, MA:	المراجع الرئيسية (المصادر)

Addison-Wesley.	
The most important books and special sources on chaos theory located in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)
<ul style="list-style-type: none"> • Discreet websites. • Virtual library. • Library locations in some international universities 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

nameThe decision	. ١				
Linear Algebra (1)					
CodeThe decision	. ٢				
MA203					
the chapter / the year	. ٣				
First semester/2023-2024					
Preparation dateThis description	. ٤				
10/1/2023					
5. shapes the audience Available					
My presence					
6.number hours Academic (total)/Number of units (total)					
3/60					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Dr. Heba Abdullah IbrahimEmail: hiba.ibrahim@sc.uobaghdad.edu.iq					
Name: Heba Abdullah Ahmed Email:hiba.ahmed@sc.uobaghdad.edu.iq					
.٨ اهداف المقرر					
<p>Πρεπαρινγ γραδυατες σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το τη δεπελοπμεντ οφ τη χουντ ρψ•</p> <p>Μεετινγ τη νεεδσ οφ τη εδυχατιον σεχτορ ωιτη ηιγηλψ θυαλιφιεδ χαδρες</p> <p>Ενχουραγινηγ διστινγυισηεδ πεοπλε το ωορκ ιν τη δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	<p>اهداف المادة الدراسية</p>				
. ٩ استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> • Managing the lecture in a way that indicates the importance of time • Assigning the student some group assignments • Websites and electronic classes 	الاستراتيجية				
. ١٠ بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General	Lectures	The properties vectors,	Vectors in the plane and	4	the first

questions and discussion		operations on vector, vectors in a space	in 3-space		
General questions and discussion	Lectures	The properties of a cross product and some applications	Cross product	4	the second
General questions and discussion	Lectures	The properties of a dot product and some applications	Dot product	4	the third
General questions and discussion	Lectures	Triangle inequality theorem with applications	Cauchy Schwarz inequality theory	4	the fourth
General questions and discussion	Lectures	Definitions with some applications	Vector spaces	4	Fifth
General questions and discussion	Lectures	Definitions with some applications	Subspaces	4	VI
General questions and discussion	Lectures	Definitions and theories	Linearly independence	4	Seventh
Annie's test	Lectures	Definitions and theories	Linearly dependence	4	VIII
General questions and discussion	Lectures	Definitions and theories deals with basis	Basis	4	Ninth
Monthly exam	Lectures	Definitions and theories deals with dimension	dimension	4	The tenth
General questions and discussion	Lectures	Definitions with some of theorems	The Rank of a matrix	4	eleventh
General questions and discussion	Lectures	Definitions and examples	Homogeneous Systems	4	twelveth
General questions and discussion	Lectures	Definitions and theories	Orthogonal basis and orthonormal basis	4	Thirteenth
General questions and discussion	Lectures	Definitions of linear transformations and their examples.	Linear transformations	4	fourteenth
General questions and discussion	Lectures		exam	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorial And reports etc	
مصادر التعلم والتدريس ١٢ .	
Elementary Linear Algebra with Applications by Bernard Colman and David R.Hill (9th edition) by 2017	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Introduction to Linear Algebra / written by Bernard Coleman 2010	المراجع الرئيسية (المصادر)

<p>The most important books and special sources on chaos theory located in the central library, the science library, and the department.</p>	<p>الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)</p>
<ul style="list-style-type: none"> • Discreet websites. • Virtual library. • Library locations in some international universities. 	<p>المراجع الإلكترونية ، مواقع الانترنت</p>

modelCourse description

nameThe decision	. 1				
Computer (3)					
CodeThe decision	. 2				
MA206					
the chapter / the year	. 3				
First semester/2023-2024					
Preparation dateThis description	. 4				
10/1/2023					
5. shapes the audience Available					
My presence					
6.number hours Academic (total)/Number of units (total)					
3/60					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Hoda MustafaEmail:					
. 8. اهداف المقرر					
<p>Πρεπαρινγ γραδυατεσ σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το τη δεπελοπμεντ οφ τη χουντ ρψ•</p> <p>Μεετινγ τη νεεδσ οφ τη εδυχατιον σεχτορ ωιτη ηιγηλψ θυαλιφιεδ χαδρεσ</p> <p>Ενχουραγιγγ διστινγυισηεδ πεοπλε το ωορκ ιν τη δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	<p>اهداف المادة الدراسية</p>				
. 9. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> • Managing the lecture in a way that indicates the importance of time • Assigning the student some group assignments • Websites and electronic classes 	<p>الاستراتيجية</p>				
. 10. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General	Lectures	Some basic concepts	The object-oriented	(2)	the first

questions and discussion			approach and who to use the	Theoretical (2) Practical	
General questions and discussion	Lectures	Application of C++	C++ programming basics	(2) Theoretical (2) Practical	the second
General questions and discussion	Lectures	Application of C++	Integer variables	(2) Theoretical (2) Practical	the third
General questions and discussion	Lectures	Application of C++	Character variable	(2) Theoretical (2) Practical	the fourth
General questions and discussion	Lectures	Application of C++	Type float, String constants	(2) Theoretical (2) Practical	Fifth
General questions and discussion	Lectures	Application of C++	Type of conversion, Arithmetic operators	(2) Theoretical (2) Practical	VI
General questions and discussion	Lectures	Application of C++	Increment and decrement operators, Relational	(2) Theoretical (2) Practical	Seventh
Annie's test	Lectures	Application of C++	Loops: The for loop; Multiple statements in loop	(2) Theoretical (2) Practical	VIII
General questions and discussion	Lectures	Application of C++	The if statement; Multiple statements	(2) Theoretical (2) Practical	Ninth
Monthly exam	Lectures	Application of C++	Nesting ifs inside loops; Library function exit	(2) Theoretical (2) Practical	The tenth
General questions and discussion	Lectures	Application of C++	Function;	(2) Theoretical (2) Practical	eleventh

General questions and discussion	Lectures	Application of C++	SimpleFunction;	(2) Theoretic al (2) Practical	twelveth
General questions and discussion	Lectures	Application of C++	The function definition	(2) Theoretic al (2) Practical	Thirteenth
General questions and discussion	Lectures	Application of C++	Function; Returning values from the functions	(2) Theoretic al (2) Practical	fourteenth
General questions and discussion	Lectures	Application of C++	Arrays in C++ programming (1)	(2) Theoretic al (2) Practical	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc	
مصادر التعلم والتدريس ١٢ .	
An introduction to computing Turbo C++, Sanford Lesstma and Larry Nyhaff.2018	(الكتب المقررة المطلوبة (المنهجية أن وجدت)
An introduction to object-oriented design in C++, Jo Ellen Perry and Harold D. Levin.2015	
Object-oriented programming in turbo C++ by Robert Lafore.2013	(المراجع الرئيسية (المصادر)
The most important books and special resources on programming available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير)
<ul style="list-style-type: none"> Discreet websites. Virtual library. 	المراجع الإلكترونية ، مواقع الانترنت
Library locations in some international universities	

modelCourse description

nameThe decision	. 1				
English language (2)					
CodeThe decision	. 2				
MAEL2					
the chapter / the year	. 3				
First semester/2023-2024					
Preparation dateThis description	. 4				
10/1/2023					
5. shapes the audience Available					
My presence					
6.number hours Academic (total)/Number of units (total)					
2/15					
7. Name of the course administrator(If more than one name is mentioned)					
the name:Email:					
. 8. اهداف المقرر					
<p>Προεπαραρινγ γραδουατες σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το τη δεπελοπμεντ οφ τη χουντ ρυ•</p> <p>Μεετινγ τη νεεδσ οφ τη εδυχατιον σεχτορ ωιτη ηιγηλψ θυαλιφιεδ χαδρεσ</p> <p>Ενχουραγινγ διςτινγυισηεδ πεοπλε το ωορκ ιν τη δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	<p>اهداف المادة الدراسية</p>				
. 9. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> • Managing the lecture in a way that indicates the importance of time • Assigning the student some group assignments • Websites and electronic classes 	الاستراتيجية				
. 10. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General	Lectures	International student	Getting to know students	1	the first

questions and discussion			from different parts of the world and chatting with them		
General questions and discussion	Lectures	Vocabulary development	knowledge Development of speech vocabulary	1	the second
General questions and discussion	Lectures	Where in the world	Identify a location in the world	1	the third
General questions and discussion	Lectures	Newspaper articles	Identify articles and how to read magazines	1	the fourth
General questions and discussion	Lectures	Modern technology	Learn about the technology of his speech	1	Fifth
General questions and discussion	Lectures	Conferences and visits	Identify the style of writing in conferences	1	VI
General questions and discussion	Lectures	Science and our world	Science and our world	1	Seventh
Annie's test	Lectures	Writing trends	Identify the characteristics of writing	1	VIII
General questions and discussion	Lectures	Reading air pollution	Identify the characteristics of pollution using the reading method	1	Ninth
Monthly exam	Lectures	Past and present	Learn about the rules of the present and past tense	1	The tenth
General questions and discussion	Lectures	The world of IT	Identify the basic characteristics of the nature of scientific material	1	eleventh
General questions and discussion	Lectures	Inventions, discoveries	Identify the characteristics of breakthroughs and discoveries	1	twelveth
General questions and discussion	Lectures	Processes	Identify the basic processes of the nature of matter	1	Thirteenth
General questions and discussion	Lectures	Travel and tourism	Learn about tourism and travel	1	fourteenth
General questions and discussion	Lectures	Exam		1	Fifteenth

تقييم المقرر ١١ .

distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorial And reports etc

مصادر التعلم والتدريس ١٢.	
New hand way: - Academic skills reading writing2018	الكتب المقررة المطلوبة (المنهجية أن وجدت)
New hand way: - Academic skills reading writing2016	المراجع الرئيسية (المصادر)
The most important books and special sources in the English language located in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)
The most important books and special sources in the English language found on the internet	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

nameThe decision	.١				
Ordinary differential equations					
CodeThe decision	.٢				
MA207					
the chapter / the year	.٣				
Second semester/2023-2024					
Preparation dateThis description	.٤				
10/1/2023					
5. shapes the audience Available					
My presence					
6.number hours Academic (total)/Number of units (total)					
4/60					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Dr. Ahmed MawludEmail: ahmed.abdulhadi@sc.uobaghdad.edu.iq					
Name Dr. Nice meeting email:liqaa.khaleel@sc.uobaghdad.edu.iq					
.٨ اهداف المقرر					
<p>Πρεπαρινγ γραδυατεσ σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το τη δεπελοπμεντ οφ τη χουντ ρψ•</p> <p>Μεετινγ τη νεεδσ οφ τη εδυχατιον σεχτορ ωιτη ηιγηλψ θυαλιφιεδ χαδρεσ</p> <p>Ενχουραγιγ διστινγυισηεδ πεοπλε το ωορκ ιν τη δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	<p>اهداف المادة الدراسية</p>				
.٩ استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> • Managing the lecture in a way that indicates the importance of time • Assigning the student some group assignments • Websites and electronic classes 	الاستراتيجية				
.١٠ بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General	Lectures	Linear equations	First order differential	4	the first

questions and discussion			equations		
General questions and discussion	Lectures	Separable equations	First order differential equations	4	the second
General questions and discussion	Lectures	Exact equations and integration	First order differential equations	4	the third
General questions and discussion	Lectures	Factors	First order differential equations	4	the fourth
General questions and discussion	Lectures	Homogeneous equations	First order differential equations	4	Fifth
General questions and discussion	Lectures	Some of examples	First order differential equations	4	VI
General questions and discussion	Lectures	Second order equations reducible to first order	Higher order linear equations	4	Seventh
Annie's test	Lectures	Higher order linear equations with constant coefficients	Higher order linear equations	4	VIII
General questions and discussion	Lectures	Some of examples	Higher order linear equations	4	Ninth
Monthly exam	Lectures	The method of undermined coefficients	Higher order linear equations	4	The tenth
General questions and discussion	Lectures	The method of variation of parameters	Higher order linear equations	4	eleventh
General questions and discussion	Lectures	Some of examples	Higher order linear equations	4	twelveth
General questions and discussion	Lectures	Series solution near an ordinary point	Series solution of second order linear equations	4	Thirteenth
General questions and discussion	Lectures	Regular singular points	Series solution of second order linear equations	4	fourteenth
General questions and discussion	Lectures	Some of examples	Series solution of second order linear equations	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorial And reports etc	
مصادر التعلم والتدريس ١٢ .	
Hairer, Ernst; Norsett, Paul Syvert; Wanner, Gerhard (2013), Solving ordinary differential equations I: Nonstiff problems, Berlin, New York	الكتب المقررة المطلوبة (المنهجية أن وجدت)

Zill, Dennis GA First Course in Differential Equations 2016	المراجع الرئيسية (المصادر)
The most important books and special sources on ordinary differential equations available in the central library, the science library, and the department	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، النقارير....)
<ul style="list-style-type: none"> Discreet websites. Virtual library. Library locations in some international universities 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

nameThe decision	.١
Statement theory	
CodeThe decision	.٢
MA208	
the chapter / the year	.٣
Second semester/2023-2024	
Preparation dateThis description	.٤
10/1/2023	
5. shapes the audience Available	
My presence	
6.number hours Academic (total)/Number of units (total)	
2/60	
7. Name of the course administrator(If more than one name is mentioned)	
Name: Dr. Duraid braceletsEmail: asawer.d@sc.uobaghdad.edu.iq	
٨. اهداف المقرر	
Πρεπαρινγ γραδυατες σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το τη δεπελοπμεντ οφ τη χουντ ρψ•	اهداف المادة الدراسية

