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

University of Anbar Educational collage for Pure Sciences Mathematical Department

2024

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:

<u>Academic Program Description:</u> 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.

<u>Course Description</u>: 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.

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

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

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

<u>Curriculum Structure:</u> 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.

<u>Learning Outcomes</u>: 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.

<u>Teaching and learning strategies:</u> 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



Academic Program Description Form

University Name: University Of Anbar Faculty/Institute: College of Education for Pure Sciences Scientific Department: Mathematical Department Academic or Professional Program Name: Mathematical Education Final Certificate Name: Bachelor's degree in Mathematical Education Academic System: Semester Description Preparation Date: 1/3/2024 File Completion Date: 1/3/2024

Signature Head of Department Name: Dr. Mohammed Yousif Turki Date: 1/5/2024

Signature:

Scientific Associate Name: Dr. Harith Kamil Buniya

Date: 1.3.2024

The file is checked by: Department of Quality Assurance and University Performance Director of the Quality Assurance and Oniversity Performance Department: Dr. Feras Shaker Mahmood Date: 1/3/2024

Signature:

Approval of the Dean Prof.Dr. Abdul Rahman Salman Juma

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This academic program description provides a necessary summary of the most important characteristics of the program and the learning outcomes that the student is expected to achieve, demonstrating whether he has made the most of the available opportunities. It is accompanied by a description of each course within the program.

1. Program Vision

A scientific and educational department that seeks leadership in university education and scientific research locally and globally in a way that contributes to serving society and achieving sustainable development and global reliability.

2. Program Mission

Providing a pioneering program to prepare qualified educational and scientific cadres to create an educational environment based on a clear vision that supports teaching skills using modern technologies and in cooperation with the local community.

3. Program Objectives

1. Achieving the specified standards for the quality of material, human, technical and financial resources.

2. Providing competent administrative staff who know their duties and powers in accordance with work structures and regulations and fulfill the requirements of the job description.

3. Providing specialized teaching staff who are proficient in using modern technologies and methods in education with good job satisfaction.

4. Preparing academic programs in accordance with international academic standards and providing their knowledge, training and technical requirements.

5. Preparing students with cognitive, practical and educational skills that meet the needs of the labor market.

6. Paying attention to scientific research from the perspective of the researcher and the researcher in order to achieve a distinguished research reputation locally and internationally.

7. Research and professional openness to community institutions in a way that meets their needs and aspirations.

8. Evaluating all individuals and processes to ensure quality performance and continuous improvement.

4. Program Accreditation

Procedures have been initiated to obtain accreditation according to the national standards for accrediting the programs of the educational group colleges in 2024.

5. Other external influences

The start of the school year for first-year students was delayed

6. Program Structure									
Program Structure	Number of Courses	Credit hours	Percentage	Reviews*					
Institution Requirements	8	16	%11						
College Requirements	11	22	%17						
Department Requirements	36	110	%72						
Summer Training									
Other									

* This can include notes whether the course is basic or optional.

Requirements of the institution (university) Number of accredited units (16)

Introduction	Weekly hours			Course	Year: 2023-2024 the level	
Introduction	Practi	theory	Unit	Course the	code	
Essential according to the Ministry's letter 7937 dated 10/26/2023	-	2	2	English language 1	UOA101	The first stage
UOA101	-	2	2	English language2	UOA201	The second phase
Essential according to the Ministry's letter 7937 dated 10/26/2023	-	2	2	Arabic	UOA102	The first stage
UOA102	-	2	2	Freedom and democracy	UOA202	The first stage
Essential according to the Ministry's letter 7937 dated 10/26/2023	2	1	2	Calculators 1	UOA103	The first stage
UOA103	2	1	2	Calculators 2	UOA203	The second phase
Essential according to the Ministry's letter 7588 dated 10/19/2023	-	2	2	human rights	UOA104	The first stage

Essential according to the Ministry's letter 7588 dated 10/19/2023	-	2	2	The crimes of the Baath regime in Iraq	UOA105	The second phase
	4	14	16		-	Others

College requirements: 22 credit units

Introduction	Weekly hours		ours	Course title	Course code
introduction	Practi	theory	Unit	Course une	Course coue
	-	2	2	Educational psychology	EPS101
	-	2	2	Foundations of education	EPS102
	-	2	2	Childhood psychology	EPS202
	-	2	2	Educational administration	EPS201
	-	2	2	Scientific research method	EPS211
	-	2	2	Curricula and teaching methods	EPS311
	-	2	2	Counseling and mental health	EPS312
	-	2	2	Measurement and evaluation	EPS411
	-	2	2	Teaching applications	EPS412
	4		2	School applications	EPS413
	-	2	2	Graduation Project	EPS414
	4	20	22	the total	′

متطلبات القسم 110 وحدة معتمدة

	Weekly hours		urs		
Introduction	Proctico	theory	Credit	Course title	Course code
	Tractice	theory	units		
	2	3	4	Calculus 1	MAT105
	2	2	3	Mathematics foundations 1	MAT106
	2	2	3	Linear algebra 1	MAT107
	2	1	2	Phsisc 1	PHY105
MAT105	2	3	4	Calculus 2	MAT113
MAT106	2	2	3	Mathematics foundations 2	MAT114
MAT107	2	2	3	Linear algebra 2	MAT115
PHY105	2	1	2	Phsisc 2	PHY115
MAT105	2	3	4	Advanced calculus 1	MAT201
MAT105	2	2	3	Ordinary differential equations 1	MAT202
	2	2	3	Group algebra 1	MAT203
	2	2	3	Geometry 1	MAT204
MAT104	2	1	2	Advanced computers 1	MAT205
MAT105	2	3	4	Advanced calculus 2	MAT206
MAT202	2	2	3	Ordinary differential equations 2	MAT207
	2	2	3	Group algebra 2	MAT208
	2	2	3	Geometry 2	MAT209
	2	2	2	Advanced computers 2	MAT210
	2	2	3	Mathematical analysis 1	MAT301
MAT202	2	2	3	Partial differential equations 1	MAT302
MAT203	2	2	3	Algebra of rings 1	MAT303
	2	2	3	Probability 1	MAT304
	2	2	3	Numerical analysis 1	MAT305
MAT105	2	2	3	Mathematical analysis 2	MAT306
MAT302	2	2	3	Partial differential equations 2	MAT307
MAT303	2	2	3	Algebra of rings 2	MAT308
MAT304	2	2	3	Possibility 2	MAT309
	2	2	3	Numerical analysis 2	MAT310
	2	2	3	Complex analysis 1	MAT401
	2	2	3	Topology 1	MAT402
MAT309	2	2	3	Mathematical statistics 1	MAT403
	2	2	3	Functional analysis 1	MAT404
	2	2	3	Module 1	MAT405
	2	2	3	Complex analysis 2	MAT406
	2	2	3	Topology 2	MAT407
MAT309	2	2	3	Mathematical statistics 2	MAT408

2	2	3	Functional analysis 2	MAT409
2	2	3	Module 2	MAT410
72	74	110	Title	

First Class

T (1).	We	ekly ho	urs		Course	
Introduction	Practice	theory	Credit units	Course title	code	
	2	3	4	Differentiation and integration 1	MAT105	
	2	2	3	Mathematics foundations 1	MAT106	
	2	2	3	Linear algebra 1	MAT107	
	2	1	2	Computers 1	UOA141	
	2	1	2	Physics 1	PHY105	
	2	3	4	Differentiation and integration 2	MAT113	
	2	2	3	Mathematics foundations 2	MAT114	
	2	2	3	Linear algebra 2	MAT115	
	2	1	2	Advanced computers 1	UOA142	
	2	1	2	Physics 2	PHY110	
	-	2	2	Educational psychology	EPS101	
	-	2	2	Foundations of education	EPS120	
	-	2	2	Arabic Language	UOA137	
	-	2	2	English language1	UOA140	
	-	1	1	human rights	UOA135	
	-	2	2	Freedom and democracy	UOA136	
	20	29	39	the total		

Second Class

Tratuc duration	Weekly hours				Course
Introduction	Practice	theory	Credit units	Course the	code
	2	2	3	Advanced differentiation 1	MAT201
	2	2	3	Ordinary differential equations 1	MAT202
	2	2	3	Group algebra 1	MAT203
	2	2	3	Geomatry 1	MAT204
	2	2	3	Computers 2	MAT205
	2	2	3	Advanced differentiation 2	MAT206
	2	2	3	Ordinary differential equations 2	MAT207
	2	2	3	Group algebra 2	MAT208
	2	2	3	Geomatry 2	MAT209
	2	2	3	Advanced computers 2	MAT210
		2	2	Scientific research method	EPS 211
		2	2	Childhood psychology	EPS 202
		2	2	Educational administration	EPS 201
		2	2	English language 2	UOA240
	20	28	38	the total	

Third Class

T (1 (1	W	eekly ho	ours		Course	
Introduction	Practice	Practice theory		Course title	code	
	2	2	3	Mathematical analysis 1	MAT301	
	2	2	3	Partial differential equations 1	MAT302	
	2	2	3	Algebra of rings 1	MAT303	
	2	2	3	Probability 1	MAT304	
	2	2	3	Numerical analysis 1	MAT305	
	2	2	3	Mathematical analysis 2	MAT306	
	2	2	3	Partial differential equations 2	MAT307	
	2	2	3	Algebra of rings 2	MAT308	
	2	2	3	Probability 2	MAT309	

2 2	2 2 2	3 3 2	Numerical analysis 2 Curricula and teaching methods Counseling and mental health English language 3	MAT310 EPS 311 EPS 312
	2	2	English language 3	UOA340
22	26	37	the total	

Fourth Class

T / T /•	W	eekly ho	ours		Course
Introduction	Practice	theory	Credit units	Course title	code
	2	2	3	Complex analysis 1	MAT401
	2	2	3	Topology 1	MAT402
	2	2	3	Mathematical statistics 1	MAT403
	2	2	3	Functional analysis 1	MAT404
	2	2	3	Module 1	MAT405
	2	2	3	Complex analysis 2	MAT406
	2	2	3	Topology 2	MAT407
	2	2	3	Mathematical statistics 2	MAT408
	2	2	3	Functional analysis 2	MAT409
	2	2	3	Module 2	MAT410
		2	2	Measurement and evaluation	EPS411
		2	2	Teaching applications	EPS412
	4		2	School applications	EPS413
		2	2	Graduation Project	EPS414
		2	2	English language 4	UOA440
	24	28	40	the total	

7. Teaching and Learning Strategies

1. The method of listening and thinking deeply in order to understand the problem in order to solve it.

2. The method of scientific discussion and purposeful dialogue.

3. Adopting the method of monthly and final examinations and submitting weekly reports.

- 8. Evaluation methods
- 1. Treatment method using final grades.
- 2. Random and surprise tests.
- **3.** Educational tasks in virtual classrooms.

9.	Facu	ilty
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Faculty Members								
Academic Rank	Specializat	tion	Special Requirements/Skil Is (if applicable)	Number of the teaching staff				
	General	Special		Staff	Lecturer			
professor	Math	Complex Analysis		\checkmark				
professor	Math	Mathematical Statistics		\checkmark				
Assistant Professor	Math	Mathematical Statistics		V				
Assistant Professor	Math	General Topology		V				
Assistant Professor	Math	Numerical Analysis		\checkmark				
Assistant Professor	Math	Differential Equations						
Assistant Professor	Math	Approximation Theory						
Assistant Professor	Math	Module		V				
Assistant Professor	Math	General Topology		V				
Lecturer	Math	Computer Sciences		\checkmark				

Lecturer	Math	Computer Sciences		
Lecturer	Math	Topology		
Lecturer	Math	Module		
Lecturer	Math	Partial Equation		
Lecturer	Math	Partial Equation		
assistant teacher	Math	Mathematics		
Lecturer	Math	Pure sciences		
assistant Lecturer	Math	Pure sciences		
assistant Lecturer	Math	Pure sciences		
assistant Lecturer	Math	Pure sciences		
assistant Lecturer	Math	Pure sciences		
assistant Lecturer	Math	Pure sciences		
assistant Lecturer	Math	Pure sciences		
assistant Lecturer	Math	Pure sciences		
assistant Lecturer	Math	Pure sciences		
assistant Lecturer	Math	Pure sciences		
assistant Lecturer	Math	Pure sciences		
assistant Lecturer	Math	Pure sciences		
assistant Lecturer	Math	Pure sciences		
assistant Lecturer	Math	Pure sciences		
assistant Lecturer	Math	Pure sciences		
assistant Lecturer	Math	Pure sciences		
assistant Lecturer	Math	Pure sciences		

Professional Development

Mentoring new faculty members

Orienting new faculty members

Professional development of faculty members

1. That the student benefits from learning and embodying this in his personal and professional development.

2. That the student can employ the knowledge he receives during the study stage.

3. That the student benefits from theoretical knowledge in employing the teaching profession and mastering it in a manner based on the basic concepts in teaching life sciences.4. Skills of modern technologies in communications, documentation and communication.