<p>Μετινγ της νεεδσ οφ της εδυχατιον σεχτορ ωιτη ηιγηλψ θυαλιφιεδ χαδρεσ</p> <p>Ενχουραγινη διστινηυισηεδ πεοπλε το ωορκ ιν της δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>					
<p>٩. استراتيجيات التعليم والتعلم</p>					
<ul style="list-style-type: none"> Managing the lecture in a way that indicates the importance of time Assigning the student some group assignments Websites and electronic classes 					<p>الاستراتيجية</p>
<p>١٠. بنية المقرر</p>					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and discussion	Lectures	Graph, order, size and simple, Multiple graph, and subgroup	Graph Concepts	4	the first
General questions and discussion	Lectures	Directed and undirected graph	Graph Concepts	4	the second
General questions and discussion	Lectures	Concepts of adjacent vertex and degree of vertex with some examples	Adjacent vertex, degree of vertex	4	the third
General questions and discussion	Lectures	Some of its application	The first theorem of graph	4	the fourth
General questions and discussion	Lectures	Some of its application and theorems of degree	Degree sequences	4	Fifth
General questions and discussion	Lectures	Intersection of graphs, complement of graph	Operations on the graph	4	VI
General questions and discussion	Lectures	Product of graphs, composition of graphs	Operations on the graph	4	Seventh
Annie's test	Lectures	Definitions, theorems and examples	Path, connected, strongly connected, weakly connected graphs	4	VIII
General questions and discussion	Lectures	Definitions, theorems and examples	Isomorphism of graph, self-complementary graph	4	Ninth
Monthly exam	Lectures	Definition of walk, open and closed walk, cycle path	Walk	4	The tenth
General questions and	Lectures	Some important matrix, adjacent matrix, path	Matrix	4	eleventh

discussion		matrix and incidence matrix			
General questions and discussion	Lectures	Definitions, theorems and examples	Bipartite graph and complete	4	twelveth
General questions and discussion	Lectures	Definitions and some of its applications	Loop and circuits and circuit matrix	4	Thirteenth
General questions and discussion	Lectures	Eulerian path, Eulerian circuit, Eulerian graph and Eulerian cycle	Eulerian	4	fourteenth
General questions and discussion	Lectures	Some theorems of trees and its applications	Trees	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorial And reports etc	
مصادر التعلم والتدريس ١٢ .	
Graph Theory by H. K. Taluja and D. Bhardwaj 2016	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Harry, Frank (2010), Graph Theory, Reading, MA: Addison-Wesley.	المراجع الرئيسية (المصادر)
The most important books and special sources on the theory of statement found in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)
<ul style="list-style-type: none"> • Discreet websites. • Virtual library. • Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

nameThe decision	. ١				
Linear Algebra (2)					
CodeThe decision	. ٢				
MA209					
the chapter / the year	. ٣				
Second semester/2023-2024					
Preparation dateThis description	. ٤				
10/1/2023					
5. shapes the audience Available					
My presence					
6.number hours Academic (total)/Number of units (total)					
3/60					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Dr. Heba Abdullah Ibrahim Email: hiba.ibrahim@sc.uobaghdad.edu.iq					
Name: Heba Abdullah Ahmed Email: hiba.ahmed@sc.uobaghdad.edu.iq					
٨. اهداف المقرر					
<p>Πρεπαρινγ γραδυατεσ σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το τη δεπελοπμεντ οφ τη χουντ ρψ•</p> <p>Μεετινγ τη νεεδσ οφ τη εδυχατιον σεχτορ ωιτη ηιγηλψ θυαλιφιεδ χαδρεσ</p> <p>Ενχουραγινη διστινγυισηεδ πεοπλε το ωορκ ιν τη δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	<p>اهداف المادة الدراسية</p>				
٩. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> • Managing the lecture in a way that indicates the importance of time • Assigning the student some group assignments • Websites and electronic classes 	الاستراتيجية				
١٠. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General	Lectures	Definitions, theorems and	The eigen values and the	4	the first

questions and discussion		some examples	eigen vectors		
General questions and discussion	Lectures	Definitions and examples	The characteristic polynomial	4	the second
General questions and discussion	Lectures	Definitions and examples	The characteristic equation	4	the third
General questions and discussion	Lectures	Some of examples	Similar matrices	4	the fourth
General questions and discussion	Lectures	Some of examples	Diagonalizable	4	Fifth
General questions and discussion	Lectures	Several examples	Theorems of diagonalizable	4	VI
General questions and discussion	Lectures	Definitions and its properties	Diagonalizable of symmetric matrix	4	Seventh
Annie's test	Lectures	Some of examples	Orthogonal matrix properties	4	VIII
General questions and discussion	Lectures	Theorems with some examples	Linear programming	4	Ninth
Monthly exam	Lectures	Several examples	Geometric solution	4	The tenth
General questions and discussion	Lectures	Definitions, theorems and some examples	Simplex methods to solve the problem of linear program	4	eleventh
General questions and discussion	Lectures	Some of examples	Linear equations	4	twelveth
General questions and discussion	Lectures	Some of examples	Quadratic equations	4	Thirteenth
General questions and discussion	Lectures	Definitions, theories and some examples	Planes	4	fourteenth
General questions and discussion	Lectures	Some of example	The equations of a plane	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc	
مصادر التعلم والتدريس ١٢ .	
Abstract and linear algebra by D. Burton 2018	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Introduction to Linear Algebra / written by Bernard Coleman 2012	المراجع الرئيسية (المصادر)

<p>The most important books and special sources on linear algebra available in the central library, the science library, and the department.</p>	<p>الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)</p>
<ul style="list-style-type: none"> • Discreet websites. • Virtual library. • Library locations in some international universities. 	<p>المراجع الإلكترونية ، مواقع الانترنت</p>

modelCourse description

name	The decision	. ١			
Linear programming					
Code	The decision	. ٢			
MA2010					
the chapter / the year		. ٣			
Second semester/2023-2024					
Preparation date	This description	. ٤			
10/1/2023					
5. shapes the audience	Available				
My presence					
6.number hours Academic (total)/Number of units (total)					
2/60					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Dr. Iraq Tariq Email: iraq.t@sc.uobaghdad.edu.iq					
Name: Dr. Hasna Faisal Email: hasnaa.mohammed1103@sc.uobaghdad.edu.iq					
٨. اهداف المقرر					
<p>Πρεπαρινγ γραδυατες στεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το της δεπελοπμεντ οφ της χουντ ρυ•</p> <p>Μεετινγ της νεεδσ οφ της εδυχατιον σεχτορ ωιτη ητηηλψ θυαλιφιεδ χαδρες</p> <p>Ενχουραγινγ διστινγυσιηεδ πεοπλε το ωορκ ιν της δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	<p>اهداف المادة الدراسية</p>				
٩. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> Managing the lecture in a way that indicates the importance of time Assigning the student some group assignments Websites and electronic classes 	<p>الاستراتيجية</p>				
١٠. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and	Lectures	Definitions, some of theorems and examples	Basic of operation Research	4	the first

discussion					
General questions and discussion	Lectures	Some of its application	Linear programming model	4	the second
General questions and discussion	Lectures	Some of its application	Construction of LP. model	4	the third
General questions and discussion	Lectures	Some of its application	Solutions of LP. model	4	the fourth
General questions and discussion	Lectures	Some of its application	Graphical LP. solution	4	Fifth
General questions and discussion	Lectures	Some of its application	Solutions of maximization model	4	VI
General questions and discussion	Lectures	Some of its application	Some exceptional cases	4	Seventh
Annie's test	Lectures	Some of its application	Slack, Surplus and unrestricted variables	4	VIII
General questions and discussion	Lectures	Some of its application	The standard LP. form	4	Ninth
Monthly exam	Lectures	Definitions, some of theorems and examples	Determination of basic solutions	4	The tenth
General questions and discussion	Lectures	Some of its application	The simplex method	4	eleventh
General questions and discussion	Lectures	Some of its application	The Big M-method	4	twelveth
General questions and discussion	Lectures	Some of its application	The two-phase method	4	Thirteenth
General questions and discussion	Lectures	Definitions, some of theorems and examples	Duality of LP.	4	fourteenth
General questions and discussion	Lectures	Definitions, some of theorems and examples	Dual problem where the primal is in standard form	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorial And reports etc	
مصادر التعلم والتدريس ١٢ .	
Operation research, Gupta and Hira 2016	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Operation research, Hamdy Taha 2017	المراجع الرئيسية (المصادر)

The most important books and special sources on linear programming available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)
<ul style="list-style-type: none"> Discreet websites. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

name	The decision	. ١			
Statistics and probability (2)					
Code	The decision	. ٢			
MA2011					
the chapter / the year		. ٣			
Second semester/2023-2024					
Preparation date	This description	. ٤			
10/1/2023					
5. shapes the audience	Available				
My presence					
6.number hours Academic (total)/Number of units (total)					
3/60					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Dr. Rehab Nouri Email: rehab.shallan@sc.uobaghdad.edu.iq the name: Dr. Ghadeer Jassim Email: ghadeer.j@sc.uobaghdad.edu.iq					
٨. اهداف المقرر					
<p>Πρεπαρινγ γραδυατες σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το της δεπελοπμεντ οφ της χουντ ρυ•</p> <p>Μεετινγ της νεεδσ οφ της εδυχατιον σεχτορ ωιτη ητηηλψ θυαλιφιεδ χαδρες</p> <p>Ενχουραγινγ διστινγυσιηεδ πεοπλε το ωορκ ιν της δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	<p>اهداف المادة الدراسية</p>				
٩. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> Managing the lecture in a way that indicates the importance of time Assigning the student some group assignments Websites and electronic classes 	<p>الاستراتيجية</p>				
١٠. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and	Lectures	Definition, examples and theories	Random variable and probability distribution	4	the first

discussion					
General questions and discussion	Lectures	Random variable distribution function	Discrete and continuous random variable	4	the second
General questions and discussion	Lectures	Theorem, properties of cumulative distribution function	Discrete and continuous random variable	4	the third
General questions and discussion	Lectures	Definitions and several examples	Probability distribution function	4	the fourth
General questions and discussion	Lectures	Definitions with some examples	Distribution function	4	Fifth
General questions and discussion	Lectures	Relation between distribution function and probability density function definitions, and examples	Probability density function	4	VI
General questions and discussion	Lectures	Expectation, The variant, definitions, Examples Moments	Mathematical Expectation	4	Seventh
Annie's test	Lectures	The Median Moment generating function, Characteristic function	distribution function	4	VIII
General questions and discussion	Lectures	Uniform Distribution Binomial distribution Bernoli distribution	Discrete Distribution	4	Ninth
Monthly exam	Lectures	Negative Bernoli distribution Poisson Distribution Hyper geometric distribution	Discrete Distribution	4	The tenth
General questions and discussion	Lectures	Uniform and Normal Distribution moments	Continuous Distribution	4	eleventh
General questions and discussion	Lectures	Gamma function, Gamma distribution	Continuous Distribution	4	twelveth
General questions and discussion	Lectures	Join marginal Discrete joint distribution	Joint marginal and conditional distribution	4	Thirteenth
General questions and discussion	Lectures	Join probability density functions Marginal distribution	Joint Distribution Function	4	fourteenth
General questions and discussion	Lectures	Expectation of sum of a random variable Covariance and correlation coefficient	Conditional Distribution	4	Fifteenth

تقييم المقرر ١١ .

distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly

And editorialAnd reports etc	
مصادر التعلم والتدريس ١٢.	
Introduction to statics by Degroote2015	الكتب المقررة المطلوبة (المنهجية أن وجدت)
	المراجع الرئيسية (المصادر)
The most important books and special sources on statistics and probability available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)
<ul style="list-style-type: none"> • Discreet websites. • Virtual library. • Library locations in some international universities 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

nameThe decision	. ١				
Computer (4)					
CodeThe decision	. ٢				
MA212					
the chapter / the year	. ٣				
Second semester/2023-2024					
Preparation dateThis description	. ٤				
10/1/2023					
5. shapes the audience Available					
My presence					
6.number hours Academic (total)/Number of units (total)					
3/60					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Dr. Saad Muhammad AliEmail: saad.m@sc.uobaghdad.edu.iq					
٨. اهداف المقرر					
<p>Πρεπαρινγ γραδυατεσ σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το τη δεπελοπμεντ οφ τη χουντ ρψ•</p> <p>Μεετινγ τη νεεδσ οφ τη εδυχατιον σεχτορ ωιτη ηιγηλψ θυαλιφιεδ χαδρεσ</p> <p>Ενχουραγιγ διστινγυισηεδ πεοπλε το ωορκ ιν τη δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	<p>اهداف المادة الدراسية</p>				
٩. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> • Managing the lecture in a way that indicates the importance of time • Assigning the student some group assignments • Websites and electronic classes 	<p>الاستراتيجية</p>				
١٠. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General	Lectures	The object-oriented	Some basic concepts	(2)	the first

questions and discussion		approach and who to use the		Theoretical (2) Practical	
General questions and discussion	Lectures	C++ programming basics	Application of C++	(2) Theoretical (2) Practical	the second
General questions and discussion	Lectures	Integer variables	Application of C++	(2) Theoretical (2) Practical	the third
General questions and discussion	Lectures	Character variable	Application of C++	(2) Theoretical (2) Practical	the fourth
General questions and discussion	Lectures	Type float, String constants	Application of C++	(2) Theoretical (2) Practical	Fifth
General questions and discussion	Lectures	Type of conversion, Arithmetic operators	Application of C++	(2) Theoretical (2) Practical	VI
General questions and discussion	Lectures	Increment and decrement operators, Relational	Application of C++	(2) Theoretical (2) Practical	Seventh
Annie's test	Lectures	Loops: The for loop; Multiple statements in loop	Application of C++	(2) Theoretical (2) Practical	VIII
General questions and discussion	Lectures	The if statement; Multiple statements	Application of C++	(2) Theoretical (2) Practical	Ninth
Monthly exam	Lectures	Nesting ifs inside loops; Library function exit	Application of C++	(2) Theoretical (2) Practical	The tenth
General questions and discussion	Lectures	Function;	Application of C++	(2) Theoretical (2) Practical	eleventh