10.Acceptance Criterion

1. Acceptance according to the general and central average system.

2. Admission to departments according to the student's desire and modified.

3. The condition must be for graduates of preparatory studies and the scientific stream exclusively."

4. The accepted student's personal and mental safety and freedom from physical disabilities

11. The most important sources of information about the program

1. Methodological books approved by the sectoral committee for colleges of education for pure sciences.

2. Helping books.

3. Books and archaeological sources / sources in English.

4. Additional sources from the Internet.

5. Training courses held by the university on e-learning platforms.

12.Program Development Plan

1. Using modern scientific sources.

2. Using high-speed communication networks to transfer information, such as the Internet.

3. Visits and practical practices in service laboratories.

4. Acquiring modern scientific expertise and skills in the field of modern technical communication

Program Skills Outline															
						Red	quire	d pro	gram	Lear	ningo	outco	mes		
Year/Level	Course Code	Course Name	Basic or		Know	ledge	•	Skills				Ethics			
			optional	A1	A2	A3	A4	B1	B2	B 3	B4	C1	C2	C 3	C4
	MAT105	Differentiation and integration 1	Basic	\checkmark	\checkmark	\checkmark						\checkmark	\checkmark		
	MAT106	Mathematics foundations 1	Basic					\checkmark							
	MAT107	Linear algebra 1	my choice			\checkmark			\checkmark				\checkmark		
	UOA141	Calculators 1	Basic											\checkmark	
	PHY105	Physics 1	my choice												
	MAT113	Differentiation and integration 2	Basic											\checkmark	
First	MAT114	Mathematics foundations 2	Basic												
	MAT115	Linear algebra 2	Basic												
	UOA142	Calculators 2	Basic	\checkmark											
	PHY110	Physics 2	my choice		\checkmark				\checkmark						
	EDU101	Educational psychology	Basic		\checkmark						\checkmark			\checkmark	
	EDU120	Foundations of education	Basic		\checkmark		\checkmark								
	UOA135	Arabic Language	Basic				\checkmark			\checkmark				\checkmark	
	UOA140	English language	Basic				\checkmark			\checkmark				\checkmark	
	MAT201	Advanced differentiation 1	Basic	\checkmark	\checkmark			\checkmark							
	MAT202	Ordinary differential equations 1	Basic					\checkmark				\checkmark	\checkmark		
	MAT203	Group algebra 1	Basic					\checkmark							
	MAT204	Engineering 1	Basic						,						
	MAT205	Advanced computers 1	my choice							,					
Second	MAT206	Advanced differentiation 2	Basic		,					\checkmark		\checkmark			
Second	MAT207	Ordinary differential equations 2	Basic	,							\checkmark	,			
	MAT208	Group algebra 2	Basic			N							N		
	MAT209	Engineering 2	Basic		V	N			<u> </u>			N	N		
	MAT210	Advanced computers 2	my choice										N		
	EDU 211	Scientific research method	Basic	N	N	N		N	,			N	N		
	EDU 202	Childhood psychology	my choice	\checkmark	\checkmark	N	L ,	\checkmark	V	ļ ,			٧		
	EDU 201	Educational administration	Basic				\checkmark			\checkmark		\checkmark			\checkmark

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	MAT301	Mathematical analysis 1	Basic										\checkmark		
-	MAT302	Partial differential equations 1	Basic	\checkmark	\checkmark	\checkmark		\checkmark	\checkmark			\checkmark	\checkmark		
	MAT303	Algebra of rings 1	Basic			\checkmark							\checkmark		
	MAT304	Probability 1	Basic			\checkmark							\checkmark		
	MAT305	Numerical analysis 1	Basic			\checkmark							\checkmark		
Third	MAT306	Mathematical analysis 2	Basic			\checkmark							\checkmark		
Third	MAT307	Partial differential equations 2	Basic				\checkmark			\checkmark	\checkmark			\checkmark	\checkmark
	MAT308	Algebra of rings 2	Basic			\checkmark							\checkmark		
	MAT309	Possibility 2	Basic										\checkmark		
	MAT310	Numerical analysis 2	Basic												
	EDU 311	Curricula and teaching methods	Basic										\checkmark		
	EDU 312	Counseling and mental health	Basic										\checkmark		
	UOA140	English	Basic												\checkmark
	MAT401	Complex analysis 1	Basic										\checkmark		
	MAT402	Topology 1	Basic												
	MAT403	Mathematical statistics 1	Basic										\checkmark		
	MAT404	Functional analysis 1	Basic												
	MAT405	Module 1	Basic										\checkmark		
	MAT406	Complex analysis 2	Basic												
	MAT407	Topology 2	Basic											\checkmark	\checkmark
Fourth	MAT408	Mathematical statistics 2	Basic												\checkmark
Fourth	MAT409	Functional analysis 2	Basic												
	MAT410	Module 2	Basic												
	EPS411	Measurement and	Basic	\checkmark	\checkmark	\checkmark		\checkmark	\checkmark			\checkmark	\checkmark		
		evaluation													
	EPS412	Teaching applications	Basic												
	UOA140	English	Basic	\checkmark	\checkmark	\checkmark		\checkmark	\checkmark			\checkmark	\checkmark		
	EPS413	School applications	my choice		,		\checkmark			\checkmark					\checkmark
	EPS414	Graduation Project	Basic			\checkmark		\checkmark					\checkmark	\checkmark	

• Please tick the boxes corresponding to the individual program learning outcomes under evaluation.

1. Cours	se Name:							
	Probability Theory 1							
2. Cours	se Code:							
MAT305								
3. Semes	3. Semester / Year:							
	first semester/2023-2024							
4. Descr	iption Preparation Date:							
-	12/11/2023							
5. Availa	able Attendance Forms:							
	Daily, at the time specified in the schedule, and at full time							
6. Numb	per of Credit Hours (Total) / Number of Units (Total)							
	60 hr./ 3Unit							
7. Cours	se administrator's name (mention all, if more than one name)							
	Name: Dr. Feras Shaker Mahmood							
	Email: ferashaker2001@uoanbar.edu.ig							
8. Cours	se Objectives							
Course Object	tives This course aims to convey a general idea about:							
	1-The student must be able to teach and learn the subject of probability							
	2-The student should be familiar with the concept of a random variable							
	3- That the student understands the types of random variables							
	4- That the student understands the concepts of probability in the case of							
	two variables							
	5- That the student understands how to use probability theory in daily life							
9. Teachi	ng and Learning Strategies							
Strategy	Learning outcomes, teaching, learning and assessment methods							
	. A- Cognitive objectives							
	1- Extrapolation							
	2- Analysis							
	3- Conclusion							
	4-1 ne lecture 5 Empeyerment							
	S-Empowerment B - The skills objectives of the course							
	B - The skins objectives of the course. B1 - Developing the skill in knowing the distribution of random variables and							
	using them in the practical aspect							
	B2 - Developing the skill of how to calculate the distribution of a function in							
	terms of its random variables							
	B3 - Developing the skill of employing the properties of random distributions for							
	use in the practical aspect of life							
	C- Emotional and value goals							
	C1- Thinking that explores the truth through (question and answer)							
	C2- Managing societal problems by finding appropriate solutions to them							
	through academic concepts							
	C3- Spreading the spirit of interaction and attraction among students through							
	academic competition							

C4- Urging students to employ what they have learned in public life
D - Transferable general and qualifying skills (other skills related to employability and personal development).
D1-The skill of calculating number methods
D2- The skill of calculating the probability of certain events
D3- The skill of knowing the degree of correlation between variables
D4- The skill of self-development by giving him information that will benefit him in the academic future
D5- It enables the student to use what he has learned to develop himself

10. Course structure

	-				
Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
an in-person	Blackboar		Understand the	2 Theoretical	1
lecture, and	d and data	methods and concepts	lecture topic	+ 2 practical	
motivational	5110 W	of permutations and			
questions.		combinations,			
motivational	Blackboar		Understand the	2 Theoretical	2
questions	d and data	Basic concepts in	lecture topic	+ 2 practical	
	show	probability theory,	Ĩ	Ĩ	
mativational	Dlaalthaan	Conditional	Understand the	2 Theoretical	2
mouvational	Diackuoar	Conultional	Understand the	2 Theoretical	5
questions	d and data	probability. An in-	lecture topic	+ 2 practical	
	show	person lecture and			
		motivational			
		questions.			
motivational	Blackboar	its discrete and	Understand the	2 Theoretical	4
questions	d and data	continuous form is	lecture topic	+ 2 practical	
	show	a random variable			
motivational	Blackboar	Expectation and	Understand the	2 Theoretical	5
questions	d and data	variance.	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	The distributive	Understand the	2 Theoretical	6
questions	d and data	function.	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	A comprehensive	Understand the	2 Theoretical	7

questions	d and data	review	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	The expectation	Understand the	2 Theoretical	8
questions	d and data	and variance of	lecture topic	+ 2 practical	
	show	discrete variables		_	
motivational	Blackboar	understanding of	Understand the	2 Theoretical	9
questions	d and data	what has been	lecture topic	+ 2 practical	
	show	studied by taking			
		the lecture, grade			
motivational	Blackboar	continuous	Understand the	2 Theoretical	10
questions	d and data	variables:	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Expectation and	Understand the	2 Theoretical	11
questions	d and data	conditional	lecture topic	+ 2 practical	
	show	variance.			
motivational	Blackboar	The properties of	Understand the	2 Theoretical	12
questions	d and data	expectation,	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Solve the questions	Understand the	2 Theoretical	13
questions.	d and data	and assignments	lecture topic	+ 2 practical	
	show	that were given			
motivational	Blackboar	standing increases	Understand the	2 Theoretical	14
questions.	d and data	through enriching	lecture topic	+ 2 practical	
	show	examples and			
		questions			
motivational	Blackboar		Understand the	2 Theoretical	15
questions with	d and data		lecture topic	+ 2 practical	
the grade	show				
11.Course	Evaluation				L
Distributing t	he score out	of 100 according to th	e tasks assigned to	the student such a	as daily
12 Learn	iany orai, moi ing and Te	aching Resources	s, reports etc		
Required	textbooks	(curricu ·	، دار نشر جامعه الموصل	مير حنا، الاحصاء الرياضم)

books, if any)	العراق. 2- خاشع الراوي، مدخل الى علم الاحصاء ، دار نشر جامعة الموصل، العراق الكيمياء اللاعضوية العصرية دباسم السعدي
Main references (sources)	 3- Mathematical Statistics with Applications, Dennis D. Wackerly, William Mendenhall III and Richard L. Scheaffer, SEVENTH EDITION, 2008, USA. 4- Probability and statistics, Morris H. Degroot and Mark J. Schervish, Fourth Edition,2012.
Recommended books and	A first course in probability , Sheldon Ross, Ninth Editi
references (scientific journals, reports)	2014
Electronic References, Websites	https://www.uoanbar.edu.iq/staff-page.php?ID=1105

1. Course Na	1. Course Name:							
	Probability Theory 2							
2. Course Co	de:							
MAT309								
3. Semester / Year:								
	Second semester/2023-2024							
4. Descriptio	n Preparation Date:							
	1/2/2024							
5. Available	Attendance Forms:							
Daily, at the time specified in the schedule, and at full time								
6. Number of	f Credit Hours (Total) / Number of Units (Total)							
	60 hr./ 3Unit							
7. Course ad	ministrator's name (mention all, if more than one name)							
	Name: Dr. Feras Shaker Mahmood							
	Email: <u>ferashaker2001@uoanbar.edu.iq</u>							
8. Course Ob	ojectives							
Course Objectives	This course aims to convey a general idea about:							
	1-The student must be able to teach and learn the subject of probability							
	2-The student should be familiar with the concept of a random variable							
	3- That the student understands the types of random variables							
	4- That the student understands the concepts of probability in the case of							
	two variables							