General questions and discussion	Lectures	SimpleFunction;	Application of C++	(2) Theoretic al (2) Practical	twelveth
General questions and discussion	Lectures	The function definition	Application of C++	(2) Theoretic al (2) Practical	Thirteenth
General questions and discussion	Lectures	Function; Returning values from the functions	Application of C++	(2) Theoretic al (2) Practical	fourteenth
General questions and discussion	Lectures	Arrays in C++ programming (1)	Application of C++	(2) Theoretic al (2) Practical	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc	
مصادر التعلم والتدريس ١٢ .	
An introduction to computing Turbo C++, Sanford Lesstma and Larry Nyhaff.2018	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Object-oriented programming in turbo C++ by Robert Lafore.2013	المراجع الرئيسية (المصادر)
The most important books and special resources on programming available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير)
<ul style="list-style-type: none"> Discreet websites. Virtual library. Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

nameThe decision	. ١				
Optimization					
CodeThe decision	. ٢				
MA305					
the chapter / the year	. ٣				
First semester/2023-2024					
Preparation dateThis description	. ٤				
10/1/2023					
5. shapes the audience Available					
My presence					
6.number hours Academic (total)/Number of units (total)					
2/15					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Dr. Iraq AbbasEmail: iraq.t@sc.uobaghdad.edu.iq					
Name: Dr. Duraid bracelets Email:asawer.d@sc.uobaghdad.edu.iq					
٨. اهداف المقرر					
<p>Πρεπαρινγ γραδυατεσ σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το τη δεπελοπμεντ οφ τη χουντ ρψ•</p> <p>Μεετινγ τη νεεδσ οφ τη εδυχατιον σεχτορ ωιτη ηιηηλψ θυαλιφιεδ χαδρεσ</p> <p>Ενχουραγιγγ διστινγυισηεδ πεοπλε το ωορκ ιν τη δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	<p>اهداف المادة الدراسية</p>				
٩. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> • Managing the lecture in a way that indicates the importance of time • Assigning the student some group assignments • Websites and electronic classes 	الاستراتيجية				
١٠. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General	Lectures	Several variables	Review some concepts	1	the first

questions and discussion		calculator	in calculus		
General questions and discussion	Lectures	Gradient vector	Review some concepts in calculus	1	the second
General questions and discussion	Lectures	Implicit differentiation	Review some concepts in calculus	1	the third
General questions and discussion	Lectures	Change of variables	Review some concepts in calculus	1	the fourth
General questions and discussion	Lectures	Stationary points	Calculate quadratic formulas and eigenvalues	1	Fifth
General questions and discussion	Lectures	Quadratic forms and eigenvalues	Learn some points	1	VI
General questions and discussion	Lectures	Piscipleminor test	accountPMT	1	Seventh
Annie's test	Lectures	Uuconstrained optimization	The concept of optimization is unrestricted	1	VIII
General questions and discussion	Lectures	Local extrema	Local points	1	Ninth
Monthly exam	Lectures	Cobb-Douglas production function	Cobb-Duclas production function	1	The tenth
General questions and discussion	Lectures	Constrained maximization with equality	Learn about some of the equations used	1	eleventh
General questions and discussion	Lectures	Lagrange multiplier and Bordered Hessian	Learn about some important concepts	1	twelfth
General questions and discussion	Lectures	Constrained maximization with inequality and mixed constraints	The concept of constrained optimization using inequality	1	Thirteenth
General questions and discussion	Lectures	Kuhn-Tucker theory	Learn about Khan Tucker theory	1	fourteenth
General questions and discussion	Lectures	Exam		1	Fifteenth

تقييم المقرر ١١ .
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc
١٢ . مصادر التعلم والتدريس

<p>CPSimon, L Blume, Mathematics for economists, WW Nort, 2014</p>	<p>• الكتب المقررة المطلوبة (المنهجية أن وجدت)</p>
<p>Alpha C.Charge, Fundamental Methods of Mathematics Economics, McGraw-Hill, 1984. D.Baily, Mathematics in economics, McGraw-Hill, 1988. A.Ostazewski, Mathematics in economics models, Blackwell, 1993.</p>	<p>• المراجع الرئيسية (المصادر)</p> <p>•</p> <p>•</p>
<p>The most important books and special sources on chaos theory located in the central library, the science library, and the department.</p>	<p>الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)</p>
<ul style="list-style-type: none"> • Discreet websites. • Virtual library. • Library locations in some international universities. 	<p>المراجع الإلكترونية ، مواقع الانترنت</p>

modelCourse description

nameThe decision	. ١				
Numerical Analysis (1)					
CodeThe decision	. ٢				
MA301					
the chapter / the year	. ٣				
First semester/2023-2024					
Preparation dateThis description	. ٤				
10/1/2023					
5. shapes the audience Available					
My presence					
6.number hours Academic (total)/Number of units (total)					
4/60					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Dr. Mohamed SabahEmail: mmmsh@sc.uobaghdad.edu.iq					
Name: Dr. Alaa Hussein Email: alaa.h@sc.uobaghdad.edu.iq					
. ٨ اهداف المقرر					
<p>Πρεπαρινιγ γραδυατες σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το τη δεπελοπμεντ οφ τη χουντ ρη•</p> <p>Μεετινγ τη νεεδσ οφ τη εδυχατιον σεχτορ ωιτη ηηηηη θυαλιφιεδ χαδρες</p> <p>Ενχουραγινγ διστινγιυσιηεδ πεοπλε το ωορκ ιν τη δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	<p>اهداف المادة الدراسية</p>				
. ٩ استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> • Managing the lecture in a way that indicates the importance of time • Assigning the student some group assignments • Websites and electronic classes 	<p>الاستراتيجية</p>				
. ١٠ بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع

General questions and discussion	Lectures	The concept of numerical analysis	Elementary <i>numerical analysis</i>	4	the first
General questions and discussion	Lectures	Absolute error, Relative errors	The numerical error types	4	the second
General questions and discussion	Lectures	Rounding errors	Resource of errors	4	the third
General questions and discussion	Lectures	Truncation errors, Human errors	Resource of errors	4	the fourth
General questions and discussion	Lectures	Examples	Floating point arithmetic	4	Fifth
General questions and discussion	Lectures	Bisection method, Newton Raphson method, Secant method	Numerical solution of nonlinear equation	4	VI
General questions and discussion	Lectures	Fixed point iteration (Definition, fixed point theorem)	Numerical solution of nonlinear equation	4	Seventh
Annie's test	Lectures	Error analysis for iterative methods (order of convergence)	Numerical solution of nonlinear equation	4	VIII
General questions and discussion	Lectures	Direct methods, iterative methods, error analysis	Numerical solution of linear and nonlinear systems	4	Ninth
Monthly exam	Lectures	Convergent and stability of the methods	Numerical solution of linear and nonlinear systems	4	The tenth
General questions and discussion	Lectures	Interpolation and extrapolation	Interpolation methods	4	eleventh
General questions and discussion	Lectures	Lagrange polynomial,	Interpolation methods	4	twelveth
General questions and discussion	Lectures	Interpolation with differences (finite and divided) polynomials, error analysis	Interpolation methods	4	Thirteenth
General questions and discussion	Lectures	Interpolation with cubic spline	Interpolation methods	4	fourteenth
General questions and discussion	Lectures	Examples and theories	Approximation with least square method	4	Fifteenth

تقييم المقرر ١١ .

distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorial And reports etc

١٢ . مصادر التعلم والتدريس

<p>1. Froberg CE, Introduction to Numerical Analysis, 2018.</p> <p>2. Hildebrand. FB, WH, Introduction to numerical analysis, 2017.</p> <p>Ali Muhammad Sadiq and Ibtisam Kamal Al-Din3.</p> <p>, 1986. University of Baghdad, Principles of Numerical Analysis</p>	<p>الكتب المقررة المطلوبة (المنهجية أن وجدت)</p>
<p>Kazem Muhammad Hussein Al-Lami, Introduction to numerical analysis. University of Basra, 1987</p>	<p>المراجع الرئيسية (المصادر)</p>
<p>The most important books and sources on numerical fraud available in the central library, the science library, and the department.</p>	<p>الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)</p>
<ul style="list-style-type: none"> • Discreet websites. • Virtual library. • Library locations in some international universities. 	<p>المراجع الإلكترونية ، مواقع الانترنت</p>

modelCourse description

nameThe decision	. 1
Numerical Analysis Laboratory (1)	
CodeThe decision	. 2
LMA301	
the chapter / the year	. 3
First semester/2023-2024	
Preparation dateThis description	. 4
10/1/2023	
5. shapes the audience Available	
My presence	
6.number hours Academic (total)/Number of units (total)	
4/30	
7. Name of the course administrator(If more than one name is mentioned)	
Name: Saja Ghazi Ali Abdel Kazem Mohamed Salam Zainab Mohammed Maryam KhudairEmail:	
. 8. اهداف المقرر	
Πρεπαρινγ γραδυατες σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το της δεπελοπμεντ οφ της χουντ ρησ• Μεετινγ της νεεδσ οφ της εδυχατιον σεχτορ ωιτη ηγηλψ θυαλιφιεδ χαδρες Ενχουραγινγ διστινγυισηεδ πεοπλε το ωορκ ιν της δεπαρτμεντ• Encouraging research programs and participating in scientific conferences and seminars Achieving quality and academic accreditation•	اهداف المادة الدراسية
. 9. استراتيجيات التعليم والتعلم	
<ul style="list-style-type: none"> • Managing the lecture in a way that indicates the importance of time • Assigning the student some group assignments • Websites and electronic classes 	الاستراتيجية

١٠. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and discussion	Lectures	Elementary numerical analysis	The concept of numerical analysis	2	the first
General questions and discussion	Lectures	The numerical error types	Absolute error, Relative errors	2	the second
General questions and discussion	Lectures	Resource of errors	Rounding errors	2	the third
General questions and discussion	Lectures	Resource of errors	Truncation errors, Human errors	2	the fourth
General questions and discussion	Lectures	Floating point arithmetic	Examples	2	Fifth
General questions and discussion	Lectures	Numerical solution of nonlinear equation	Bisection method, Newton Raphson method, Secant method	2	VI
General questions and discussion	Lectures	Numerical solution of nonlinear equation	Fixed point iteration (Definition, fixed point theorem)	2	Seventh
Annie's test	Lectures	Numerical solution of nonlinear equation	Error analysis for iterative methods (order of convergence)	2	VIII
General questions and discussion	Lectures	Numerical solution of linear and nonlinear systems	Direct methods, iterative methods, error analysis	2	Ninth
Monthly exam	Lectures	Numerical solution of linear and nonlinear systems	Convergent and stability of the methods	2	The tenth
General questions and discussion	Lectures	Interpolation methods	Interpolation and extrapolation	2	eleventh
General questions and discussion	Lectures	Interpolation methods	Lagrange polynomial,	2	twelveth
General questions and discussion	Lectures	Interpolation methods	Interpolation with differences (finite and divided) polynomials, error analysis	2	Thirteenth
General questions and discussion	Lectures	Interpolation methods	Interpolation with cubic spline	2	fourteenth
General questions and discussion	Lectures	Approximation with least square method	Examples and theories	2	Fifteenth

تقييم المقرر ١١.

distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorial And reports etc	
مصادر التعلم والتدريس ١٢.	
1. Froberg CE, Introduction to Numerical Analysis, 2018.	الكتب المقررة المطلوبة (المنهجية أن وجدت)
2. Hildebrand. FB, WH, Introduction to numerical analysis, 2017., Ali Muhammad Sadiq and Ibtisam Kamal Al-Din3.	
, 1986. University of Baghdad, Principles of Numerical Analysis	
Kazem Muhammad Hussein Al-Lami, Introduction to numerical analysis. University of Basra, 1987	المراجع الرئيسية (المصادر)
The most important books and sources on numerical fraud available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير)
<ul style="list-style-type: none"> • Discreet websites. • Virtual library. • Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

nameThe decision	.١
Episodes (1)	
CodeThe decision	.٢
MA312	
the chapter / the year	.٣
Second semester/2023-2024	
Preparation dateThis description	.٤
10/1/2023	
5. shapes the audience Available	
My presence	
6.number hours Academic (total)/Number of units (total)	
3/60	
7. Name of the course administrator(If more than one name is mentioned)	
Name: Dr. Alaa AbbasEmail: alaa.elewi@sc.uobaghdad.edu.iq Name:: Dr. Iman via email: iman.athab@sc.uobaghdad.edu.iq	