	5- That the student understands how to use probability theory in daily life							
9. Teach	ing and Learı	ning Strategies						
Strategy	Learning of	utcomes, teaching, lear	ning and assessmen	nt methods				
	. A- Cogniti	ive objectives						
	1- Extrapol	ation						
	2- Analysis							
	3- Conclusi	on						
	4-The lectu	re						
	5-Empowerment							
	B - The skills objectives of the course.							
	B1 - Developing the skill in knowing the distribution of random variables and							
	using them in the practical aspect							
	B2 - Developing the skill of how to calculate the distribution of a function in							
	terms of its	random variables						
	B3 - Developing the skill of employing the properties of random distributions for							
	use in the practical aspect of life							
	C- Emotional and value goals							
	C1- Thinking that explores the truth through (question and answer)							
	C2- Manag	ing societal problems k	oy finding appropri	iate solutions to the	n			
	through aca	ademic concepts						
	C3- Spread	ing the spirit of intera	ction and attraction	among students th	rough			
	academic co	ompetition		1 • 1 1• 1•6				
	C4- Urging	students to employ wh	hat they have learned	ed in public life				
	D - Transfe	rable general and qua	lifying skills (other	skills related to				
	employabili	ity and personal develo	opment).					
	D1-1 ne skil	ll of calculating numbe	er methods	4-				
	D2- The ski	ill of calculating the pr	obability of certain	events				
	D3- The ski	III of knowing the degr	ee of correlation de	tween variables	f:4 h :			
	D4- The ski	iii of self-development	by giving him infor	mation that will be	herit nim			
	D5 It anal	emic iuture log the student to use v	what ha has loownad	to dovelon himself				
10 Course	structure	ies me student to use v	vnat ne nas learneu	to develop millsen				
10. Course	structure							
Evaluation	Teest	Name of	Required		XX / 1			
method	Teaching	unit/course or	learning	Hours	Week			
	method	subject	outcomes					
		~~~J••••						

an in-perso lecture, and motivationa questions.	n Blackboar d and data show	Uniform and Bernoulli Distributions	Understand the lecture topic	2 Theoretical + 2 practical	1
motivationa questions	l Blackboar d and data show	Binomail Distribution	Understand the lecture topic	2 Theoretical + 2 practical	2
motivationa	l Blackboar	hyperbolic geometric and	Understand the	2 Theoretical	3

questions	d and data	Negative binary	lecture topic	+ 2 practical	
	show	distributions			
motivational	Blackboar	Poisson distribution	Understand the	2 Theoretical	4
questions	d and data		lecture topic	+ 2 practical	
	show				
motivational	Blackboar	a comprehensive	Understand the	2 Theoretical	5
questions	d and data	review	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Continues Uniform	Understand the	2 Theoretical	6
questions	d and data	Distribution	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Normal	Understand the	2 Theoretical	7
questions	d and data	Distribution	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Gamma	Understand the	2 Theoretical	8
questions	d and data	distribution	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Beta distributions	Understand the	2 Theoretical	9
questions	d and data		lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Exponential	Understand the	2 Theoretical	10
questions	d and data		lecture topic	+ 2 practical	
	show				
motivational	Blackboar	conducting a	Understand the	2 Theoretical	11
questions	d and data	monthly	lecture topic	+ 2 practical	
	show	examination			
motivational	Blackboar	chi-square	Understand the	2 Theoretical	12
questions	d and data	distributions	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	T-student and	Understand the	2 Theoretical	13
questions.	d and data	Fisher distributions	lecture topic	+ 2 practical	
	show				

motivational	Blackboar	a comprehensive	Understand the	2 Theoretical	14
questions.	d and data	review of the	lecture topic	+ 2 practical	
	show	subject, with the			
		third month's exam			
motivational	Blackboar	the final evaluation	Understand the	2 Theoretical	15
questions with	d and data	is an in-person	lecture topic	+ 2 practical	
the grade	show	lecture, and the			
		grade			

### **11.Course Evaluation**

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

#### **12.Learning and Teaching Resources**

<b>Required textbooks (curricular books</b>	5- امير حنا، الاحصاء الرياضي، دار نشر جامعه الموصل،
any)	العراق.
	6- خاشع الراوي، مدخل الى علم الاحصاء ، دار نشر جامعة
	الموصل، العراق الكيمياء اللاعضوية العصرية دباسم
	السعدي
Main references (sources)	7- Mathematical Statistics with Applications,
	Dennis D. Wackerly, William Mendenhall III
	and Richard L. Scheaffer, SEVENTH
	EDITION, 2008, USA.
	8- Probability and statistics, Morris H. Degroot
	and Mark J. Schervish, Fourth Edition,2012.
Recommended books and	A first course in probability, Sheldon Ross, Ninth Editi
references (scientific journals,	2014
reports)	
Electronic References, Websites	https://www.uoanbar.edu.ig/staff-page.php?ID=1105

1. Cours	e Name:
	Complex Analysis 1
2. Cours	e Code:
	MAT401
3. Semes	ster / Year:
	first semester/2023-2024
4. Descr	iption Preparation Date:
	12/11/2023
5. Availa	able Attendance Forms:
	Daily, at the time specified in the schedule, and at full time
6. Numb	er of Credit Hours (Total) / Number of Units (Total)
	60 hr./ 3Unit
7. Cours	e administrator's name (mention all, if more than one name)
	Name: Dr. Abdulrahman Salman Jumi
	<b>Email:</b> eps.abdulrahman.juma@uoanbar.edu.iq
8. Cours	e Objectives
Course Objecti	ves This course aims to convey a general idea about:
-	1-The student must be able to teach and learn the religious
	subject
	2- The student will be familiar with the concept of complex
	numbers.
	3- That the student understands the types of logarithmic
	functions
	4- That the student understands the concepts of Riemann and
	Cauchy integration
	5- That the student understands how to use complex numbers
	daily life
9. Teach	ing and Learning Strategies
Strategy	Learning outcomes, teaching, learning and assessment methods
	A- Cognitive objectives
	1-Extrapolation
	2- Analysis 2. Conclusion
	J- Colliciusion A The leature
	5-Empowerment
	<b>B</b> - The skills objectives of the course.
	B1 - Developing the skill in knowing the distribution of random variables and
	using them in the practical aspect
	B2 - Developing the skill of how to calculate the distribution of a function in
	terms of its random variables

**B3** - Developing the skill of employing the properties of random distributions for use in the practical aspect of life **C-Emotional and value goals C1-** Thinking that explores the truth through (question and answer) C2- Managing societal problems by finding appropriate solutions to them through academic concepts C3- Spreading the spirit of interaction and attraction among students through academic competition C4- Urging students to employ what they have learned in public life D - Transferable general and qualifying skills (other skills related to employability and personal development). D1-The skill of calculating number methods **D2-** The skill of calculating the probability of certain events D3- The skill of knowing the degree of correlation between variables D4- The skill of self-development by giving him information that will benefit him in the academic future D5- It enables the student to use what he has learned to develop himself

10. Course structure							
Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week		
an in-person lecture, and motivational questions.	Blackboar d and data show	Definitions: Complex number Operations on complex numbers Characteristics of complex	Understand the lecture topic	2 Theoretical + 2 practical	1		
motivational questions	Blackboar d and data show	Accompaniment Algebraic properties	Understand the lecture topic	2 Theoretical + 2 practical	2		
motivational questions	Blackboar d and data show	The absolute value of a complex number	Understand the lecture topic	2 Theoretical + 2 practical	3		
motivational questions	Blackboar d and data show	Definition: The modulus or absolute value of a complex number	Understand the lecture topic	2 Theoretical + 2 practical	4		
motivational	Blackboar	Geometric	Understand the	2 Theoretical	5		

questions	d and data	representation of	lecture topic	+ 2 practical	
	show	complex numbers			
motivational	Blackboar	Polar coordinates	Understand the	2 Theoretical	6
questions	d and data		lecture topic	+ 2 practical	
	show				
motivational	Blackboar	De Movier's	Understand the	2 Theoretical	7
questions	d and data	theorem	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Euler's formula	Understand the	2 Theoretical	8
questions	d and data		lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Full review	Understand the	2 Theoretical	9
questions	d and data	continuity	lecture topic	+ 2 practical	
	show	Derivatives			
		Differentiation			
		formulas			
motivational	Blackboar		Understand the	2 Theoretical	10
questions	d and data	Review the subject	lecture topic	+ 2 practical	
	show	and conduct a			
		monthly exam			
motivational	Blackboar	Cauchy-Riemann	Understand the	2 Theoretical	11
questions	d and data	equations in polar	lecture topic	+ 2 practical	
	show	forms			
motivational	Blackboar	Analytical function	Understand the	2 Theoretical	12
questions	d and data		lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Harmonic function	Understand the	2 Theoretical	13
questions.	d and data		lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Solve the questions	Understand the	2 Theoretical	14
questions.	d and data	and assignments	lecture topic	+ 2 practical	

	-						
motivational	Blackboar	A compr	ehensive	Understand the	2 Theoretical	15	
questions with	d and data	review	of the	lecture topic	+ 2 practical		
the grade	chow	motorial	with the		<b>r</b>		
	SHOW	material	with the				
		second mo	onth exam				
11. Cour	se Evaluatio	า					
Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc							
12. Learning and Teaching Resources							
Required textbooks (curricular books							
	any)		1	و النشد احامعة الموصد	يرية دار الكتب للطباعة	-	
			1980				
					.190		
				ة وتطبيقاتها، مديرية 1	اون، المتغيرات المعقد الحامعة\الموصل،983	1 <b>- جي بر</b> مط <b>يع</b> ة	
				.1.			
Main refer	Main references (sources)1- R. V. Churchill, J. W. Brown and R. F. Verhey, "Complex Variables and Applications," 3rd Edition, McGraw Hill, New York, 1976.						
2- S. Ponnusamy, Herb Silverman, Complex Variables with Applications, Birkhäuser Boston, MA, USA, 2006.							
Recommend references reports)	ed books (scientific	s and journals,	S. Ponnus Applicatio	samy, Herb Silver ons, Birkhäuser Bos	rman, Complex Va ston, MA, USA, 200	nriables w 6.	
Electronic References, Websites         https://www.uoanbar.edu.iq/staff-page.php?ID=1107							

1. 0	Course Na	ime:				
		Complex Analysis 2				
2. 0	Course Co	de:				
	MAT405					
3. S	emester /	Year:				
		Second semester/2023-2024				
<b>4. D</b>	<b>Descriptio</b>	n Preparation Date:				
		1/2/2024				
5. A	vailable	Attendance Forms:				
	Da	ily, at the time specified in the schedule, and at full time				
6. N	umber of	f Credit Hours (Total) / Number of Units (Total)				
		60 hr./ 3Unit				
7. C	Course adn	ninistrator's name (mention all, if more than one name)				
		Name: Dr. Abdulrahman Salman Jumi				
		Email: eps.abdulrahman.juma@uoanbar.edu.jg				
8. (	Course Of	Diectives				
Course C	biectives	This course aims to convey a general idea about:				
	, sjoett oe	1. The student must be able to teach and learn the religious				
		subject				
		2 The student will be familiar with the concent of complex				
		2- The student will be familiar with the concept of complex				
		3- I hat the student understands the types of logarithmic				
		iunctions				
		4- That the student understands the concepts of Riemann and				
		Cauchy integration				
		5- That the student understands how to use complex numbers				
		daily life				
9. 1	eaching a	and Learning Strategies				
Strategy	Lea	rning outcomes, teaching, learning and assessment methods				
	. A-	Cognitive objectives				
	1- E	xtrapolation				
	2- A	nalysis				
	3- U 4-TI	onclusion he lecture				
	5-E	mnowerment				
	<b>B</b> - '	The skills objectives of the course.				
	B1 -	Developing the skill in knowing the distribution of random variables and				
	usin	g them in the practical aspect				
	B2 -	Developing the skill of how to calculate the distribution of a function in				
	tern	ns of its random variables				
	B3 -	Developing the skill of employing the properties of random distributions for				
	use	in the practical aspect of life				

C- Emotional and value goals
C1- Thinking that explores the truth through (question and answer)
C2- Managing societal problems by finding appropriate solutions to them through academic concepts
C3- Spreading the spirit of interaction and attraction among students through academic competition
C4- Urging students to employ what they have learned in public life
D - Transferable general and qualifying skills (other skills related to employability and personal development).
D1-The skill of calculating number methods
D2- The skill of calculating the probability of certain events
D3- The skill of self-development by giving him information that will benefit him in the academic future
D5- It enables the student to use what he has learned to develop himself

10. Course	structure				
Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
an in-person lecture, and motivational questions.	Blackboar d and data show	The real and imaginary parts Logarithmic functions	Understand the lecture topic	2 Theoretical + 2 practical	1
motivational questions	Blackboar d and data show	The bow and its types	Understand the lecture topic	2 Theoretical + 2 practical	2