٨. اهداف المقرر					
<p>Πρεπαρινγ γραδουατες σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το της δεπελοπμεντ οφ της χουντ ρη•</p> <p>Μεετινγ της νεεδσ οφ της εδυχατιον σεχτορ ωιτη ηιηηλψ θυαλιφιεδ χαδρεσ</p> <p>Ενχουραγιγγ διστινγιυσιηεδ πεοπλε το ωορκ ιν της δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>		<p>اهداف المادة الدراسية</p>			
٩. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> Managing the lecture in a way that indicates the importance of time Assigning the student some group assignments Websites and electronic classes 					<p>الاستراتيجية</p>
١٠. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الاسبوع
General questions and discussion	Lectures	Ring	Definition and elementary properties of rings	4	the first
General questions and discussion	Lectures	Ring	Examples of rings	4	the second
General questions and discussion	Lectures	Ring	Zero divisor, identity, subrings	4	the third
General questions and discussion	Lectures	Integral domain and fields	Definition, properties and examples	4	the fourth
General questions and discussion	Lectures	Ring homomorphism	Definition, properties and examples	4	Fifth
General questions and discussion	Lectures	Isomorphisms theory of rings	Definition, properties and examples	4	VI
General questions and discussion	Lectures	Ideals	Definition, properties and examples	4	Seventh
Annie's test	Lectures	Certain special ideals	Definition, properties and examples	4	VIII
General questions and discussion	Lectures	Maximal ideals	Examples and Theorems	4	Ninth
Monthly exam	Lectures	Prime ideals	Examples and Theorems	4	The tenth
General questions and	Lectures	The relationship between prime ideal and a maximal	Theorems and examples	4	eleventh

discussion		ideal			
General questions and discussion	Lectures	The quotient rings	Definition, properties and examples	4	twelveth
General questions and discussion	Lectures	The Boolean ring	properties and examples	4	Thirteenth
General questions and discussion	Lectures	The principal ideal domain	Definition, properties and examples	4	fourteenth
General questions and discussion	Lectures	The internal direct sum, the external direct product	properties and examples	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc	
مصادر التعلم والتدريس ١٢ .	
A first course in Rings and ideals -David M. Burton.2016	الكتب المقررة المطلوبة (المنهجية أن وجدت)
A first course in Rings and ideals –David M. Burton.2018	المراجع الرئيسية (المصادر)
2018Group theory written by DrBasil Atta Al-Hashemi	
The most important books and special sources on abstract algebra found in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير)
<ul style="list-style-type: none"> • Discreet websites. • Virtual library. • Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

name	The decision	.1			
Mathematical Analysis (2)					
Code	The decision	.2			
MA303					
the chapter / the year		.3			
Second semester/2023-2024					
Preparation date	This description	.4			
10/1/2023					
5. shapes the audience	Available				
My presence					
6.number hours Academic (total)/Number of units (total)					
4/60					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Dr. Sun Khaled Email: wasan.hasan@sc.uobaghdad.edu.iq					
Name: Dr. Rana Adnan Email: rana.a@sc.uobaghdad.edu.iq					
.8. اهداف المقرر					
<p>Πρεπαρινιν γραδυατεσ σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το τηε δεπελοπμεντ οφ τηε χουντ ρην• Μεετινγ τηε νεεδσ οφ τηε εδυχατιον σέχτορ ωιτη ηιγηλψ θυαλιφιεδ χαδρεσ Ενχουραγινγ διςτινγυισηεδ πεοπλε το ωορκ ιν τηε δεπαρτμεντ• Encouraging research programs and participating in scientific conferences and seminars Achieving quality and academic accreditation•</p>	<p>اهداف المادة الدراسية</p>				
.9. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> Managing the lecture in a way that indicates the importance of time Assigning the student some group assignments Websites and electronic classes 	<p>الاستراتيجية</p>				
.10. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع

General questions and discussion	Lectures	Real numbers and rational numbers	Inclusion concepts, Equal sets, Subsets	4	the first
General questions and discussion	Lectures	The relationship between the field of rational numbers and the field of real numbers	Proper set, empty set, universal set	4	the second
General questions and discussion	Lectures	The density of rational (irrational) numbers	<i>Union, Intersection, Disjoint set, Symmetric difference</i>	4	the third
General questions and discussion	Lectures	Sequence of real numbers	Power set, Complement set, Algebra of sets	4	the fourth
General questions and discussion	Lectures	Convergence and divergence of sequence	Compound statements, Condition statements, Bio-condition statement	4	Fifth
General questions and discussion	Lectures	Monotonic and bounded sequence	Tautology, Contradiction and Arguments	4	VI
General questions and discussion	Lectures	Cauchy sequence	Open sentence, Quantified statements	4	Seventh
Annie's test	Lectures	Infinite series	Cartesian product, Relations	4	VIII
General questions and discussion	Lectures	Convergence test	Symmetric relation	4	Ninth
Monthly exam	Lectures	Metric space	Transitive relation -	4	The tenth
General questions and discussion	Lectures	Basic principals in Topology	Equivalence relation, Partition of the set	4	eleventh
General questions and discussion	Lectures	Convergence sequence in a metric space	Partially ordered set	4	twelveth
General questions and discussion	Lectures	Cauchy sequence in a metric space	Totally ordered set	4	Thirteenth
General questions and discussion	Lectures	Complete metric space	Domain and Co-domain of the function	4	fourteenth
General questions and discussion	Lectures	Compact metric space	Algebra of functions	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorial And reports etc	
مصادر التعلم والتدريس ١٢ .	
Real analysis, Royden, New York, 2018. Principles of Mathematical Analysis, Rudin, 2000.	الكتب المقررة المطلوبة (المنهجية أن وجدت)

Introduction of Mathematical analysis, William R. 2017.	المراجع الرئيسية (المصادر)
Introduction to Mathematical Analysis, written by: Professor Dr. Adel Ghassan Naoum 2000	
The most important books and special sources on mathematical analysis located in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)
<ul style="list-style-type: none"> • Discreet websites. • Virtual library. • Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

name	The decision	. ١			
Mathematical statistics (1)					
Code	The decision	. ٢			
MA304					
the chapter / the year		. ٣			
First semester/2023-2024					
Preparation date	This description	. ٤			
10/1/2023					
5. shapes the audience	Available				
My presence					
6.number hours Academic (total)/Number of units (total)					
3/60					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Dr. Tasneem Hassan Email: tasnim.h@sc.uobaghdad.edu.iq					
Name: Dr. Sadiq Najj Email: sadiq.n@sc.uobaghdad.edu.iq					
٨. اهداف المقرر					
<p>Πρεπαρινγ γραδυατες στεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το της δεπελοπμεντ οφ της χουντ ρυφ</p> <p>Μεετινγ της νεεδσ οφ της εδυχατιον σεχτορ ωιτη ητηηλψ θυαλιφιεδ χαδρες</p> <p>Ενχουραγινγ διστινγυσιηεδ πεοπλε το ωορκ ιν της δεπαρτμεντ</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation</p>	<p>اهداف المادة الدراسية</p>				
٩. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> Managing the lecture in a way that indicates the importance of time Assigning the student some group assignments Websites and electronic classes 		الاستراتيجية			
١٠. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and	Lectures	Sampling distribution theory	Definition and examples	4	the first

discussion					
General questions and discussion	Lectures	Transformations of random variables	The distribution function technique	4	the second
General questions and discussion	Lectures	Transformations of random variables	Change of variable technique	4	the third
General questions and discussion	Lectures	Transformations of random variables	mgf technique	4	the fourth
General questions and discussion	Lectures	The Beta and t-distribution	Definition, properties and examples	4	Fifth
General questions and discussion	Lectures	The F-distribution	Definition, properties and examples	4	VI
General questions and discussion	Lectures	The distribution of \bar{X} and $\frac{(n-1)s^2}{\sigma^2}$ (normal case)	Definition, properties and examples	4	Seventh
Annie's test	Lectures	Distribution of order statistics	Definition, properties and examples	4	VIII
General questions and discussion	Lectures	Limiting distributions	Definition and examples	4	Ninth
Monthly exam	Lectures	The central limit theorem	Definition, properties and examples	4	The tenth
General questions and discussion	Lectures	Methods of point estimation	Method of moments	4	eleventh
General questions and discussion	Lectures	Methods of maximum likelihood	Some of examples	4	twelveth
General questions and discussion	Lectures	Properties of estimator	Unbiasedness, Minimum MSE	4	Thirteenth
General questions and discussion	Lectures	Consistency, Sufficiency	Definition, properties and examples	4	fourteenth
General questions and discussion	Lectures	The Rao-Blackwell theorem	Completeness and uniqueness	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc	
مصادر التعلم والتدريس ١٢ .	
Degroot, M.H., "Probability and Statistics" Third Ed., 2002, Addison Wesley. Hogg, R. and Craig, A., "Introduction to Mathematical Statistics" 1995, New York.	(الكتب المقررة المطلوبة) المنهجية أن وجدت)

Mood, A. M., et al, "Introduction to the theory of statistics" 1974, Tokyo.	المراجع الرئيسية (المصادر)
The most important books and special sources on mathematical analysis located in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)
<ul style="list-style-type: none"> • Discreet websites. • Virtual library. • Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

name	The decision	. ١			
Algebra of groups					
Code	The decision	. ٢			
MA306					
the chapter / the year		. ٣			
First semester/2023-2024					
Preparation date	This description	. ٤			
10/1/2023					
5. shapes the audience	Available				
My presence					
6.number hours Academic (total)/Number of units (total)					
3/60					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Dr. Bahar HamadEmail: bahar.ahmed@sc.uobaghdad.edu.iq					
Name: Dr. Iman via email: iman.athab@sc.uobaghdad.edu.iq					
٨. اهداف المقرر					
<p>Πρεπαρινγ γραδυατες σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το της δεπελοπμεντ οφ τη χουντ ρη•</p> <p>Μεετινγ της νεεδσ οφ τη εδυχατιον σεχτορ ωιτη ητηγληψ θυαλιφιεδ χαδρες</p> <p>Ενχουραγινγ διστινγυσιηεδ πεοπλε το ωορκ ιν της δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	<p>اهداف المادة الدراسية</p>				
٩. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> Managing the lecture in a way that indicates the importance of time Assigning the student some group assignments Websites and electronic classes 	<p>الاستراتيجية</p>				
١٠. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and	Lectures	Group	Definition and examples	4	the first

discussion					
General questions and discussion	Lectures	Subgroup	Definition and examples	4	the second
General questions and discussion	Lectures	Cyclic group	Definition, properties and examples	4	the third
General questions and discussion	Lectures	Finitely generated group	Definition, properties and examples	4	the fourth
General questions and discussion	Lectures	Center of a group	Definition, properties and examples	4	Fifth
General questions and discussion	Lectures	Normal subgroup	Definition, properties and examples	4	VI
General questions and discussion	Lectures	quotient groups	Definition, properties and examples	4	Seventh
Annie's test	Lectures	Homomorphism	Definition, properties and examples	4	VIII
General questions and discussion	Lectures	The isomorphism theory	Properties and examples	4	Ninth
Monthly exam	Lectures	The internal direct sum	Definition, properties and examples	4	The tenth
General questions and discussion	Lectures	The external direct product	Definition, properties and examples	4	eleventh
General questions and discussion	Lectures	The p-group	Definition, properties and examples	4	twelveth
General questions and discussion	Lectures	The Barnsid's Theorm	properties and examples	4	Thirteenth
General questions and discussion	Lectures	The Sylow's subgroups	Definition, properties and examples	4	fourteenth
General questions and discussion	Lectures	The sylow's theorem	properties and examples	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc	
مصادر التعلم والتدريس ١٢ .	
Abstract and linear algebra by D. Burton 2017	الكتب المقررة المطلوبة (المنهجية أن وجدت)
. Group theory written by Dr. Basil Atta Al-Hashimi2018	المراجع الرئيسية (المصادر)

<p>The most important books and special sources on group theory available in the central library, the science library, and the department.</p>	<p>الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)</p>
<ul style="list-style-type: none"> • Discreet websites. • Virtual library. • Library locations in some international universities. 	<p>المراجع الإلكترونية ، مواقع الانترنت</p>

modelCourse description

name	The decision	. ١			
Partial differential equations					
Code	The decision	. ٢			
MA302					
the chapter / the year		. ٣			
First semester/2023-2024					
Preparation date	This description	. ٤			
10/1/2023					
5. shapes the audience	Available				
My presence					
6.number hours Academic (total)/Number of units (total)					
2/60					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Dr. Sondos Badr Email: sundos.b@sc.uobaghdad.edu.iq					
Name: Dr. Sherine Rasul Email: shireen.jawad@sc.uobaghdad.edu.iq					
٨. اهداف المقرر					
<p>Πρεπαρινγ γραδυατες σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το της δεπελοπμεντ οφ της χουντ ρψ•</p> <p>Μεετινγ της νεεδσ οφ της εδυχατιον σεχτορ ωιτη ηιηλψ θυαλιφιεδ χαδρες</p> <p>Ενχουραγινγ διστινγυισηεδ πεοπλε το ωορκ ιν της δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	<p>اهداف المادة الدراسية</p>				
٩. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> Managing the lecture in a way that indicates the importance of time Assigning the student some group assignments Websites and electronic classes 	<p>الاستراتيجية</p>				
١٠. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and discussion	Lectures	Partial Differential	Definitions of the partial differential	4	the first

General questions and discussion	Lectures	Classification second order PDE	Solution of partial differential equation	4	the second
General questions and discussion	Lectures	The general form of the PDE of first order	Some of examples	4	the third
General questions and discussion	Lectures	Lagrange's Equation	Linear Partial differential equations	4	the fourth
General questions and discussion	Lectures	Nonlinear partial differential equation	differential equations of the form $f(p,q)=0$, $f(z,p,q)=0$, $f_1(x,p)=f_2(y,q)$	4	Fifth
General questions and discussion	Lectures	Clairout extended PDE	General form of linear PDES	4	VI
General questions and discussion	Lectures	Clairout extended PDE	Partial differential operator	4	Seventh
Annie's test	Lectures	Inverse of the partial differential operator	Some of examples	4	VIII
General questions and discussion	Lectures	Linear PDEs with homogeneous and constant coefficients	Some of examples	4	Ninth
Monthly exam	Lectures	Linear PDEs with constant coefficients and nonhomogeneous terms	Some of examples	4	The tenth
General questions and discussion	Lectures	Reducible PDEs, irreducible PDEs	Some of examples	4	eleventh
General questions and discussion	Lectures	Cauchy's linear PDE	Some of examples	4	twelveth
General questions and discussion	Lectures	Method of separation of variables	Some of examples	4	Thirteenth
General questions and discussion	Lectures	Fourier series	Half range Fourier series	4	fourteenth
General questions and discussion	Lectures	Integral transform	Laplace transform and application laplace transform, Fourier transforms and application	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorial And reports etc	
مصادر التعلم والتدريس ١٢ .	
Integral transformation and their applications. 2015	الكتب المقررة المطلوبة (المنهجية أن وجدت)

Solving partial differential equations and their applications - Dr. Nouri Farhan.2018	
Partial Differential Equations (Atallah Thamer).2010	المراجع الرئيسية (المصادر)
The most important books and special sources on partial differential equations available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)
<ul style="list-style-type: none"> Discreet websites. Virtual library. Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

nameThe decision	.١
Chaos Theory	
CodeThe decision	.٢
MA308	
the chapter / the year	.٣
Second semester/2023-2024	
Preparation dateThis description	.٤
10/1/2023	
5. shapes the audience Available	
My presence	
6.number hours Academic (total)/Number of units (total)	
2/60	
7. Name of the course administrator(If more than one name is mentioned)	
Name: Dr. Sherine Rasoul Email: shireen.jawad@sc.uobaghdad.edu.iq	
Name: Dina Sultan Email: dina.s@sc.uobaghdad.edu.iq	
٨. اهداف المقرر	
Πρεπαρινγ γραδυατεσ σπεχαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το της δεπελοπμεντ οφ τη χουντ ρη• Μεετινγ της νεεδσ οφ της εδυχατιον σέχτορ ωιτη	اهداف المادة الدراسية

ηγηλψ θυαλιφιεδ χαδρεσ Ενχουραγινγ διστινγυισηεδ πεοπλε το ωορκ ιν της δεπαρτμεντ• Encouraging research programs and participating in scientific conferences and seminars Achieving quality and academic accreditation•					
۹. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> Managing the lecture in a way that indicates the importance of time Assigning the student some group assignments Websites and electronic classes 					الاستراتيجية
۱۰. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and discussion	Lectures	Iterates of functions	Fixed points, examples	4	the first
General questions and discussion	Lectures	Iterates of functions	Graphical analysis of the orbit, examples,	4	the second
General questions and discussion	Lectures	Iterates of functions	Attracting fixed points, repelling fixed points with examples,	4	the third
General questions and discussion	Lectures	Iterates of functions	Basin of attraction, eventually fixed point	4	the fourth
General questions and discussion	Lectures	Tent function	Periodic points, attracting periodic points	4	Fifth
General questions and discussion	Lectures	Tent function	Repelling periodic points, families of functions, quadratic family	4	VI
General questions and discussion	Lectures	Bifurcation diagram of the family f_μ	Period-doubling bifurcation	4	Seventh
Annie's test	Lectures	Bi furcation diagram of the family f_μ	Tangent trifurcation	4	VIII
General questions and discussion	Lectures	Bi furcation diagram of the family f_μ	Period-3 points, Li-yorke theorem,	4	Ninth
Monthly exam	Lectures	Bifurcation diagram of the family f_μ	Schwarzian derivative	4	The tenth
General questions and discussion	Lectures	One-dimensional chaos	Similar matrices, Dynamics of linear function [theorems and examples]	4	eleventh
General questions and discussion	Lectures	One-dimensional chaos	Invariant set, nonlinear maps, area-contracting map, area expanding	4	twelveth

			map		
General questions and discussion	Lectures	Stable and unstable manifold theorem	Hyperbolic fixed point	4	Thirteenth
General questions and discussion	Lectures	Stable and unstable manifold theorem	Non-hyperbolic fixed point	4	fourteenth
General questions and discussion	Lectures	Stable and unstable manifold theorem	Henon Maps	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc	
مصادر التعلم والتدريس ١٢ .	
Encounters with chaos Denny Guliclc 2014-Micraw-Hill.	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Peinke, J., Parisi, J., Rossler, Otto E., Stoop, R., Encounter With Chaos: Self-Organized Hierarchical Complexity in Semiconductor Experiments2018	المراجع الرئيسية (المصادر)
The most important books and special sources on chaos theory located in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير)
<ul style="list-style-type: none"> • Discreet websites. • Virtual library. • Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

nameThe decision	. 1				
English language (3)					
CodeThe decision	. 2				
MAEL3					
the chapter / the year	. 3				
First semester/2023-2024					
Preparation dateThis description	. 4				
10/1/2023					
5. shapes the audience Available					
My presence					
6.number hours Academic (total)/Number of units (total)					
15/2					
7. Name of the course administrator(If more than one name is mentioned)					
the name: Email:					
. 8. اهداف المقرر					
<p>Προεπαραρινγ γραδουατεσ σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το τη δεπελοπμεντ οφ τη χουντ ρυ•</p> <p>Μεετινγ τη νεεδσ οφ τη εδυχατιον σεχτορ ωιτη ηιγηλψ θυαλιφιεδ χαδρεσ</p> <p>Ενχουραγινγ διςτινγυισηεδ πεοπλε το ωορκ ιν τη δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	<p>اهداف المادة الدراسية</p>				
. 9. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> • Managing the lecture in a way that indicates the importance of time • Assigning the student some group assignments • Websites and electronic classes 	<p>الاستراتيجية</p>				
. 10. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General	Lectures	International student	Getting to know	1	the first

questions and discussion			students from different parts of the world and talking to them		
General questions and discussion	Lectures	Vocabulary development	Knowledge of the development of speech vocabulary	1	the second
General questions and discussion	Lectures	Where in the world	Identify a location in the world	1	the third
General questions and discussion	Lectures	Newspaper articles	Identify articles and how to read magazines	1	the fourth
General questions and discussion	Lectures	Modern technology	Learn about the technology of his speech	1	Fifth
General questions and discussion	Lectures	Conferences and visits	Identify the style of writing in conferences	1	VI
General questions and discussion	Lectures	Science and our world	Science and our world	1	Seventh
Monthly exam	Lectures	Writing trends	Identify the characteristics of writing	1	VIII
General questions and discussion	Lectures	Reading air pollution	Identify the characteristics of pollution using the reading method	1	Ninth
General questions and discussion	Lectures	Past and present	Learn about the rules of the present and past tense	1	The tenth
General questions and discussion	Lectures	The world of IT	Identify the basic characteristics of the nature of scientific material	1	eleventh
General questions and discussion	Lectures	Inventions, discoveries	Identify the characteristics of breakthroughs and discoveries	1	twelveth
General questions and discussion	Lectures	Processes	Identify the basic processes of the nature of matter	1	Thirteenth
General questions and discussion	Lectures	Travel and tourism	Learn about tourism and travel	1	fourteenth
General questions and discussion	Lectures	Exam		1	Fifteenth

تقييم المقرر ١١ .

distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly

And editorialAnd reports etc	
مصادر التعلم والتدريس ١٢.	
New headway plus by John and Liz Soars2018	الكتب المقررة المطلوبة (المنهجية أن وجدت)
	المراجع الرئيسية (المصادر)
The most important books and special sources on topics in general mathematics available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)
<ul style="list-style-type: none"> • Discreet websites. • Virtual library. • Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

nameThe decision	.١
Mathematical Analysis (2)	
CodeThe decision	.٢
MA309	
the chapter / the year	.٣
Second semester/2023-2024	
Preparation dateThis description	.٤
10/1/2023	

5. shapes the audience Available					
My presence					
6.number hours Academic (total)/Number of units (total)					
60/4					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Dr. Nice meeting Email: liqaa.khaleel@sc.uobaghdad.edu.iq Name: Dr. Rana Adnan Email: rana.a@sc.uobaghdad.edu.iq					
٨. اهداف المقرر					
<p>Πρεπαρινγ γραδυατες σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το τη δεπελοπμεντ οφ τη χουντ ρμ•</p> <p>Μεετινγ τη νεεδσ οφ τη εδυχατιον σεχτορ ωιτη ηιηηλψ θυαλιφιεδ χαδρεσ</p> <p>Ενχουραγιγγ διστινγυισηεδ πεοπλε το ωορκ ιν τηε δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>			<p>اهداف المادة الدراسية</p>		
٩. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> Managing the lecture in a way that indicates the importance of time Assigning the student some group assignments Websites and electronic classes 					الاستراتيجية
١٠. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الاسبوع
General questions and discussion	Lectures	Continuity	Definition and Examples	4	the first
General questions and discussion	Lectures	Uniformly continuous	Definition and Examples	4	the second
General questions and discussion	Lectures	Intermediate value	Property and application	4	the third
General questions and discussion	Lectures	The sequence and series of functions	Definition and Examples	4	the fourth
General questions and discussion	Lectures	Uniformly convergence and point wise convergence	Property and examples	4	Fifth
General questions and discussion	Lectures	Power series	Interval of convergence of power series	4	VI

General questions and discussion	Lectures	Riemann integration	Definition and examples	4	Seventh
Monthly exam	Lectures	Continuous functions and Riamann integration	Definitions and examples	4	VIII
General questions and discussion	Lectures	Monotonic functions and Riamann integration	Definitions and examples	4	Ninth
General questions and discussion	Lectures	Lebesgue Theory of Integration	Definitions and examples	4	The tenth
General questions and discussion	Lectures	Lebesgue Theory of Integration	Some properties of Lebesgue integration	4	eleventh
General questions and discussion	Lectures	Convergence Linear space of Riemann integration function	Definitions and examples	4	twelveth
General questions and discussion	Lectures	Measurable function and Lebesgue integration	Definitions and examples	4	Thirteenth
General questions and discussion	Lectures	Continuity of Lebesgue integration	Definitions and examples	4	fourteenth
General questions and discussion	Lectures	Functions of bounded variations	Definitions and examples	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc	
مصادر التعلم والتدريس ١٢ .	
Real analysis, Royden, New York, Real analysis, Royden, New York, 2018.	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Principles of Mathematical analysis, Rudin, 2014 Introduction of Mathematical analysis, William R. 2016.	المراجع الرئيسية (المصادر)
The most important books and special sources on mathematical analysis located in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)
<ul style="list-style-type: none"> Discreet websites. Virtual library. Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

nameThe decision	. ١				
Numerical Analysis (2)					
CodeThe decision	. ٢				
MA307					
the chapter / the year	. ٣				
Second semester/2023-2024					
Preparation dateThis description	. ٤				
10/1/2023					
5. shapes the audience Available					
My presence					
6.number hours Academic (total)/Number of units (total)					
60 theoretical and 30 practical/4					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Dr. Mohamed SabahEmail: mmmsh@sc.uobaghdad.edu.iq					
Name: Dr. Alaa Hussein Email: alaa.h@sc.uobaghdad.edu.iq					
. ٨ اهداف المقرر					
<p>Πρεπαρινιγ γραδυατες σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το της δεπελοπμεντ οφ τη χουντ ρη•</p> <p>Μεετινγ της νεεδσ οφ της εδυχατιον σεχτορ ωιτη ηηηλψ θυαλιφιεδ χαδρες</p> <p>Ενχουραγινγ διστινγισηεδ πεοπλε το ωορκ ιν της δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	<p>اهداف المادة الدراسية</p>				
. ٩ استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> • Managing the lecture in a way that indicates the importance of time • Assigning the student some group assignments • Websites and electronic classes 	<p>الاستراتيجية</p>				
. ١٠ بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع

General questions and discussion	Lectures	Numerical differentiation of higher numerical differentiation	Equispaced Bata	4	the first
General questions and discussion	Lectures	Numerical differentiation of higher numerical differentiation	Non equispaced Bata, errors analysis	4	the second
General questions and discussion	Lectures	Numerical integration	Numerical integration for equispaced nodes, Trapezoidal method	4	the third
General questions and discussion	Lectures	Numerical integration	Simpson method, Romberg integration	4	the fourth
General questions and discussion	Lectures	Newton cots methods and Gaussian quadrature	Gaussquadrature	4	Fifth
General questions and discussion	Lectures	Newton cots methods and Gaussian quadrature	Gauss-Legendre method	4	VI
General questions and discussion	Lectures	Newton cots methods and Gaussian quadrature	Gauss-Chebyshev	4	Seventh
Monthly exam	Lectures	Multiplier numerical integration and error analysis	Theorems and examples	4	VIII
General questions and discussion	Lectures	Numerical solution of ordinary differential equations (single step methods, multistep mmethod)	Eulor method	4	Ninth
General questions and discussion	Lectures	Numerical solution of ordinary differential equations (single step methods, multistep mmethod)	Tylor method and higher order Tylor method	4	The tenth
General questions and discussion	Lectures	Numerical solution of ordinary differential equations (single step methods, multistep mmethod)	Runge-Kutta of order two	4	eleventh
General questions and discussion	Lectures	Numerical solution of ordinary differential equations (single step methods, multistep mmethod)	Runge-Kutta of order four	4	twelveth
General questions and discussion	Lectures	Multistep methods (explicit and implicit methods)	Theorems and examples	4	Thirteenth
General questions and discussion	Lectures	Predictor-corrretor methods	Numerical solution of system of differential equations	4	fourteenth
General questions and discussion	Lectures	Predictor-corrretor methods	Stability of numerical methods for solving differential	4	Fifteenth

			equations		
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and discussion	Lectures	Numerical differentiation of higher numerical differentiation	Equispaced Bata	2 practical	the first
General questions and discussion	Lectures	Numerical differentiation of higher numerical differentiation	Non equispaced Bata, errors analysis	2 practical	the second
General questions and discussion	Lectures	Numerical integration	Numerical integration for equispaced nodes, Trapezoidal method	2 practical	the third
General questions and discussion	Lectures	Numerical integration	Simpson method, Romberg integration	2 practical	the fourth
General questions and discussion	Lectures	Newton cots methods and Gaussian quadrature	Gaussquadrature	2 practical	Fifth
General questions and discussion	Lectures	Newton cots methods and Gaussian quadrature	Gauss-Legendre method	2 practical	VI
General questions and discussion	Lectures	Newton cots methods and Gaussian quadrature	Gauss-Chebyshev	2 practical	Seventh
Monthly exam	Lectures	Multiplier numerical integration and error analysis	Theorems and examples	2 practical	VIII
General questions and discussion	Lectures	Numerical solution of ordinary differential equations (single step methods, multistep mmethod)	Eulor method	2 practical	Ninth
General questions and discussion	Lectures	Numerical solution of ordinary differential equations (single step methods, multistep mmethod)	Tylor method and higher order Tylor method	2 practical	The tenth
General questions and discussion	Lectures	Numerical solution of ordinary differential equations (single step methods, multistep mmethod)	Runge-Kutta of order two	2 practical	eleventh
General questions and discussion	Lectures	Numerical solution of ordinary differential equations (single step methods, multistep mmethod)	Runge-Kutta of order four	2 practical	twelveth
General questions and discussion	Lectures	Multistep methods (explicit and implicit methods)	Theorems and examples	2 practical	Thirteenth
General questions and discussion	Lectures	Predictor-corrretor methods	Numerical solution of system of differential equations	2 practical	fourteenth
General questions and discussion	Lectures	Predictor-corrretor methods	Stability of numerical methods for solving differential equations	2 practical	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc	
مصادر التعلم والتدريس ١٢ .	
1. Froberg CE, Introduction to Numerical Analysis, 20178. 2. Hildebrand. FB, WH, Introduction to numerical analysis, 2018.	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Kazem Muhammad Hussein Al-Lami,Introduction to numerical analysis. University of Basra, 1987	المراجع الرئيسية (المصادر)
The most important books and sources on numerical fraud available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)
<ul style="list-style-type: none"> • Discreet websites. • Virtual library. • Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

nameThe decision	. 1
Arithmetic groups	
CodeThe decision	. 2
MA311	
the chapter / the year	. 3
Second semester/2023-2024	
Preparation dateThis description	. 4
10/1/2023	
5. shapes the audience Available	
My presence	
6.number hours Academic (total)/Number of units (total)	
60/4	
7. Name of the course administrator(If more than one name is mentioned)	
Name: Dr. Ali Abed ObaidEmail: ali.abd@sc.uobaghdad.edu.iq	
. 8. اهداف المقرر	
<p>Πρεπαρινγ γραδυατεσ σπεχιαλιζειδ ιν μαθηματιχ σ το χοντριβυτε το της δεπελοπμεντ οφ της χουντ ρψ•</p> <p>Μεετινγ της νεεδσ οφ της εδυχατιον σεχτορ ωιτη ηιηηλψ θυαλιφιεδ χαδρεσ</p> <p>Ενχουραινγ διςτινγυισηεδ πεοπλε το ωορκ ιν της δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	<p>اهداف المادة الدراسية</p>

٩. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> Managing the lecture in a way that indicates the importance of time Assigning the student some group assignments Websites and electronic classes 					الاستراتيجية
١٠. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and discussion	Lectures	Historical background on the topicArithmetic groups	Definitions and examples	4	the first
General questions and discussion	Lectures	AxiomsAnd some of its applications	GapWhat is the	4	the second
General questions and discussion	Lectures	Computer applications	Definitions and examples	4	the third
General questions and discussion	Lectures	Computer applications	Definitions and examples	4	the fourth
General questions and discussion	Lectures	Overview	What is itgroup Action	4	Fifth
General questions and discussion	Lectures	Computer applications	Definitions and examples	4	VI
General questions and discussion	Lectures	Computer applications	Algorithm 1	4	Seventh
Monthly exam	Lectures	Computer applications	Algorithm 2	4	VIII
General questions and discussion	Lectures	Computer applications	Algorithm 3	4	Ninth
General questions and discussion	Lectures	Computer applications	Algorithm 4	4	The tenth
General questions and discussion	Lectures	Overview	Applications in group theory	4	eleventh
General questions and discussion	Lectures	Computer applications	Definitions and examples	4	twelveth
General questions and discussion	Lectures	Implementation of programs	Problems in groups 1	4	Thirteenth
General questions and discussion	Lectures	Computer applications	Definitions and examples	4	fourteenth
General questions and discussion	Lectures	Implementing computer programs and applications	Full review	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc	
مصادر التعلم والتدريس ١٢ .	
Derek F. Holt, Bettina Eick, Eamonn A. O'Brien, "Handbook of computational group theory", Discrete Mathematics and its Applications (Boca Raton). Chapman & Hall/CRC, Boca Raton, Florida, 2016. ISBN1-58488-372-3	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Charles C. Sims , "Computation with Finitely-presented Groups", Encyclopedia of Mathematics and its Applications, vol 48, Cambridge University Press , Cambridge, 1994. ISBN0-521-43213-8	المراجع الرئيسية (المصادر)
Ákos Seress, "Permutation group algorithms", Cambridge Tracts in Mathematics, vol. 152, Cambridge University Press, Cambridge, 2003. ISBN0-521-66103-X	
The most important books and special sources on computer group theory available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)
<ul style="list-style-type: none"> • Discreet websites. • Virtual library. • Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

nameThe decision	.١
Mathematical statistics (2)	

Code	The decision	.٢			
	MA310				
the chapter / the year		.٣			
	Second semester/2023-2024				
Preparation date	This description	.٤			
	10/1/2023				
5. shapes the audience	Available				
	My presence				
6.number hours Academic (total)/Number of units (total)					
	60/3				
7. Name of the course administrator(If more than one name is mentioned)					
	Name: Dr. Tasneem Hassan Email: tasnim.h@sc.uobaghdad.edu.iq Name: Dr. Sadiq Naji Email: sadiq.n@sc.uobaghdad.edu.iq				
٨. اهداف المقرر					
<p>Πρεπαρινγ γραδυατες σπεχιαλιζειδ ιν μαθηματιχ σ το χοντριβυτε το της δεπελοπμεντ οφ της χουντ ρψ•</p> <p>Μεετινγ της νεεδσ οφ της εδυχατιον σεχτορ ωιτη ηιηηλψ θυαλιφιεδ χαδρες</p> <p>Ενχουραγιγγ διστινγυισηεδ πεοπλε το ωορκ ιν της δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	اهداف المادة الدراسية				
٩. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> Managing the lecture in a way that indicates the importance of time Assigning the student some group assignments Websites and electronic classes 	الاستراتيجية				
١٠. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and discussion	Lectures	Fisher Information and the Rao-Cramer Inequality	Definition and examples	4	the first
General questions and discussion	Lectures	Efficiency, Exponential class of pdf's	Examples	4	the second
General	Lectures	Random intervals	Definition and examples	4	the third

questions and discussion					
General questions and discussion	Lectures	Confidence intervals for of two means	Definition and examples	4	the fourth
General questions and discussion	Lectures	Confidence intervals for difference of two means	Definition and examples	4	Fifth
General questions and discussion	Lectures	Confidence intervals for variances	Definition, and examples	4	VI
General questions and discussion	Lectures	Confidence intervals for the ratio of two variances	Definition, and examples	4	Seventh
Monthly exam	Lectures	Confidence intervals for the difference for proportions	Definition, properties and examples	4	VIII
General questions and discussion	Lectures	Confidence intervals for the difference of two proportions	Definition, and examples	4	Ninth
General questions and discussion	Lectures	Testing statistical hypotheses	General concepts	4	The tenth
General questions and discussion	Lectures	Best critical region	Definition, properties and examples	4	eleventh
General questions and discussion	Lectures	Nyman-Pearson theorem	Some of examples	4	twelveth
General questions and discussion	Lectures	Uniformly most powerful test	Definition, and examples	4	Thirteenth
General questions and discussion	Lectures	Likelihood ratio test	Definition, properties and examples	4	fourteenth
General questions and discussion	Lectures	The swquential probability ratio test	Some of examples	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc	
مصادر التعلم والتدريس ١٢ .	
Degroot, M.H., "Probability and Statistics" Third Ed., 2010, Addison Wesley Hogg, R. and Craig, A., "Introduction to Mathematical Statistics 2018, New York	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Mood, AM, et al, "Introduction to the theory of statistics" 2015, Tokyo.	المراجع الرئيسية (المصادر)

The most important books and special sources on mathematical statistics available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)
<ul style="list-style-type: none"> Discreet websites. Virtual library. Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

name	The decision	.١
	Nodal analysis (1)	
Code	The decision	.٢
	MA401	
the chapter / the year		.٣
	First semester/2023-2024	
Preparation date	This description	.٤
	10/1/2023	
5. shapes the audience	Available	
	My presence	
6.number hours Academic (total)/Number of units (total)		
	60/4	
7. Name of the course administrator(If more than one name is mentioned)		
	Name: Dr. Heba Fawzi Email: hiba.f@sc.uobaghdad.edu.iq Name: Dr. Qasim Abdel Hamid Email: kassim.jassim@sc.uobaghdad.edu.iq	
٨. اهداف المقرر		
Πρεπαρινγ γραδυατες σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το τη δεπελοπμεντ οφ τη χουντ ρυ• Μεετινγ τη νεεδσ οφ τη εδυχατιον σεχτορ ωιτη ηιγληψ θυαλιφιεδ χαδρεσ Ενχουραγινγ διστινγυισηεδ πεοπλε το ωορκ ιν τη δεπαρτμεντ•	اهداف المادة الدراسية	

Encouraging research programs and participating in scientific conferences and seminars Achieving quality and academic accreditation•	
٩. استراتيجيات التعليم والتعلم	
<ul style="list-style-type: none"> Managing the lecture in a way that indicates the importance of time Assigning the student some group assignments Websites and electronic classes 	الاستراتيجية

١٠. بنية المقرر

طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and discussion	Lectures	Complex number, complex plane		4	the first and the second
General questions and discussion	Lectures	Powers and roots		4	Third and fourth
General questions and discussion	Lectures	Functions, limits and continuity		4	Fifth and sixth
General questions and discussion	Lectures	Analytic and Harmonic functions, elementary functions		4	Seventh and eighth
General questions and discussion	Lectures	Mid-term		4	The ninth and tenth
General questions and discussion	Lectures	Cauchy riemann integral theorem		4	Eleventh and twelfth
General questions and discussion	Lectures	Cauchy integral formulas and its consequences sequences		4	thirteenth and fourteenth
General questions and discussion	Lectures	Maximum and minimum modulus theorem		4	Fifteenth

١١. تقييم المقرر

distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc

١٢. مصادر التعلم والتدريس

Complex analysis by Alfors L.V 2018	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Complex variable and applications by James's ward Brown2018	المراجع الرئيسية (المصادر)
The most important books and special sources on mathematical statistics available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير)

<ul style="list-style-type: none"> • Discreet websites. • Virtual library. • Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت
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modelCourse description

nameThe decision	.١
Nodal analysis (2)	
CodeThe decision	.٢
MA406	
the chapter / the year	.٣
Second semester/2023-2024	
Preparation dateThis description	.٤
10/1/2023	
5. shapes the audience Available	
My presence	
6.number hours Academic (total)/Number of units (total)	