motivational	Blackboar	The curve and its	Understand the	2 Theoretical	3
questions	d and data show	types	lecture topic	+ 2 practical	
motivational	Blackboar	Full review	Understand the	2 Theoretical	4
questions	d and data show		lecture topic	+ 2 practical	
motivational	Blackboar	a comprehensive	Understand the	2 Theoretical	5
questions	d and data show	review	lecture topic	+ 2 practical	
motivational	Blackboar	First month exam	Understand the	2 Theoretical	6
questions	d and data		lecture topic	+ 2 practical	

	show				
motivational	Blackboar	Types of functions	Understand the	2 Theoretical	7
questions	d and data	of complex	lecture topic	+ 2 practical	
	show	numbers			
		Gordon curve			
motivational	Blackboar	theorem for a	Understand the	2 Theoretical	8
questions	d and data	simple path	lecture topic	+ 2 practical	
	show	Positively directed			
		path			
motivational	Blackboar	Properties of	Understand the	2 Theoretical	9
questions	d and data	complex integration	lecture topic	+ 2 practical	
	show	Cauchy's integral			
		formulas			
		Cauchy distribution			
motivational	Blackboar	Review the subject	Understand the	2 Theoretical	10
questions	d and data	and conduct a	lecture topic	+ 2 practical	
	show	monthly exam			
motivational	Blackboar	conducting a	Understand the	2 Theoretical	11
questions	d and data	monthly	lecture topic	+ 2 practical	
	show	examination			
motivational	Blackboar	Singularity method	Understand the	2 Theoretical	12
questions	d and data	Sediment method	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Cauchy's method	Understand the	2 Theoretical	13
questions.	d and data	and formulas	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	a comprehensive	Understand the	2 Theoretical	14
questions.	d and data	review of the	lecture topic	+ 2 practical	
	show	subject, with the			
		third month's exam			

motivational	Blackboar	the final e	evaluation	Understand the	2 Theoretical	15	
questions	d and data	is an in	-person	lecture topic	+ 2 practical		
with the	show	lecture.	and the				
grada		are a	ndo				
graue		gra	aue				
11 Course	Evoluction						
Distributing	the score out	of 100 acc	ording to	the tasks assigned	to the student such	as daily	
preparation,	daily oral, mo	on how acconthly, or w	ritten exa	ms, reports etc	to the student such	as uniy	
12. Learnin	g and Teachi	ng Resourc	es	· •			
1- سمير بشير حديد، الدوال المعقدة، طبع بمطابع مديرية Required textbooks (curricular books							
any)			دارالكتب للطباعة والنشر\جامعة الموصل ،1980.				
			ä	ة وتطبيقاتها، مديرية مطبع	ببراون، المتغيرات المعقد	2- جي	
					امعة\الموصل،1983.	الج	
Main referen	COS (SOUPCOS)		1 R	V Churchill I V	W Brown and R	F	
	ices (sources)		1. K. Va	arhav "Complex	Veriables au	r. nd	
				nlications " 3rd Fa	variables at	10	
			Ne Ne	ew Vork 1976		11,	
			2. S	Ponnusamy, Herh S	Silverman, Complex	T	
				ariables with Annlic	ations. Birkhäuser	•	
			Bo	oston, MA, USA, 200	)6.		
Recommende	ed books	and	S. Ponnu	isamy, Herb Silver	man, Complex Va	ariables v	
references	(scientific	journals,	Applicati	ons, Birkhäuser Bos	ston, MA, USA, 200	6.	
Flectronic R	eferences We	hsites	https://w	ww.uoanbar.edu.io/	staff-nage nhn?ID-	1107	

1. Course Name:	
Partial differential equations 1	
2. Course Code:	
MAT202	
3. Semester / Year:	
first semester/2023-2024	
4. Description Preparation Date:	
12/11/2023	
5. Available Attendance Forms:	
Daily, at the time specified in the schedule, and at full time	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 hr./ 3Unit	
7. Course administrator's name (mention all, if more than one name)	
Name: Dr. Ali Abed Mutlag	
Email: <u>eps.aliabd.mutlik@uoanbar.edu.iq</u>	
8. Course Objectives	
Course Objectives This course aims to convey a general idea about:	
1- That the student is familiar with the definition and concept o	f
partial differential equations and how to form them.	
<b>2-</b> For the student to become familiar with the classification of	
partial differential equations in terms of degree and rank.	
3- Identify the applications of partial differential equation	ns
various fields.	
9. Teaching and Learning Strategies	
Strategy A-Knowledge and understanding	
A1- identify the methods and rules for infuning solutions to uniferent partial differential equations of the first and second order with initial and limit values	
A2- The ability to use partial differential equations to solve mathematical	
problems.	
A3- Understanding the links between differential equations and mathematical	
analysis and highlighting the importance of equations in various different	
sciences. A4- Training the student to solve higher order linear equations using Lanlace	
transformations and other methods.	
<b>B</b> - The program's skill objectives	
B1- Scientific reports	
B 2- Graduation research	
C- Thinking skills C 1 Developing the student's shility to work on nonforming aggingments and	
C 1- Developing the student's admity to work on performing assignments and submitting them on the scheduled date	
C 2- The ability to think scientifically.	
C 3- The ability to participate effectively in semester activities.	

C 4- Skill in carrying out research activities and using useful sources to support the main idea required
D - General and rehabilitative transferable skills
D 1- Developing the student's ability to use differential equations to solve problems in mathematics.
D 2- Developing the student's ability to identify and solve examples with deductive and deductive ideas.
D 3- Developing the student's ability to deal with others by participating in scientific discussions.
D 4- Developing the student's ability to analyze and synthesize.

**10.** Course structure

Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
an in-person lecture, and motivational questions.	Blackboar d and data show	Chapter one	Introduction to partial differential equations	4	1
motivational questions	Blackboar d and data show	Chapter one	How to get the equation	4	2
motivational questions	Blackboar d and data show	Chapter Two	Methods for solving first- order and first- order equations	4	3
motivational questions	Blackboar d and data show	Chapter Two	Nonlinear partial differential equations of the first order	4	4
motivational questions	Blackboar d and data show	Chapter Two	Review and test	4	5
motivational questions	Blackboar d and data show	Chapter Two	Using some transformations to solve first-	4	6

			order partial		
			differential		
			equations.		
motivational	Blackboar	Chapter Two	Garbit method	4	7
questions	d and data				
	show				
motivational	Blackboar	Chapter Two	Adjustable	4	8
questions	d and data		equations		
	show		method		
motivational	Blackboar	Chapter Three	Method of	4	9
questions	d and data		Characterestics		
	show				
motivational	Blackboar	Chapter Three	Review and test	4	10
questions	d and data				
	show				
motivational	Blackboar	Chapter Three	Direct	4	11
questions	d and data		integration		
	show		method		
motivational	Blackboar	Chapter Four	Linear partial	4	12
questions	d and data		differential		
	show		equations with		
			homogeneous		
			terms and		
			constant higher-		
			order		
			coefficients		
motivational	Blackboar	Chapter Four	Linear partial	4	13
questions.	d and data		differential		
	show		equations with		
			homogeneous		
			terms and non-		
			homogeneous		

				constant		
				coefficients of		
				higher order		
motivational	Blackboar	Chapte	er Four	Linear partial	4	14
questions.	d and data			differential		
	show			equations with		
				homogeneous		
				terms and non-		
				homogeneous		
				constant		
				coefficients of		
				higher order		
motivational	Blackboar	Chapter F	Four	Review and test	4	15
questions	d and data					
with the	show					
grade						
11.Course Evaluation						
Distributing the score out of 100 according to the tasks assigned to the student such as daily						
preparation, daily oral, monthly, or written exams, reports etc						
12.Learning and Teaching Resources						
1- المعادلات التفاضلية الجزئية للكليات العلمية والهندسية / ترجمة د.عطا الله Required textbooks (curricular book						
any) 1989 ثامر العاني 1989						
				لما الله ثامر العاني	ن التفاضلية الجزئية / د.عط	2- المعادلان

3-مقدمة إلى المعادلات التفاضلية الجزئية / د.عطا الله تُامر العاني

Main references (sources)	1- المعادلات التفاضلية الجزئية للكليات العلمية والهندسية / ترجمة د.عطا الله ثامر
	المعاني 1989
	2- المعادلات التفاضلية الجزئية / د.عطا الله ثامر العاني
	3- مقدمة إلى المعادلات التفاضلية الجزئية / د.عطا الله ثامر العاني
	Jhon.F. / Partial differential Equations -4
Recommended books and	معادلات التفاضلية الجزئية للكليات العلمية والهندسية / ترجمة د.عطا الله ثامر
references (scientific journals,	المعاني
reports)	
1. Cours	se Name:
---------------	----------------------------------------------------------------------------------------------------------------
	Partial differential equations 2
2. Cours	se Code:
MAT302	
3. Semes	ster / Year:
Second sem	ester/2023-2024
4. Descr	iption Preparation Date:
1/2/2024	
5. Availa	able Attendance Forms:
Daily, at the	e time specified in the schedule, and at full time
6. Numb	oer of Credit Hours (Total) / Number of Units (Total)
60 hr.	/ 3Unit
7. Cours	se administrator's name (mention all, if more than one name)
Name	: Dr. Ali Abed Mutlag
Email	: eps.aliabd.mutlik@uoanbar.edu.ig
8. Cours	se Objectives
Course Object	This course aims to convey a general idea about:
	1- That the student is familiar with the definition and concept of partial
	differential equations and how to form them.
	2- For the student to become familiar with the classification of partial
	differential equations in terms of degree and rank.
0 Toool	5- Identify the applications of partial differential equations in various fields.
9. Teach	A-Knowledge and understanding
Strategy	A-Knowledge and understanding A1. Identify the methods and rules for finding solutions to different partial
	differential equations of the first and second order with initial and limit values.
	A2- The ability to use partial differential equations to solve mathematical
	problems.
	A3- Understanding the links between differential equations and mathematical
	analysis and highlighting the importance of equations in various different
	sciences.
	A4- Training the student to solve higher order linear equations using Laplace
	transformations and other methods.
	B - The program's skin objectives B1- Scientific reports
	B 2- Graduation research
	C- Thinking skills
	C 1- Developing the student's ability to work on performing assignments and
	submitting them on the scheduled date.
	C 2- The ability to think scientifically.
	C 3- The ability to participate effectively in semester activities.
	C 4- Skill in carrying out research activities and using useful sources to support
	the main idea required

D - General and rehabilitative transferable skills
D 1- Developing the student's ability to use differential equations to solve problems in mathematics.
D 2- Developing the student's ability to identify and solve examples with deductive and deductive ideas.
D 3- Developing the student's ability to deal with others by participating in scientific discussions.

**D** 4- Developing the student's ability to analyze and synthesize.

#### **10. Course structure**

	·		•		
Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
an in-person lecture, and motivational questions.	Blackboar d and data show	Chapter Four	Partial differential equations with non- homogeneous terms and constant coefficients	4	1
motivational questions	Blackboar d and data show	Chapter Four	Irreducible partial differential equations	4	2
motivational questions	Blackboar d and data show	Chapter Five	Second-order linear partial differential equations with variable coefficients	4	3
motivational questions	Blackboar d and data show	Chapter Five	Cauchy's linear partial differential equation	4	4
motivational questions	Blackboar d and data show	Chapter Five	Review and test	4	5
motivational questions	Blackboar d and data show	Chapter six	Separation of variables	4	6
motivational questions	Blackboar d and data show	Chapter six	Fourier series	4	7

motivational	Blackboar	Chapter six	Fourier series	4	8
questions	d and data				
	show				
motivational	Blackboar	Chapter six	Review and test	4	9
questions	d and data				
	show				
motivational	Blackboar	Chapter six	Heat equation	4	10
questions	d and data				
	show				
motivational	Blackboar	Chapter six	wave equation	4	11
questions	d and data				
	show				
motivational	Blackboar	Chapter six	Laplace equation	4	12
questions	d and data				
	show				
motivational	Blackboar	Chapter six	Laplace transforms	4	13
questions.	d and data				
	show				
motivational	Blackboar	Chapter six	Solving partial	4	14
questions.	d and data		differential		
	show		equations using		
motivational	Dissistant	Chantan sin	Review and test	1	15
questions with		Chapter six	Keynew and test	-	13
the grade	a and data				
	show				
11.Course	e Evaluation	l			

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

### 12.Learning and Teaching Resources

any)

1-المعادلات التفاضلية الجزئية للكليات العلمية والهندسية / ترجمة د.عطا الله Required textbooks (curricular booke

ثامر العاني 1989

2-المعادلات التفاضلية الجزئية / د.عطا الله ثامر العاني

	3-مقدمة إلى المعادلات التفاضلية الجزئية / د.عطا الله ثامر العاني
Main references (sources)	1-المعادلات التفاضلية الجزئية للكليات العلمية والهندسية / ترجمة د.عطا الله ثامر
	العاني 1989
	2-المعادلات التفاضلية الجزئية / د.عطا الله ثامر العاني
	3-مقدمة إلى المعادلات التفاضلية الجزئية / د.عطا الله  ثامر العاني
	Jhon.F. / Partial differential Equations -4
Recommended books and	المعادلات التفاضلية الجزئية للكليات العلمية والهندسية / ترجمة د.عطا الله ثامر
references (scientific journals,	العاني
reports)	
Electronic References, Websites	https://www.uoanbar.edu.iq/staff-page.php?ID=1062

1. Cours	e Name:
	Geometry 1