7. Name of the course administrator(If more than one name is mentioned)

Name: Dr. Abdul Rahman Hamid Email: abdulrahman.majeed@sc.uobaghdad.edu.iqName: Dr. Qasim Abdel Hamid Email: kassim.jassim@sc.uobaghdad.edu.iq

٨. اهداف المقرر

Πρεπαρινγ γραδουατες σπεχιαλιζεδ ιν μαθηματιχ
σ το χοντριβυτε το τη δεπελοπμεντ οφ τη χουντ
ρψ•

Μεετινγ τη νεεδσ οφ τη εδυχατιον σεχτορ ωιτη
ηιηλψ θυαλιφιεδ χαδρεσ

Ενχουραγιγγ διστινγυισηεδ πεοπλε το ωορκ ιν τηε
δεπαρτμεντ•

Encouraging research programs and participating
in scientific conferences and seminars

Achieving quality and academic accreditation•

اهداف المادة الدراسية

٩. استراتيجيات التعليم والتعلم

- Managing the lecture in a way that indicates the importance of time
- Assigning the student some group assignments
- Websites and electronic classes

الاستراتيجية

١٠. بنية المقرر

طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and discussion	Lectures	Introduction. Real and complex numbers		4	the first
General questions and discussion	Lectures	Complex plane		4	the second
General questions and discussion	Lectures	Roots from a complex number		4	the third
General questions and discussion	Lectures	Functions of a complex variable		4	the fourth
General questions and discussion	Lectures	Continuous Functions		4	Fifth
General questions and discussion	Lectures	Derivatives Analytic functions		4	VI
General questions and discussion	Lectures	Analytic functions		4	Seventh
Monthly exam	Lectures	Cauchy-Riemann Equations		4	VIII

General questions and discussion	Lectures	Harmonic functions	4	Ninth
General questions and discussion	Lectures	Elementary Functions	4	The tenth
General questions and discussion	Lectures	Complex integration	4	eleventh
General questions and discussion	Lectures	Cauchy integral theorem	4	twelveth
General questions and discussion	Lectures	Cauchy integral formulas	4	Thirteenth
General questions and discussion	Lectures	Maximum modulus theorem	4	fourteenth
General questions and discussion	Lectures	Minimum modulus theorem	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc	
١٢ . مصادر التعلم والتدريس	
Functions of complex variable, John B. Conway2017	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Complex variable and applications by James's ward Brown	المراجع الرئيسية (المصادر)
The most important books and special sources on mathematical statistics available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)
<ul style="list-style-type: none"> Discreet websites. Virtual library. Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

name	The decision	.1
	Modeling	
Code	The decision	.2
	MA410	
the chapter / the year		.3
	Second semester/2023-2024	
Preparation date	This description	.4
	10/1/2023	
5. shapes the audience	Available	
	My presence	
6.number hours Academic (total)/Number of units (total)		
	60/3	
7. Name of the course administrator(If more than one name is mentioned)		
	Name: Dr. Raed Kamel Email: raid.naji@sc.uobaghdad.edu.iq Name: Dr. Hoda Abdel Sattar Email: huda.oun@sc.uobaghdad.edu.iq	
.8. اهداف المقرر		
	<p>Προετοιμασία γραδουατες σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το της δεπελοπμεντ οφ της χουντ ρημ•</p> <p>Μεετινγ της νεεδσ οφ της εδυχατιον σεχτορ ωιτη ητηηλψ θυαλιφιεδ χαδρες</p> <p>Ενχουραγινγ διστινγυισηεδ πεοπλε το ωορκ ιν της δεπαρτμεντ•</p>	<p>اهداف المادة الدراسية</p>

Encouraging research programs and participating in scientific conferences and seminars					
Achieving quality and academic accreditation•					
٩. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> Managing the lecture in a way that indicates the importance of time Assigning the student some group assignments Websites and electronic classes 					الاستراتيجية
١٠. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and discussion	Lectures	Basic concept of MM	Learn about mathematical modeling	4	the first
General questions and discussion	Lectures	Definition of the nth first difference and examples	The ability to understand and comprehend scientific vocabulary Through examples	4	the second
General questions and discussion	Lectures	Definition and examples of dynamical system model	Dynamic system model	4	the third
General questions and discussion	Lectures	The method of conjecture of solution dynamical system	Solution Dynamic system model	4	the fourth
General questions and discussion	Lectures	Definition examples and classify equilibrium point	Points of existence for the dynamical system model	4	Fifth
General questions and discussion	Lectures	The concept of system of difference equations and examples	The ability to understand the system of differential equations	4	VI
General questions and discussion	Lectures	Describe epidemic models and examples	Identify models Epidemiological	4	Seventh
Monthly exam	Lectures	The concept of models of DE and example	The ability to understand and comprehend vocabulary and examples	4	VIII
General questions and discussion	Lectures		Mid-term	4	Ninth
General questions and discussion	Lectures	Stable and unstable equilibrium	Knowing stability or instability	4	The tenth
General questions and discussion	Lectures	Definition and examples of linear system of DE	The ability to understand differential equations	4	eleventh
General questions and discussion	Lectures	Definition and examples of nonlinear system of DE	Definitions and examples of a nonlinear system	4	twelveth

General questions and discussion	Lectures	Describe the pre-predator model and stability	Knowing the models of prey and predator	4	Thirteenth
General questions and discussion	Lectures	Describe model of epidemiology example	Description of a disease-containing model	4	fourteenth
General questions and discussion	Lectures	Exam		4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc	
مصادر التعلم والتدريس ١٢ .	
The qualitative theory of ordinary differential equations by Fred Breuer 2018	الكتب المقررة المطلوبة (المنهجية أن وجدت)
A first course in mathematical modeling, 2014	المراجع الرئيسية (المصادر)
The most important books and special sources on mathematical statistics available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)
<ul style="list-style-type: none"> Discreet websites. Virtual library. Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

nameThe decision	.١
Communication mechanics	
CodeThe decision	.٢
MA409	
the chapter / the year	.٣
Second semester/2023-2024	

Preparation date This description		. ٤			
10/1/2023					
5. shapes the audience Available					
My presence					
6.number hours Academic (total)/Number of units (total)					
60/2					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Dr. Meet Zaki Email: liqaa.hummady@sc.uobaghdad.edu.iq Name Dr. Sondos Badr email: sundos.b@sc.uobaghdad.edu.iq					
.٨ اهداف المقرر					
<p>Πρεπαρινγ γραδουατες σπεχιαλιζεδ ιν ματηματιχ σ το χοντριβυτε το της δεπελοπμεντ οφ της χουντ ρη• Μεετινγ της νεεδσ οφ της εδυχατιον σεχτορ ωιτη ητηγλψ θυαλιφιεδ χαδρες Ενχουραγινγ διστινγυσισηεδ πεοπλε το ωορκ ιν της δεπαρτμεντ• Encouraging research programs and participating in scientific conferences and seminars Achieving quality and academic accreditation•</p>		<p>اهداف المادة الدراسية</p>			
.٩ استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> Managing the lecture in a way that indicates the importance of time Assigning the student some group assignments Websites and electronic classes 				الاستراتيجية	
.١٠ بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الاسبوع
General questions and discussion	Lectures		Introduction	4	the first
General questions and discussion	Lectures		Tensors, Summation Convention, Dummy Indices, Free Indices	4	the second
General questions and discussion	Lectures		Tensor a Linear transformation, Components of a Tensor	4	the third
General questions and discussion	Lectures		Dyadic Product of Vectors Orthogonal Tensors	4	the fourth
General questions and	Lectures		Transformation Matrix Between Two Rectangular Cartesian Coordinate Systems	4	Fifth

discussion				
General questions and discussion	Lectures	Symmetric And Antisymmetric Tensors	4	VI
General questions and discussion	Lectures	Defining Tensor by Transformation Laws	4	Seventh
Monthly exam	Lectures	Tensor-Valued Functions of a Scalar	4	VIII
General questions and discussion	Lectures	Vector Field and Gradient of a Vector Function	4	Ninth
General questions and discussion	Lectures	Curl Of A Vector Field	4	The tenth
General questions and discussion	Lectures	Kinematics Of a Continuum	4	eleventh
General questions and discussion	Lectures	Material Derivative Kinematic Equation for Rigid Body Motion Geometrical Meaning of The Components of The Infinitesimal Strain Tensor	4	twelveth
General questions and discussion	Lectures	Principal Strain, The Rate of Deformation Tensor, The Spin Tensor and The Angular Velocity Vector	4	Thirteenth
General questions and discussion	Lectures	Equation Of Conservation of Mass	4	fourteenth
General questions and discussion	Lectures	Stress, Boundary Condition For The Stress Tensor	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorial And reports etc	
مصادر التعلم والتدريس ١٢ .	
	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Introduction continuum Mechanics Fourth Edition, (W. Michael Lai, David Rubin, Erhard Krempf) January 2017	المراجع الرئيسية (المصادر)
The most important books and special sources on mathematical statistics available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)
<ul style="list-style-type: none"> Discreet websites. Virtual library. Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

nameThe decision	. 1
Topology (1)	
CodeThe decision	. 2
MA404	
the chapter / the year	. 3
First semester/2023-2024	
Preparation dateThis description	. 4
10/1/2023	
5. shapes the audience Available	
My presence	
6.number hours Academic (total)/Number of units (total)	
60/3	
7. Name of the course administrator(If more than one name is mentioned)	
Name: Dr. Afraa is satisfiedEmail: afraa.sadek@sc.uobaghdad.edu.iq	
Name: Dr. Iman Hassan Email: eiman.abood@sc.uobaghdad.edu.iq	
. 8. اهداف المقرر	
<p>Πρεπαρινγ γραδυατεσ σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το της δεπελοπμεντ οφ της χουντ ρημ•</p> <p>Μεετινγ της νεεδσ οφ της εδυχατιον σεχτορ ωιτη ητηηλψ θυαλιφιεδ χαδρεσ</p> <p>Ενχουραγινγ διστινγυισηεδ πεοπλε το ωορκ ιν της δεπαρτμεντ•</p>	<p>اهداف المادة الدراسية</p>

Encouraging research programs and participating in scientific conferences and seminars Achieving quality and academic accreditation•	
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٩. استراتيجيات التعليم والتعلم

- Managing the lecture in a way that indicates the importance of time
- Assigning the student some group assignments
- Websites and electronic classes

الاستراتيجية

١٠. بنية المقرر

طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and discussion	Lectures	Set theory, equivalence relations, metric space, examples, theorem		4	the first and the second
General questions and discussion	Lectures	Topological space[definitions,examples,theorems]		4	Third and fourth
General questions and discussion	Lectures	Cofinit topological, closed set, examples		4	Fifth and sixth
General questions and discussion	Lectures	Continuous functions, homomorphism, open map		4	Seventh and eighth
General questions and discussion	Lectures	Interior, limit and boundary points,dence set		4	The ninth and tenth
General questions and discussion	Lectures	Subspace topology,Euclidean top. connected space,definitionsexamples		4	Eleventh and twelfth
General questions and discussion	Lectures	Topological property theorems, pathwise connected space		4	thirteenth and fourteenth
General questions and discussion	Lectures	Exam			Fifteenth

١١. تقييم المقرر

distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc

١٢. مصادر التعلم والتدريس

Introduction to topology Bert M., 2012	الكتب المقررة المطلوبة (المنهجية أن وجدت)
General topology by Stephen W. 2011	المراجع الرئيسية (المصادر)
The most important books and special sources on mathematical statistics available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)

<ul style="list-style-type: none"> • Discreet websites. • Virtual library. • Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت
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modelCourse description

name	The decision	.١
	Taboulji (2)	
Code	The decision	.٢
	MA407	
the chapter / the year		.٣
	Second semester/2023-2024	
Preparation date	This description	.٤
	10/1/2023	
5. shapes the audience	Available	
	My presence	
6.number hours	Academic (total)/Number of units (total)	

7. Name of the course administrator(If more than one name is mentioned)

Name: Dr. Muhammad Ghazi Email:

Name: Dr. Afraa Radi Email: afraa.sadek@sc.uobaghdad.edu.iq

٨. اهداف المقرر

Πρεπαρινγ γραδουατες σπεχιαλιζεδ ιν μαθηματιχ
σ το χοντριβυτε το τη δεπελοπμεντ οφ τη χουντ
ρψ•

Μεετινγ τη νεεδσ οφ τη εδυχατιον σεχτορ ωιτη
ηιηηλψ θυαλιφιεδ χαδρεσ

Ενχουραγινγ διστινγυισηεδ πεοπλε το ωορκ ιν τηε
δεπαρτμεντ•

Encouraging research programs and participating
in scientific conferences and seminars

Achieving quality and academic accreditation•

اهداف المادة الدراسية

٩. استراتيجيات التعليم والتعلم

- Managing the lecture in a way that indicates the importance of time
- Assigning the student some group assignments
- Websites and electronic classes

الاستراتيجية

١٠. بنية المقرر

طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and discussion	Lectures	Applications on connected spaces		4	the first
General questions and discussion	Lectures	2-Applications on connected spaces		4	the second
General questions and discussion	Lectures	1-Path connected spaces		4	the third
General questions and discussion	Lectures	2-Path connected spaces		4	the fourth
General questions and discussion	Lectures	Separation axioms		4	Fifth
General questions and discussion	Lectures	Convergent		4	VI
General questions and discussion	Lectures	1-Compact spaces		4	Seventh
Monthly exam	Lectures	2-Compact spaces		4	VIII