2. Cours	e Code:
	MAT204
3. Semes	ter / Year:
	First semester/2023-2024
4. Descri	ption Preparation Date:
	12/11/2023
5. Availa	ble Attendance Forms:
	Daily, at the time specified in the schedule, and at full time
6. Numb	er of Credit Hours (Total) / Number of Units (Total)
	64 hr./ 3Unit
7. Cours	e administrator's name (mention all, if more than one name)
Name	: Dr. Mustafa Ibrahim Hameed
Email	: <u>mustafa8095@uoanbar.edu.iq</u>
8. Cours	e Objectives
Course Object	tive: This course aims to convey a general idea about:
	This course aims to study non-Euclidean geometry and its axioms, the
	concept of Hathloul and elliptical geometry and their axioms, the concept of
	projective, synthetic and analytical geometry, and the geometry of
	transformations and their axioms in harmonic groups.
9. Teachi	ng and Learning Strategies
Strategy	Learning outcomes, teaching, learning and assessment methods
	A-Knowledge and understanding
	1- The student will be familiar with the concept of non-Euclidean geometry.
	2- For the student to become familiar with the concept of Hathloul geometry.
	<b>3-</b> That the student understands what is meant by elliptical geometry.
	4- That the student knows the meaning of synthetic and analytical projective

	geometry and how to use geometry in our practical life
	5- That the student understands what is meant by Bach's axioms
	6- That the student knows the meaning of exterior angles and right angles
	7- That the student knows how to use engineering in our practical life
	<b>B</b> - The skills objectives of the course.
	1- That the student can distinguish between the projective plane and the
	damaged plane
	2- That the student can distinguish between the Fano and Young systems.
	3- That the student can distinguish between the intuitive systems he studies
	4- That the student possesses the necessary skill to find relationships between the
	types of geometry he studies, which are Euclidean geometry and non-Euclidean
	geometry, which includes Hathloulian geometry and elliptical geometry.
	C- Emotional and value goals
	C1- Enabling students to solve problems related to the intellectual framework of
	advanced mathematics.
	C2- For the student to understand and differentiate between the basic concepts
	through different questions with diverse concepts and linking them together.
	D - Transferable general and qualifying skills (other skills related to
	employability and personal development).
	D1- The student acquires the skills to establish mathematics in terms of
	language, symbols, information, and methods
	Thinking.
	D2- Follow up on scientific development by contacting international universities
	via the Internet.
	D3- Participation in scientific conferences inside and outside the country.
	D4- Participation in scientific seminars inside and outside the country.
10. Course	structure

		1			
Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
an in-person lecture, and motivational questions.	Blackboar d and data show	Non-Euclidean geometry	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	1
motivational questions	Blackboar d and data show	projective and convolutional	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	2
motivational questions	Blackboar d and data show	planes, Young and Fano systems	Understand the subject matter correctly and	2 Theoretical + 2 practical	3

			know its applications in		
			other sciences		
motivational questions	Blackboar d and data show	Euclid's system/the most important	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	4
motivational questions	Blackboar d and data show	hypotheses, axioms, and some flaws in this system	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	5
motivational questions	Blackboar d and data show	Foundations of engineering	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	6
motivational questions	Blackboar d and data show	The axioms of occurrence and existence	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	7
motivational questions	Blackboar d and data show	The axioms of order, Bach's axioms	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	8
motivational questions	Blackboar d and data show	Convex sets/triangles and angles	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	9
motivational questions	Blackboar d and data show	Matching and comparison	Understand the subject matter correctly and	2 Theoretical + 2 practical	10

			know its		
			applications in		
			other sciences		
			Understand the		
	Dissistant	Congruence of	subject matter		
motivational	Blackboar	triangles by	correctly and	2 Theoretical	11
questions	a and data	comparing line	know its	+ 2 practical	11
	snow	segments	applications in		
			other sciences		
			Understand the		
			subject matter		
motivational	Blackboar	Adding,	correctly and	2 Theoretical	
questions	d and data	subtracting, and	know its	+ 2 practical	12
-	show	comparing angles	applications in	-	
			other sciences		
			Understand the		
	Blackboar d and data show	Elementary	subject matter		
motivational		geometry, its	correctly and	2 Theoretical	
questions.		definition and most	know its	+ 2 practical	13
-		important axioms	applications in	•	
		•	other sciences		
			Understand the		
	Blackboar d and data show	External angles, uprights and	subject matter		
motivational			correctly and	2 Theoretical	
questions.			know its	+ 2 practical	14
-		constructions	applications in		
			other sciences		
			Understand the		
motivational	<b>D</b> 1 11		subject matter		
questions	Blackboar d and data	r a Monthly exam	correctly and	2 Theoretical	
with the			know its	+ 2 practical	15
grade	show		applications in	*	
8			other sciences		
11. Course	Evaluation				

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources		
Required textbooks (curricular books	1- Basic concepts in engineering	
any)	2- Principles of modern Euclidean and non-	
	Euclidean geometry	

Main references (sources)	Euclidean and Non-Euclidean Geometries:
	Development and History
Recommended books and	
references (scientific journals,	Lecture notes of mathematics 1, MIT
reports)	
Electronic References, Websites	www.mathwords.com
	https://www.uoanbar.edu.iq/staff-page.php?ID=1715

1. Cours	e Name:
	Geometry 2
2. Cours	e Code:
	MAT209
3. Semes	ter / Year:
	Second semester/2023-2024
4. Descr	iption Preparation Date:
	1/2/2024
5. Availa	able Attendance Forms:
	Daily, at the time specified in the schedule, and at full time
6. Numb	er of Credit Hours (Total) / Number of Units (Total)
	64 hr./ 3Unit
7. Cours	e administrator's name (mention all, if more than one name)
	Name: Dr. Mustafa Ibrahim Hameed
	Email: <u>mustafa8095@uoanbar.edu.iq</u>
8. Cours	e Objectives
<b>Course Object</b>	tives This course aims to convey a general idea about:
	This course aims to study non-Euclidean geometry and its axioms, the
	concept of Hathloul and elliptical geometry and their axioms, the concept of
	projective, synthetic and analytical geometry, and the geometry of
	transformations and their axioms in harmonic groups.
9. Teachi	ng and Learning Strategies
Strategy	Learning outcomes, teaching, learning and assessment methods
	A-Knowledge and understanding
	1- The student will be familiar with the concept of non-Euclidean geometry.
	2- For the student to become familiar with the concept of Hathloul geometry.
	3- That the student understands what is meant by elliptical geometry.
	4- That the student knows the meaning of synthetic and analytical projective
	geometry and how to use geometry in our practical life
	5- That the student understands what is meant by Bach's axioms
	6- That the student knows the meaning of exterior angles and right angles
	7- That the student knows how to use engineering in our practical life

<b>B</b> - The skills objectives of the course.
1- That the student can distinguish between the projective plane and the
damaged plane
2- That the student can distinguish between the Fano and Young systems.
3- That the student can distinguish between the intuitive systems he studies
4- That the student possesses the necessary skill to find relationships between the
types of geometry he studies, which are Euclidean geometry and non-Euclidean geometry, which includes Hathloulian geometry and elliptical geometry.
C- Emotional and value goals
C1- Enabling students to solve problems related to the intellectual framework of advanced mathematics.
C2- For the student to understand and differentiate between the basic concepts
through different questions with diverse concepts and linking them together.
<b>D</b> - Transferable general and qualifying skills (other skills related to
employability and personal development).
D1- The student acquires the skills to establish mathematics in terms of
language, symbols, information, and methods
Thinking.
<b>D2-</b> Follow up on scientific development by contacting international universities
via the Internet.
D3- Participation in scientific conferences inside and outside the country.
D4- Participation in scientific seminars inside and outside the country.
10. Course structure

Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
an in-person lecture, and motivational questions.	Blackboar d and data show	Non-Euclidean geometry	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	1
motivational questions	Blackboar dand data show	projective and convolutional	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	2
motivational questions	Blackboar d and data show	planes, Young and Fano systems	Understand the subject matter correctly and know its applications in	2 Theoretical + 2 practical	3

			other sciences		
motivational questions	Blackboar d and data show	Euclid's system/the most important	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	4
motivational questions	Blackboar d and data show	hypotheses, axioms, and some flaws in this system	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	5
motivational questions	Blackboar d and data show	Foundations of engineering	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	6
motivational questions	Blackboar d and data show	The axioms of occurrence and existence	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	7
motivational questions	Blackboar d and data show	The axioms of order, Bach's axioms	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	8
motivational questions	Blackboar d and data show	Convex sets/triangles and angles	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	9
motivational	Blackboar	Matching and	Understand the	2 Theoretical	10

questions	d and data	comparison	subject matter	+ 2 practical	
	show		correctly and know		
			its applications in		
			other sciences		
motivational questions	Blackboar d and data show	Congruence of triangles by comparing line segments	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	11
motivational questions	Blackboar d and data show	Adding, subtracting, and comparing angles	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	12
motivational questions.	Blackboar d and data show	Elementary geometry, its definition and most important axioms	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	13
motivational questions.	Blackboar d and data show	External angles, uprights and constructions	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	14
motivational questions with the grade	Blackboar d and data show	Monthly exam	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	15
11.Course	e Evaluation				

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12.Learning and Teaching Res	ources
<b>Required textbooks (curricular books</b>	1- Basic concepts in engineering
any)	2- Principles of modern Euclidean and non-
	Euclidean geometry
Main references (sources)	Euclidean and Non-Euclidean Geometries:
	Development and History
Recommended books and	
references (scientific journals,	Lecture notes of mathematics 1, MIT
reports)	
<b>Electronic References, Websites</b>	www.mathwords.com
	https://www.uoanbar.edu.iq/staff-page.php?ID=1715

1.	Course N	ame:			
		Module Theory 1			
2.	Course C	ode:			
		MAT405			
3.	Semester	/ Year:			
		first semester/2023-2024			
4.	Description	on Preparation Date:			
		17/11/2023			
5.	Available	Attendance Forms:			
		Daily, at the time specified in the schedule, and at full time			
6.	Number of	of Credit Hours (Total) / Number of Units (Total)			
	60 hr./ 3Unit				
7.	7. Course administrator's name (mention all, if more than one name)				
	Name: Dr. Majid Mohammed Abed				
	Email: <u>majid_math@uoanbar.edu.iq</u>				
	Name: As	sistant teacher: Abdulsalam Faeq Talak			
	Email: ab	d19u2007@uoanbar.edu.iq			
8.	Course	Objectives			
Course	e Objectiv	es This course aims to convey a general idea about:			
		1-The student must be able to teach and learn the subject of module			
		2-The student should be familiar with the concept of a cyclic module			
		<b>3-</b> That the student understands the types of submodules			
		4- That the student understands the concepts of types modules			
		5- That the student understands how to use module theory in algebra			
9.	Teaching	and Learning Strategies			
Strateg	ly L	earning outcomes, teaching, learning and assessment methods			
	•	A- Cognitive objectives			

1- Extrapolation
2- Analysis
3- Conclusion
4-The lecture
5-Empowerment
<b>B</b> - The skills objectives of the course.
<b>B1</b> - Developing the skill in knowing the module theory
<b>B2</b> - Developing the skill of how to study submodules
<b>B3</b> - Developing the skill of employing the properties of cyclic modules
C- Emotional and value goals
C1- Thinking that explores the truth through (question and answer)
C2- Managing societal problems by finding appropriate solutions to them
through academic concepts
C3- Spreading the spirit of interaction and attraction among students through
academic competition
C4- Urging students to employ what they have learned in public life
<b>D</b> - Transferable general and qualifying skills (other skills related to
employability and personal development).
D1-The skill of study modules
D2- The skill of other modules
D3- The skill of knowing the more modules
D4- The skill of self-development by giving him information that will benefit him
in the academic future
 D5- It enables the student to use what he has learned to develop himself
10. Course structure

		Nama af	Demotional		
Evaluation	Teaching	Name of	Required	TT	Week
method	method	unit/course or	learning	Hours	
		subject	outcomes		
•					
an in-person	Blackboar		Understand the	2 Theoretical	I
lecture, and	d and data show	Definition of the	lecture topic	+ 2 practical	
motivational		modules			
questions.					
motivational	Blackboar		Understand the	2 Theoretical	2
questions	d and data	submodules,	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Cyclic modules	Understand the	2 Theoretical	3
questions	d and data		lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Maximal	Understand the	2 Theoretical	4
questions	d and data	submodules	lecture topic	+ 2 practical	

	show				
motivational	Blackboar	Minimal	Understand the	2 Theoretical	5
questions	d and data	submodules	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Test.	Understand the	2 Theoretical	6
questions	d and data		lecture topic	+ 2 practical	
	show				
motivational	Blackboar	A comprehensive	Understand the	2 Theoretical	7
questions	d and data	review	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Finitely generated	Understand the	2 Theoretical	8
questions	d and data	module	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Indecomposable	Understand the	2 Theoretical	9
questions	d and data	modules	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Small submodules	Understand the	2 Theoretical	10
questions	d and data		lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Intersection and	Understand the	2 Theoretical	11
questions	d and data	union submodules	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Quotient modules	Understand the	2 Theoretical	12
questions	d and data		lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Solve the questions	Understand the	2 Theoretical	13
questions.	d and data	and assignments	lecture topic	+ 2 practical	
	show	that were given			
motivational	Blackboar	<b>Co-finitely</b>	Understand the	2 Theoretical	14
questions.	d and data	generated module	lecture topic	+ 2 practical	
	show				
1	1				

motivational	Blackboar	Understand the	2 Theoretical	15
questions with	d and data	lecture topic	+ 2 practical	
the grade	show			

### **11.Course Evaluation**

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12.Learning and Teaching Resources				
<b>Required textbooks (curricular books</b>	9- مقدمة الى نظرية المقاسات – تأليف أستاذ دكتور انعام هادي			
any)				
Main references (sources)	1- A First Course in Abstract Algebra By J.B.F.raleigh.			
	2- Foundation in ring theory : by Wisbaur .p.			
Recommended books and	Foundation in ring theory : by Wisbaur .p.1991			
references (scientific journals,				
reports)				
Electronic References, Websites	https://www.math.uni-duesseldorf.de/~wisbauer/book.pdf			
	https://www.uoanbar.edu.iq/staff-page.php?ID=1153			

1. Course Name:
Module Theory 2
2. Course Code:
MAT405
3. Semester / Year:
Second semester/2023-2024
4. Description Preparation Date:
10/2/2024
5. Available Attendance Forms:
Daily, at the time specified in the schedule, and at full time
6. Number of Credit Hours (Total) / Number of Units (Total)
60 hr./ 3Unit
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Majid Mohammed Abed
Email: <u>majid_math@uoanbar.edu.iq</u>
Name: Assistant teacher: Abdulsalam Faeq Talak
Email: <u>abd19u2007@uoanbar.edu.iq</u>
8. Course Objectives

Course Obie	ctives This c	This course aims to convey a general idea about:				
,	1-The	1-The student must be able to teach and learn the subject of more				
	modu	modules				
	2-The	student should be fa	miliar with the co	ncept of a		
	homo	morphism module		1		
	3- Tha	it the student unders	tands the types of	f homomorphisms		
	4- Tha	t the student unders	tands the concept	s of free module		
	5- Tha	it the student unders	tands how to use	module theory in a	algebra	
9. Teach	ing and Lear	ning Strategies		<i>.</i>	0	
Strategy	Learning o	utcomes, teaching, le	arning and assess	sment methods		
	. A- Cogniti	ve objectives				
	1- Extrano	lation				
	2- Analysis	 				
	3- Conclus	ion				
	4-The lect	ire				
	5-Empowe	rment				
	B - The ski	lls objectives of the c	ourse.			
	B1 - Develo	oping the skill in know	wing the homomo	orphism theorems		
	B2 - Develo	oping the skill of how	to define other c	oncepts in module	theory	
	B3 - Develo	oping the skill of emp	loving the proper	ties more module	s	
	C- Emotion	al and value goals			-	
	C1- Thinki	ng that explores the t	ruth through (au	estion and answer	)	
	C2- Manag	ing societal problems	s by finding appro	priate solutions to	, them	
	through ac	ademic concepts		P		
	C3- Spread	ing the spirit of inter	action and attrac	tion among studen	ts	
	through ac	rough academic competition				
	C4- Urging	4- Urging students to employ what they have learned in public life				
	D - Transfe	erable general and ou	alifying skills (ot	her skills related t	0	
	emplovabi	lity and personal dev	velopment).			
	D1-The ski	ill of projective modu	le			
	D2-The sk	ill of define injective	modules			
	D3- The sk	ill of knowing the div	visible and injectiv	ve modules		
	D4- The sk	ill of self-developme	nt by giving him i	nformation that wi	11	
	benefit him	n in the other subject	S			
	D5- It enab	oles the student to us	e what he has lear	rned to develop him	nself	
10. Course	structure			····· <b>F</b>		
			_			
Evaluation		Name of	Required			

Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
an in-person	Blackboar		Understand the	2 Theoretical	1
lecture, and	d and data	One to one	lecture topic	+ 2 practical	
motivational	show	homomorphism			
questions.					

motivational	Blackboar	Onto	Understand the	2 Theoretical	2
questions	d and data	homomorphism	lecture topic	+ 2 practical	
	show	•			
motivational	Blackboar	Projective module	Understand the	2 Theoretical	3
questions	d and data		lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Free module	Understand the	2 Theoretical	4
questions	d and data		lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Torsion free	Understand the	2 Theoretical	5
questions	d and data	module	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Quotient module	Understand the	2 Theoretical	6
questions	d and data		lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Injective module	Understand the	2 Theoretical	7
questions	d and data		lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Solve more	Understand the	2 Theoretical	8
questions	d and data	questions	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Review for the	Understand the	2 Theoretical	9
questions	d and data	topics	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	More examples	Understand the	2 Theoretical	10
questions	d and data		lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Test 2	Understand the	2 Theoretical	11
questions	d and data		lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Solve test 2	Understand the	2 Theoretical	12
questions	d and data		lecture topic	+ 2 practical	

	show					
motivational	Blackboar	Genera	l review	Understand the	2 Theoretical	13
questions.	d and data			lecture topic	+ 2 practical	
	show					
motivational	Blackboar	More que	estions for	Understand the	2 Theoretical	14
questions.	d and data	all t	opic	lecture topic	+ 2 practical	
	show		-		-	
motivational	Blackboar	the final o	evaluation	Understand the	2 Theoretical	15
questions	d and data	is an in	-person	lecture topic	+ 2 practical	
with the	show	lecture,	and the			
grade		gra	ade			
11.Course	11.Course Evaluation					
Distributing	the score out	of 100 acc	cording to t	the tasks assigned	to the student such	as daily
preparation,	daily oral, mo	onthly, or w	vritten exan	ns, reports etc		
12.Learni	ng and Tea	ching Res	ources			
Required tex	tbooks (curri	cular books		- تأليف أستاذ دكتور انعام	دمة الى نظرية المقاسات -	1- مق
any)						هادي
Main referen	ices (sources)		3- A First Course in Abstract Algebra By J.B.F.raleigh.			
				ation in ring theory :	by Wisbaur .p.	
Recommende	ed books	and	Foundation	in ring theory : by Wis	baur .p.1991	
references	(scientific	journals,				
reports)	reports)					
Electron	ic References	, Websites	https://v	www.math.uni-dues	seldorf.de/~wisbaue	r/book.po
			https:	//www.uoanbar.edu	1.iq/staff-page.php?	ID=1153

1. Course	1. Course Name:					
Mathematical statistics 1						
2. Course Code:						
MAT403						
3. Semest	er / Year:					
first semester/	2023-2024					
4. Descrip	otion Preparation Date:					
1/9/2023						
5. Availal	ole Attendance Forms:					
Daily, at the ti	me specified in the schedule, and at full time					
6. Numbe	er of Credit Hours (Total) / Number of Units (Total)					
60 hr./	3Unit					
7. Course	administrator's name (mention all, if more than one name)					
Name:	Dr. Mustafa Ismaeel Naif					
Email:	<u>eps.mustafa.ismaeel@uoanbar.edu.iq</u>					
Name:	Assistant teacher: Muthanna Khaleefah Mishlish					
Email:	muthana.kh.m@uoanbar.edu.iq					
8. Course	Objectives					
Course Object	tives This course aims to convey a general idea about:					
	The student acquires the necessary skills to know the importance					
	distributions and how to infer their parameters through the concept					
	sampling.					
9. Teachi	ng and Learning Strategies					
Strategy	Learning outcomes, teaching, learning and assessment methods					
	. A- Cognitive objectives					
	1- Extrapolation					
	2- Analysis					
	3- Conclusion					
	4-The lecture					
	5-Empowerment					
	B - The skills objectives of the course.					
	B1 - Developing the skill of how to estimate nervoy store					
	B2 - Developing the skill of amploying the characteristics of a good actimator for					
	b5 - Developing the skill of employing the characteristics of a good estimator for use in the practical side of life					
	C- Emotional and value goals					
	C1. The student should listen carefully to the evaluation					
	C2- The student must narticipate in subject activities					
	C3- To respect the knowledgeable value that he has					
	C4- To organize data to solve problems in the subject					
	<b>D</b> - Transferable general and qualifying skills (other skills related to					
	employability and personal development).					
	D1- The skill of calculating the properties of distributions					
	D2- The skill of calculating capabilities					
	D3- The skill of knowing the characteristics of good capabilities					
	D4- The skill of self-development by giving him information that will benefit him					

in the practical aspect D5- It enables the student to use what he has learned to develop himself						
10. Course	structure		-			
Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Ho urs	Week	
an in-person lecture, and motivational questions.	Blackboar d and data show	Some discrete and continuous probability random distributions	The student learns the basic principles of probability distributions and reviews them	4	1	
motivational questions	Blackboar d and data show	Sampling distributions	The student learns non- parametric distributions such as chi-square, chi-square, and chi-square	4	2	
motivational questions	Blackboar d and data show	Sampling theory	The student learns methods of inference for the distribution function of random variables (cumulative function).	4	3	
motivational questions	Blackboar d and data show	Sampling theory	The student will learn to deduce distributions using the function generating the moments	4	4	
motivational questions	Blackboar d and data show	ordered statistics	The student will be familiar with ordered statistics and the distributions of their functions	4	5	
motivational questions	Blackboar d and data show	Review the subject and conduct a monthly exam	The student learns how to do a comprehensive review of the subject, and the student notices the extent of his understanding of what has been studied by taking the first month's exam.	4	6	

motivational	Blackboar		The student will learn the		
questions	d and data		concept of estimation theory,		7
	show	Esumation theory	the estimator and its	4	/
			properties		
motivational	Blackboar		The student will learn the		
questions	d and data	Estimation theory	concept of an unbiased and	4	8
	show		least variable estimator		
motivational	Blackboar		That the student learns the		
questions	d and data	Point estimation	concept of sufficient and	4	9
	show		efficient estimator		
motivational	Blackboar		The student learns the		
questions	d and data	Point estimation	concept of an approximately	4	10
	show		biased change estimator		
motivational	Blackboar		The student will learn the		
questions	d and data		concept of methods for		
	show	Point estimation	finding estimators (maximum	4	11
			potential function and		
			moment method).		
motivational	Blackboar		The student will learn the		
questions	d and data	Doint actimation	concept of methods for	4	10
	show	Point estimation	finding the estimator		12
			(Bayasion method).		
motivational	Blackboar	Solve the questions			
questions.	d and data	and assignments	The student learns how to	1	12
	show	that have been	know what has been studied	4	15
		given			
motivational	Blackboar	A comprohonsivo	To increase the student's		
questions.	d and data	roviow of the	awareness through		
	show	motorial with the	enrichment examples and	4	14
		material with the	questions along with an		
		second month exam	evaluation exam		
	1			1	