General questions and discussion	Lectures	Compactness with separation axioms	4	Ninth
General questions and discussion	Lectures	1-Fixed point property	4	The tenth
General questions and discussion	Lectures	2-Fixed point property	4	eleventh
General questions and discussion	Lectures	Algebraic topology	4	twelveth
General questions and discussion	Lectures	homotopy equivalent	4	Thirteenth
General questions and discussion	Lectures	Homotopy group	4	fourteenth
General questions and discussion	Lectures	Simply connected and contractible spaces	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc	
مصادر التعلم والتدريس ١٢ .	
Introduction to topology Bert M., 2012	الكتب المقررة المطلوبة (المنهجية أن وجدت)
General topology by Stephen W. 2011	المراجع الرئيسية (المصادر)
The most important books and special sources on computer group theory available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير)
<ul style="list-style-type: none"> Discreet websites. Virtual library. Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

name	The decision	. 1
	Functional analysis2	
Code	The decision	. 2
	MA408	
the chapter / the year		. 3
	Second semester/2023-2024	
Preparation date	This description	. 4
	10/1/2023	
5. shapes the audience	Available	
	My presence	
6.number hours Academic (total)/Number of units (total)		
	60/3	
7. Name of the course administrator(If more than one name is mentioned)		
	Name: Dr. Iman HassanEmail: eiman.abood@sc.uobaghdad.edu.iq	
. 8. اهداف المقرر		
<p>Πρεπαρινγ γραδυατεσ σπεχιαλιζεδ ιν μωιηεματιχ σ το χοντριβυτε το τη δεπελοπμεντ οφ τη χουντ ρμ•</p> <p>Μεετινγ τη νεεδσ οφ τη εδυχατιον σέχτορ ωιτη ηηηλψ θυαλιφιεδ χαδρεσ</p> <p>Ενχουραγινγ διστινγυισηεδ πεοπλε το ωορκ ιν τη δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p>	<p>اهداف المادة الدراسية</p>	

Achieving quality and academic accreditation•					
٩. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> Managing the lecture in a way that indicates the importance of time Assigning the student some group assignments Websites and electronic classes 					الاستراتيجية
١٠. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and discussion	Lectures	Vector spaces with some spaces.		4	the first
General questions and discussion	Lectures	Normal spaces with some spaces.		4	the second
General questions and discussion	Lectures	Equivalent norms.		4	the third
General questions and discussion	Lectures	The connection between normed spaces and metric spaces.		4	the fourth
General questions and discussion	Lectures	The convergence sequence and Cauchy sequence in normed spaces.		4	Fifth
General questions and discussion	Lectures	Banach spaces with some spaces.		4	VI
General questions and discussion	Lectures	The connection between normed spaces and Banach spaces.		4	Seventh
Monthly exam	Lectures	The bounded linear transformation on normed spaces.		4	VIII
General questions and discussion	Lectures	The quotient spaces. The space of bounded linear transformation on normed spaces.		4	Ninth
General questions and discussion	Lectures	The isomorphic normalized spaces.		4	The tenth
General questions and discussion	Lectures	The inner product spaces with some spaces.		4	eleventh
General questions and discussion	Lectures	The connection between normed spaces and inner product spaces.		4	twelveth
General questions and discussion	Lectures	Hilbert spaces with some spaces. The connection between Hilbert spaces and Banach spaces		4	Thirteenth
General	Lectures	The orthonormal sequences in Hilbert spaces.		4	fourteenth

questions and discussion				
General questions and discussion	Lectures	The bounded linear operator and bounded linear functional on Hilbert spaces	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc	
مصادر التعلم والتدريس ١٢ .	
Introduction to functional analysis Erwin K. 2014	الكتب المقررة المطلوبة (المنهجية أن وجدت)
A course in functional analysis Join BC 2000	المراجع الرئيسية (المصادر)
The most important books and special sources on computer group theory available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير)
<ul style="list-style-type: none"> • Discreet websites. • Virtual library. • Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

nameThe decision	.١
Episodes (2)	
CodeThe decision	.٢

MA402					
the chapter / the year				. ٣	
First semester/2023-2024					
Preparation date This description				. ٤	
10/1/2023					
5. shapes the audience Available					
My presence					
6.number hours Academic (total)/Number of units (total)					
60/3					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Dr. Alaa Abbas Email: alaa.elewi@sc.uobaghdad.edu.iq Name: Dr. Rana Adnan Email: rana.a@sc.uobaghdad.edu.iq					
٨. اهداف المقرر					
<p>Πρεπαρινγ γραδουατες σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το της δεπελοπμεντ οφ της χουντ ρψ•</p> <p>Μεετινγ της νεεδσ οφ της εδυχατιον σεχτορ ωιτη ηιηηλψ θυαλιφιεδ χαδρες</p> <p>Ενχουραγινγ διστινγυισηεδ πεοπλε το ωορκ ιν της δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>		<p>اهداف المادة الدراسية</p>			
٩. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> Managing the lecture in a way that indicates the importance of time Assigning the student some group assignments Websites and electronic classes 				<p>الاستراتيجية</p>	
١٠. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and discussion	Lectures	Certain special ideals, the radicals of ideal		4	the first and the second
General questions and discussion	Lectures	The nil, the prime and the Jacobson radical of rings		4	Third and fourth
General questions and discussion	Lectures	The primary ideals and semi prime ideals theorems		4	Fifth and sixth

General questions and discussion	Lectures	The ring homomorphism	4	Seventh and eighth
General questions and discussion	Lectures	Mid-term	4	Ninth
General questions and discussion	Lectures	The divisibility theory, the prime and irreducible element	4	The tenth and eleventh
General questions and discussion	Lectures	The unique factorization domain, the Euclidean domain, the polynomial ring, the division algorithm theorem	4	Twelfth and thirteenth
General questions and discussion	Lectures	The remainder theorem, extensions of fields, kroneckers theorem and the Boolean rings	4	fourteenth
Monthly exam	Lectures	Exam	4	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc	
مصادر التعلم والتدريس ١٢ .	
Modules and rings, academic press, New York, 2017, I.Kaplansky	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Abstract algebra, WNCBrown publisher, 1988 by D. M. Burton	المراجع الرئيسية (المصادر)
The most important books and special sources on computer group theory available in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير)
<ul style="list-style-type: none"> Discreet websites. Virtual library. Library locations in some international universities. 	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

name	The decision	. 1
	Encryption	
Code	The decision	. 2
	MA405	
the chapter / the year		. 3
	First semester/2023-2024	
Preparation date	This description	. 4
	10/1/2023	
5. shapes the audience	Available	
	My presence	
6.number hours Academic (total)/Number of units (total)		
	3/45	
7. Name of the course administrator(If more than one name is mentioned)		
	Name: Dr. Saad Mohammad Email: saad.m@sc.uobaghdad.edu.iq Name: Dr. Muhammad Alaa Email: mohammed.alaa@sc.uobaghdad.edu.iq	
. 8. اهداف المقرر		
<p>Πρεπαρινγ γραδυατες σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το της δεπελοπμεντ οφ της χουντ ρυσ•</p> <p>Μεετινγ της νεεδσ οφ της εδυχατιον σεχτορ ωιτη ηιγηλψ θυαλιφιεδ χαδρες</p> <p>Ενχουραινγ διστινγυισηεδ πεοπλε το ωορκ ιν της δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	<p>اهداف المادة الدراسية</p>	
. 9. استراتيجيات التعليم والتعلم		

<ul style="list-style-type: none"> Managing the lecture in a way that indicates the importance of time Assigning the student some group assignments Websites and electronic classes 	الاستراتيجية
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١٠. بنية المقرر

طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الأسبوع
General questions and discussion	Lectures		What is cryptography	3	the first
General questions and discussion	Lectures		Conventional system, transposition cipher	3	the second
General questions and discussion	Lectures		Substitution cipher, monoalphabetic	3	the third
General questions and discussion	Lectures		Homophonic (Beal-higher order)	3	the fourth
General questions and discussion	Lectures		Polygraphic one-time pads	3	Fifth
General questions and discussion	Lectures		Classification of cryptanalytic attacks	3	VI
General questions and discussion	Lectures		Cryptanalysis of transposition	3	Seventh
Annie's test	Lectures		the first exam	3	VIII
General questions and discussion	Lectures		Diffusion and condition	3	Ninth
Monthly exam	Lectures		Frequency test	3	The tenth
General questions and discussion	Lectures		One time pad, synchronous stream ciphers	3	eleventh
General questions and discussion	Lectures		Feedback shift registers	3	twelveth
General questions and discussion	Lectures		Exclusive-or-algorithm	3	Thirteenth
General questions and discussion	Lectures		Geff's algorithm	3	fourteenth
General questions and discussion	Lectures		final exam	3	Fifteenth

١١. تقييم المقرر

distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorialAnd reports etc	
مصادر التعلم والتدريس ١٢.	
H.Beker and F.Piper,Cipher systems. Northwoodboos, London, 1982	الكتب المقررة المطلوبة (المنهجية أن وجدت)
D.Welsh, Codes and Cryptography. Clarendon press, Oxford, 1988 DRStinson, Cryptography-theory and practice. CRC Press, Boca Raton 1995	المراجع الرئيسية (المصادر)
Douglas Stinson, cryptography: theory and practice, second edition, CRC/C&H, 2002	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)
• Discreet websites.	المراجع الإلكترونية ، مواقع الانترنت

modelCourse description

nameThe decision	.١
Theory of differential equations	
CodeThe decision	.٢
MA403	

the chapter / the year	. ٣				
First semester/2023-2024					
Preparation date	This description . ٤				
10/1/2023					
5. shapes the audience	Available				
My presence					
6.number hours Academic (total)/Number of units (total)					
4/60					
7. Name of the course administrator(If more than one name is mentioned)					
Name: Dr. Raed Kamel Email: raid.naji@sc.uobaghdad.edu.iq Name: Dr. Hoda Abdel Sattar Email: huda.oun@sc.uobaghdad.edu.iq					
٨. اهداف المقرر					
<p>Πρεπαρινγ γραδυατες σπεχιαλιζεδ ιν μαθηματιχ σ το χοντριβυτε το της δεπελοπμεντ οφ της χουντ ρυ•</p> <p>Μεετινγ της νεεδσ οφ της εδυχατιον σεχτορ ωιτη ηιγηλψ θυαλιφιεδ χαδρες</p> <p>Ενχουραγινγ διστινγυισηεδ πεοπλε το ωορκ ιν της δεπαρτμεντ•</p> <p>Encouraging research programs and participating in scientific conferences and seminars</p> <p>Achieving quality and academic accreditation•</p>	اهداف المادة الدراسية				
٩. استراتيجيات التعليم والتعلم					
<ul style="list-style-type: none"> Managing the lecture in a way that indicates the importance of time Assigning the student some group assignments Websites and electronic classes 	الاستراتيجية				
١٠. بنية المقرر					
طريقة التقييم	طريقة التعلم	اسم الوحدة او الموضوع	مخرجات التعلم المطلوبة	الساعات	الاسبوع
General questions and discussion	Lectures	The concept of linear ordinary differential equations system		3	the first
General questions and discussion	Lectures	Definitions and theorems of the fundamental matrix of solution		3	the second
General questions and discussion	Lectures	Properties and example of exponential matrix		3	the third
General questions and	Lectures	Properties of solution with eigenvalue and eigenvectors with theorm		3	the fourth

discussion				
General questions and discussion	Lectures	The method of solution of the system	3	Fifth
General questions and discussion	Lectures	Definition and theorem of two linear differential equation	3	VI
General questions and discussion	Lectures	The concept second order differential equation system	3	Seventh
Annie's test	Lectures	Classify planer's system trace and determine plane	3	VIII
General questions and discussion	Lectures	Mid-term	3	Ninth
Monthly exam	Lectures	The property of stability for nonlinear differential equation system and theorems	3	The tenth
General questions and discussion	Lectures	The concept of limit cycle	3	eleventh
General questions and discussion	Lectures	Theorem Poincaré Bendixon and examples	3	twelveth
General questions and discussion	Lectures	Lyapunov theorems for stability	3	Thirteenth
General questions and discussion	Lectures	Picard's theorem of the first differential equation and example	3	fourteenth
General questions and discussion	Lectures	Theorem's of existence and unique of the system and examples	3	Fifteenth

تقييم المقرر ١١ .	
distribution Class from 011 on according to mission Assigned With it requester like Preparation Daily And exams Daily And oral And monthly And editorial And reports etc	
مصادر التعلم والتدريس ١٢ .	
The theory of differential equations, Allan C, Peterson, Walter Kelley 2017	الكتب المقررة المطلوبة (المنهجية أن وجدت)
Ordinary differential equation, SMFig, New York, Amsterdam 2016. W. A. Benjamin, Inc.	المراجع الرئيسية (المصادر)
The most important books and special sources on the foundations of mathematics are in the central library, the science library, and the department.	الكتب والمراجع الساندة التي يوصى بها (المجلات العلمية، التقارير....)
• Discreet websites.	المراجع الإلكترونية ، مواقع الانترنت