	motivational questions.	Blackboar d and data show	A compr review mat	ehensive of the erial	To increase the student's awareness through enrichment examples	4	15
	11.Course	Evaluation	l				
	Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc						
	12.Learni	ng and Tead	ching Res	ources			
Required textbooks (curricular books any)			cular books	10- امير حنا، الاحصاء الرياضي، دار نشر جامعه الموصل، العراق. 11- خاشع الراوي، مدخل الى علم الاحصاء ، دار نشر جامعة الموصل، العراق الكيمياء اللاعضوية العصرية دباسم السعدي			
	Main references (sources)			<ol> <li>Introd McKea USA.</li> <li>Probal Tanis, USA.</li> <li>Mathe Dennis and Ri EDITI</li> </ol>	uction in Mathematical Statist an, J. and Craig, A., , Pearso pility and Statistical Inference E., and Zimmerman, D., Pearso matical Statistics with Applicati 5 D. Wackerly, William Menden chard L. Scheaffer, SEVENTH ON, 2008, USA	ics., He on Edu e, Hog son Ed ons, hall III	ogg, R., ucation, gg, R., ucation,
	Recommender references reports)	ed books (scientific	and journals,	A first cours	e in probability , Sheldon Ross, Ninth	Edition,	, 2014
	Electron	ic Referenc <del>e</del> s,	Websites	https://oc	w.mit.edu/courses/18-655-math	ematic	al-statistic
				https://ww	w.uoanbar.edu.iq/staff-page.ph	p?ID=	1104

1.	Course Name:					
	Mathematical statistics 2					
2.	Course Code:					
	MAT403					
3.	Semester / Year:					
	Second semester/2023-2024					
4.	Description Preparation Date:					
	1/2/2024					
5.	Available Attendance Forms:					
	Daily, at the time specified in the schedule, and at full time					
6.	Number of Credit Hours (Total) / Number of Units (Total)					
	60 hr./ 3Unit					
7.	Course administrator's name (mention all, if more than one name)					
	Name: Dr. Mustafa Ismaeel Naif					
	Email: <u>eps.mustafa.ismaeel@uoanbar.edu.iq</u>					
	Name: Assistant teacher: Muthanna Khaleefah Mishlish					
0	Email: <u>muthana.kn.m@uoanbar.edu.iq</u>					
<b>8.</b>	Course Objectives					
Course	Objectives This course aims to convey a general idea about:					
	The student acquires the necessary skills to know the importance					
	distributions and how to infer their parameters through the conc					
	of sampling.					
9.	Teaching and Learning Strategies					
Strate	gy Learning outcomes, teaching, learning and assessment methods					
	. A- Cognitive objectives					
	1- Extrapolation					
	2- Analysis					
	3- Conclusion					
	4-The lecture					
	5-Empowerment					
	<b>B</b> - The skills objectives of the course.					
	B1 - Developing the skill in knowing the inference of the parameter in practice.					
	B2 - Developing the skill of how to make a decision to accept or reject the null					
	hypothesis of parameters					
	<b>B3</b> - Developing the skill of employing the best rejection test area for use in the					
	practical side of life					
	C- Emotional and value goals					
	C1- The student should listen carefully to the explanation					
	C2- The student must participate in subject activities					
	C3- 10 respect the knowledgeable value that he has					
	U4- 10 organize data to solve problems in the subject $D_{\rm c}$ Transform has a smallest difference of the subject of the sub					
	D - 1 ransierable general and qualifying skills (other skills related to					
	D1. The skill of conducting hypothesis testing for the nerometer					
	D1- The skill of colouloting the rejection area					
	D2- The SKin of Calculating the rejection area					

D3- The skill of knowing the most powerful rejection area test
D4- The skill of self-development by giving him information that will benefit him
in the practical aspect
D5- It enables the student to use what he has learned to develop himself

10. Course	10. Course structure					
Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	W ee k	
an in-person lecture, and motivational questions.	Blackboar d and data show	The concept of hypothesis testing	The student learns the basic principles of hypothesis testing	4	1	
motivational questions	Blackboar d and data show	The concept of hypothesis testing	The student will learn the types of hypotheses	4	2	
motivational questions	Blackboar d and data show	Determine the rejection region	The student learns the concept of the rejection region and how to deduce it	4	3	
motivational questions	Blackboar d and data show	Test the rejection region	The student should know how to determine the type of test (likelihood ratio test)	4	4	
motivational questions	Blackboar d and data show	Review the subject and conduct a monthly exam	The student learns how to do a comprehensive review of the subject, and the student notices the extent of his understanding of what has been studied by taking the first month's exam.	4	5	
motivational questions	Blackboar d and data show	Calculating the rejection region	The student will learn to use Neyman-Pearson theory and determine the most robust regular test using the rank probability ratio	4	6	

motivational questions	Blackboar d and data show	Most puwerful test	Determine the strongest area of regular rejection	4	7
motivational questions	Blackboar d and data show	Uniformly most puwerful test	The student learns to determine the most powerful regular test using the exponential family	4	8
motivational questions	Blackboar d and data show	Uniformly most puwerful test	The student will learn to use the sequential probability proportional test	4	9
motivational questions	Blackboar d and data show	Uniformly most puwerful test	The student learns to use the Roe's score test	4	10
motivational questions	Blackboar d and data show	Final evaluation	The student learns the extent of his understanding of the material through a comprehensive review	4	11

#### **11.Course Evaluation**

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resour	rces
Required textbooks (curricular boo	1- امير حنا، الإحصاء الرياضي، دار نشر جامعه الموصل،
if any)	العراق.
	2- خاشع الراوى، مدخل الى علم الاحصاء ، دار نشر جامعة
	الموصل، العراق الكيمياء اللاعضوية العصرية دباسم
	السعدي
Main references (sources)	<ol> <li>Introduction in Mathematical Statistics., Hogg, R. , McKean, J. and Craig, A., , Pearson Education , USA.</li> <li>Probability and Statistical Inference, Hogg, R. , Tanis, E., and Zimmerman, D., Pearson Education , USA.</li> <li>Mathematical Statistics with Applications, Dennis D. Wackerly, William Mendenhall III and Richard L. Scheaffer, SEVENTH EDITION, 2008, USA</li> </ol>
<b>Recommended books and</b> references (scientific journals, reports)	A first course in probability , Sheldon Ross, Ninth Edition, 2014
<b>Electronic References, Websites</b>	https://ocw.mit.edu/courses/18-655-mathematical-statistics-sprin
	2016/pages/lecture-notes/
	https://www.uoanbar.edu.iq/staff-page.php?ID=1104

1.	Course	Name:
		Computer 1
2.	Course	Code:
		MAT210
3.	Semest	er / Year:
		First Semester/2023-2024
4.	Descrip	otion Preparation Date:
		12/11/2023
5.	Availal	ole Attendance Forms:
		Daily, at the time specified in the schedule, and at full time
6.	Numbe	r of Credit Hours (Total) / Number of Units (Total)
		60 hr./ 3Unit
7.	Course	administrator's name (mention all, if more than one name)
	Name:	Dr. Doreyed Muhammed Ahmed Al-Kerboly
	Email:	doreyedm@uoanbar.edu.iq
	Name:	MSc. Falah Amer Abdulazeez Alkubaisi
	Email:	: <u>falah.amer.azeez@uoanbar.edu.iq</u>
8.	Course	Objectives
Cours	e Object	ives This course aims to convey a general idea about:
	· ·	Teach the student the history of computers and the extent of their developm
		over the years with operating systems
9.	Teachi	ng and Learning Strategies
Strate	gy	1- Cognitive objectives
		2Learn about computer generations.
		3. Learn about the types of computers.
		4. Identify numerical systems.
		5- Identify algorithms.
		6- Learn Word & Excel
		B - The skills objectives of the course.
		B1 - Developing the skill in knowing the distribution of random variables and usin
		them in the practical aspect
		<b>B2</b> - Developing the skill of how to calculate the distribution of a function in terms
		its random variables
		<b>B3</b> - Developing the skill of employing the properties of random distributions for u
		in the practical aspect of life
		C- Emotional and value goals
		C1 - Critical Thinking (Question and Answer)
		C2- Organization skill
		C3- Interaction skill
		C4- Work skill
		<b>D</b> - Transferable general and qualifying skills (other skills related to employability
		and personal development).
		D1- The student participates in intellectual problems and finds the solution to thes
		problems
		D2. Assignments in addition to questions during the lecture

10. Course	structure				
Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
Attendance and motivational questions	In-person lecture	Computer Fundamentals	understand some of the basics of computer fundamentals	2 Theoretical 2Practical	1
Attendance and motivational questions	In-person lecture	Defining the Computer	Define the computer and its stages of development	2 Theoretical 2Practical	2
Attendance and motivational questions	In-person lecture	Computer Components	Computer components	2 Theoretical 2Practical	3
Attendance and motivational questions	In-person lecture	Hardware and Software Components	Identify and distinguish between hardware and software components	2 Theoretical 2Practical	4
Attendance and motivational questions	In-person lecture	Number Systems	Number systems	2 Theoretical 2Practical	5
Attendance and motivational questions	In-person lecture	Conversion between Number Systems	Conversion between number systems	2 Theoretical 2Practical	6

Attendance and motivational questions Grade	In-person lecture In-person lecture	Arithmetic Operations in the Binary System	Arithmetic operations in the binary system First exam	2 Theoretical 2Practical 2 Theoretical 2Practical	7 8
Attendance and motivational questions	In-person lecture	Programming Language	What is the meaning Programming Language	2 Theoretical 2Practical	9
Attendance and motivational questions	In-person lecture	Algorithms	Introduction to algorithms and their types	2 Theoretical 2Practical	10
Attendance and motivational questions	In-person lecture	Examples of Algorithms	Examples of algorithms	2 Theoretical 2Practical	11
Attendance and motivational questions	In-person lecture	While Loop	While loop	2 Theoretical 2Practical	12
Attendance and motivational questions	In-person lecture	For Loop	For loop	2 Theoretical 2Practical	13
Grade		Examples of Loop	Examples of Loop	2 Theoretical 2Practical	14

Grade	Second exam	<b>2 Theoretical</b> 2Practical	15
<b>11.Course Evaluation</b> <b>Distributing the score out of 10</b> <b>such as daily preparation, daily</b>	00 according to the tasks a oral, monthly, or written ex	assigned to the st kams, reports (	tudent etc
<b>12.Learning and Teaching Res</b>	ources	• £ •	••••••
hooks if any)		عاسب الألي	مبادئ الح
Main references (sources)         Main references (sources)         Recommended       books         and         references       (scientific         journals,	<ol> <li>G. O. Regan, A brief Hist</li> <li>T. Edition, Computer Ba</li> <li>"Digital_Logic_And_Com</li> <li>B. J. Lameres, "Introduc Circuits &amp; Logic Design with</li> <li>S. Scargall, Programming Memory.</li> <li>J. Lambert, Microsoft W Step.</li> <li>S. A. Jones, "The Word 2 Editor Contents," pp. 1–11, 20</li> <li>"A Concise User's Guide</li> <li>"LINE OF MICROSOFT OPERATING SYSTEMS".</li> </ol>	cory computing. sics. puter_Design.pdf." tion to Logic Verilog". g Persistent ord 2019: Step by 2007 / 2010 Equation 013. to". T WINDOWS	
reports)			
Electronic Reference	https://www.uoanbar.edu.ig	/staff-page.php?ID=	1142

Computer 1 2. Course Code: UOA142 3. Semester / Year: Second Semester/2023-2024 4. Description Preparation Date: 1/2/2024
2. Course Code: UOA142 3. Semester / Year: Second Semester/2023-2024 4. Description Preparation Date: 1/2/2024
UOA142 3. Semester / Year: Second Semester/2023-2024 4. Description Preparation Date: 1/2/2024
3. Semester / Year:         Second Semester/2023-2024         4. Description Preparation Date:         1/2/2024
Second Semester/2023-2024 4. Description Preparation Date: 1/2/2024
4. Description Preparation Date: 1/2/2024
1/2/2024
5. Available Attendance Forms:
Daily, at the time specified in the schedule, and at full time
6. Number of Credit Hours (Total) / Number of Units (Total)
60 hr./ 3Unit
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Doreyed Muhammed Ahmed Al-Kerboly
Email: : <u>doreyedm@uoanbar.edu.iq</u>
Name: MSc. Falah Amer Abdulazeez Alkubaisi
Email: <u>falah.amer.azeez@uoanbar.edu.iq</u>
8. Course Objectives
Course Objectives This course aims to convey a general idea about:
A course concerned with teaching the student the art of programming,
basics of programming, taking into account some concepts of the C++ lang
so that it becomes an introduction to the expansion of this language next yea
9. Teaching and Learning Strategies
Strategy A- Cognitive objectives
1 Learn now to solve problems using a calculator.
2. Issue analysis. 2. Dractical analysis.
5. Fractical examples
B - The skills objectives of the course. The student newticinates in intellectual issues and finds solutions to these issues
for use in the practical side of life
C- Fmotional and value goals
C1- Critical Thinking (Question and Answer)
C2- Organization skill
C3- Interaction skill
C4- Work skill
<b>D</b> - Transferable general and qualifying skills (other skills related to
employability and personal development).
D1: The student participates in intellectual problems and finds the solution to
these problems
D2. Assignments in addition to questions during the lecture

10.Cours	e structure				
Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
Attendance and motivational questions	In-person lecture	Algorithms	algorithms to establish an introduction to understanding programmer thinking	2 Theoretical 2Practical	1
Attendance and motivational questions	In-person lecture	Algorithm Description Method	How to describe algorithms	2 Theoretical 2Practical	2
Attendance and motivational questions	In-person lecture	Flowcharts	Introduction to the flowchart	2 Theoretical 2Practical	3
Attendance and motivational questions	In-person lecture	Program flowchart	Introduction to the program flowchart	2 Theoretical 2Practical	4
Attendance and motivational questions	In-person lecture	Simple sequence maps, branching maps	Introduction to the types of flowcharts	2 Theoretical 2Practical	5
Attendance and motivational questions	In-person lecture	Single loop maps, multi-loop maps	Introduction to the rest of the types of flowcharts	2 Theoretical 2Practical	6
Attendance and	In-person lecture	Arrays	Arrays and how to represent	2 Theoretical 2Practical	7

motivational			them		
questions			programmatical		
questions			lv		
		Holiday break	*y	2 Theoretical 2Practical	8
Attendance and motivational questions	In-person lecture	Two-dimensional arrays	Two- dimensional arrays and how to represent them programmatical ly	2 Theoretical 2Practical	9
Grade			First exam	2 Theoretical 2Practical	10
Attendance and motivational questions	In-person lecture	Introduction to C++	Understand the significance of this programming language and how to convert the algorithms we have learned into a C++ program	2 Theoretical 2Practical	11
Attendance and motivational questions	In-person lecture	Reading and printing in C++	Reading and printing in C++	2 Theoretical 2Practical	12
Attendance and motivational	In-person lecture	Variables and their declaration	Introduction to variables and the difference	2 Theoretical 2Practical	13

questions				between a		
				variable from a		
				mathematical		
				perspective		
				from a		
				programming		
				perspective		
Attendance				Simple examples		
and	Ŧ	Arit	hmetic	of arithmetic	2 Theoretical	
motivational	In-person	operati	ons in the	operations in	2Practical	14
questions	lecture	C++ l	anguage	the C++		
with grade				language		
Grade				Second exam	2 Theoretical 2Practical	15
11. Course E	Cvaluation					
Distributing t	he score out o	of 100 acc	cording to the	e tasks assigned to	the student such a	as daily
12. Learning	and Teaching	g Resource	es	s, reports etc		
Required text	books (curric	ular books			الخوارزميات	1- مبادئ
any)					المسائل باستخدام الحاسب	2- تحليل
Main reference	ces (sources)		[1] P. Lan Beginners.	nguage, Modern C -	-+ for Absolute	
			<ul> <li>[2] J. Sou</li> <li>[3] S. Scat</li> <li>Memory.</li> <li>[4] D. Ras</li> <li>language in</li> </ul>	li, "C ++ Language rgall, Programming ssokhin, "The C ++ a cheminformatics a	Tutorial," 2007. g Persistent programming and computational	
			chemistry,'	' J. Cheminform., p	p. 1–16, 2020, doi:	
			10.1186/s13	321-020-0415-y.		
			[6] Micros	oft Excel 2019 Krol	k po kroku	
Recommendee	d books	and			▲ ¹	
references	(scientific	journals,				
Electronic Def	forona		https://w	www.uconbor.odu.ia	staff nage nhn?ID-	-1142

1. Cours	se Nai	me:			
		Functional analysis 1			
2. Cours	se Coo	de:			
		MAT404			
3. Semes	ster /	Year:			
		first semester/2023-2024			
4. Descr	iptior	Preparation Date:			
	•	12/11/2023			
5. Availa	able A	Attendance Forms:			
	Dai	ly, at the time specified in the schedule, and at full time			
6. Numb	er of	Credit Hours (Total) / Number of Units (Total)			
		60 hr./ 3Unit			
7. Cours	se adr	ninistrator's name (mention all, if more than one name)			
		Name: Dr. Alaa Adnan Auad			
		Email: alaa.adnan.auad@uoanbar.edu.ig			
8. Cours	se Ob	iectives			
Course Obiec	tives	The course aims to study the main topics:			
		1-The student must be able to teach and learn Dali1			
		2- The student will be familiar with the concept of metric and metaphorical			
		spaces 3. That the student understands the target of second states and their			
		3- That the student understands the types of sequences and their comparison			
		4- That the student understands the basic concepts related to Euclidean			
space		space 5. That the student understands how to use proofs of theorems and link them			
		s- That the student understands now to use proofs of theorems and mix then concepts related to the tonic			
9. Teachi	ng ang	d Learning Strategies			
Strategy	A-C	ognitive objectives			
	1- Te	eaching the student how to think about solving engineering problems			
	2- A1	nalysis			
	3- Co	onclusion			
	4-1n 5-En	e lecture			
	B - T	The skills objectives of the course.			
	B1 -	It makes students skilled by giving abbreviations to prove problems and			
	solve	them in a simple way			
	<b>B2</b> G	aining the ability to interact in society.			
	B3 -	Raising the student's ability to express his ideas through dialogue or writing			
	$\begin{bmatrix} and \\ C_{-} \mathbf{F} \end{bmatrix}$	now to solve problems in artistic ways.			
	C1- C	Thinking that explores the truth through (question and answer)			
	C2- I	Managing societal problems by finding appropriate solutions to them			
	throu	ugh academic concepts			
	C3- 8	Spreading the spirit of interaction and attraction among students through			

academic competition
C4- Urging students to employ what they have learned in public life
D - General and qualifying transferable skills (other skills related to employability and personal development).
D1--The student's response to the main goal of the course, which is to develop his four skills.
D2- That the student understands and differentiates between various basic concepts, links them together, and benefits from them socially.
D3- Enhancing the student's self-confidence by distinguishing the different topics that were dealt with in the course and choosing those that suit his personality and society.
D4- The skill of self-development by giving him information that will benefit him in the academic future
D5- It enables the student to use what he has learned to develop himself

П

10 Course structure

	Shutture				
Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
an in-person lecture, and motivational questions.	Blackboar d and data show	Teaching students the definitions of metric spaces	Understand the lecture topic	2 Theoretical + 2 practical	1
motivational questions	Blackboar d and data show	Applications of metric spaces,	Understand the lecture topic	2 Theoretical + 2 practical	2
motivational questions	Blackboar d and data show	Convergent sequences, metric space, theory of public debates	Understand the lecture topic	2 Theoretical + 2 practical	3
motivational questions	Blackboar d and data show	Types of convergent sequences, metric space, theory of public discussions	Understand the lecture topic	2 Theoretical + 2 practical	4
motivational questions	Blackboar d and data show	Perfect spaces, metric space, theory of public	Understand the lecture topic	2 Theoretical + 2 practical	5

motivational questionsBlackboar d and dataApplications to metric spacesUnderstand the lecture topic2 Theoretical + 2 practical6
motivationalBlackboarApplications toUnderstand the2 Theoretical6questionsd and datametric spaceslecture topic+ 2 practical6
motivational questionsBlackboar d and dataApplications to metric spacesUnderstand the lecture topic2 Theoretical6+ 2 practical
questionsd and datametric spaceslecture topic+ 2 practical
show
motivational Blackboar Definitions of Understand the 2 Theoretical 7
questions d and data normed spaces lecture topic + 2 practical
show
SHOW
motivational         Blackboar         Applications to         Understand the         2 Theoretical         8
questions d and data normed spaces lecture topic + 2 practical
show
motivational Blackboar Banach spaces and Linderstand the 2 Theoretical 9
ausstions d and data their applications leature tonic 2 prostical
questions d'and data their applications, lecture topic + 2 practical
show normative space,
theory of public
discussions
motivationalBlackboarFinite dimensionalUnderstand the2 Theoretical10
questionsd and dataspaceslecture topic+ 2 practical
show
motivationalBlackboarCompact spaces.Understand the2 Theoretical11
questionsd and datalecture topic+ 2 practical
show
motivationalBlackboarLinear operatorsUnderstand the2 Theoretical12
questions     d and data     lecture topic     + 2 practical
show
motivationalBlackboarApplications ofUnderstand the2 Theoretical13
questions. d and data linear operators lecture topic + 2 practical
show
motivational         Blackboar         Pre-final exam         Understand the         2 Theoretical         14
questions. d and data lecture topic + 2 practical
--------------
motivational
questions
with the
grade

#### **11.Course Evaluation**

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resource	12. Learning and Teaching Resources			
<b>Required textbooks (curricular books</b>	12- مدخل في التحليل الدالي وتطبيقاته			
any)				
Main references (sources)	2-Introductory of functional analysis with			
	Applications			
	<b>3-Topics in functional analysis</b>			
	4.Functional Analysis Problems with Solutions			
Recommended books and references (scientific journals,	Functional analysis notes			
reports)				
Electronic References, Websites	https://www.uoanbar.edu.iq/staff-page.php?ID=1117			

1. Course Nam	1. Course Name:		
	Functional analysis 2		
2. Course Code	e:		
	MAT409		
3. Semester / Y	/ear:		
	Second semester/2023-2024		
4. Description	Preparation Date:		
	1/2/2024		
5. Available At	5. Available Attendance Forms:		
Daily, at the time specified in the schedule, and at full time			
6. Number of Credit Hours (Total) / Number of Units (Total)			
44 hr./ 3Unit			
7. Course adm	7. Course administrator's name (mention all, if more than one name)		
Name: Dr. Alaa Adnan Auad			
Email: <u>alaa.adnan.auad@uoanbar.edu.iq</u>			
8. Course Objectives			
<b>Course Objectives</b>	The course aims to study the main topics:		
	1-The student must be able to teach and learn Dali1		

	2- The student will be familiar with the concept of metric and metaphorical	
	spaces	
	<b>3-</b> That the student understands the types of sequences and their	
	comparison	
	4- That the student understands the basic concepts related to Euclidean	
	space	
	5- That the student understands how to use proofs of theorems and link ther	
	concepts related to the topic	
9. Teachi	g and Learning Strategies	
Strategy	Learning outcomes, teaching, learning and assessment methods	
87	. A- Cognitive objectives	
	1-Teaching the student how to think about solving engineering	
	2- Analysis	
	3. Conclusion	
	4.The lecture	
	5-Empowerment	
	B - The skills objectives of the course	
	B - The skins objectives of the course. B1 - Developing the skill in knowing the distribution of random variables and	
	using them in the practical aspect	
	, mem in the practical aspect Developing the skill of how to calculate the distribution of a function in	
	s of its random variables	
	Developing the skill of employing the properties of random distributions for	
	use in the practical aspect of life	
	C- Emotional and value goals	
	C1. Thinking that evolutions the truth through (question and answer)	
	$C_2$ Managing societal problems by finding appropriate solutions to them	
	through academic concents	
	$C_2$ Spreading the gnight of interaction and attraction among students through	
	co-spreading the spirit of interaction and attraction among students through	
	academic competition CA. Unging students to employ what they have learned in public life	
	D. Transforable general and qualifying skills (other skills related to	
	D - Transferable general and quantying skins (other skins related to	
	D1 The shill of colorating number methods	
	D1-The skill of calculating fulliber methods	
	D2- The skill of knowing the degree of correlation between works	
	D3- The skill of sole downlowment by sining him information between variables	
	1)4- The skill of sen-development by giving nim information that will benefit nim	
	in the academic future	
	D5- It enables the student to use what he has learned to develop himself	

10. Course structure					
Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
an in-person lecture, and motivational questions.	Blackboar d and data show	Definitions of an inner product spaces	Understand the lecture topic	2 Theoretical + 2 practical	1
motivational questions	Blackboar d and data show	Applications on an inner product space	Understand the lecture topic	2 Theoretical + 2 practical	2
motivational questions	Blackboar d and data show	Exercises related to inside hitting	Understand the lecture topic	2 Theoretical + 2 practical	3
motivational questions	Blackboar d and data show	Definitions of Hilbert spaces	Understand the lecture topic	2 Theoretical + 2 practical	4
motivational questions	Blackboar d and data show	Applications to Hilbert spaces	Understand the lecture topic	2 Theoretical + 2 practical	5
motivational questions	Blackboar d and data show	Monthly exam and discussions on previous topics	Understand the lecture topic	2 Theoretical + 2 practical	6
motivational questions	Blackboar d and data show	Orthogonality in Hilbert spaces	Understand the lecture topic	2 Theoretical + 2 practical	7
motivational questions	Blackboar d and data show	Parallelogram rule in Hilbert spaces	Understand the lecture topic	2 Theoretical + 2 practical	8
motivational questions	Blackboar d and data show	Properties of orthogonality in Hilbert spaces	Understand the lecture topic	2 Theoretical + 2 practical	9

motivational	Blackboar	Parallelogram rule	Understand the	2 Theoretical	10
questions	d and data	in Hilbert spaces	lecture topic	+ 2 practical	
	show				
motivational	Blackboar	Some theorems of	Understand the	2 Theoretical	11
questions	d and data	orthogonality in	lecture topic	+ 2 practical	
	show	Hilbert space			

11. Course Evaluation

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

12. Learning and Teaching Resources

8 8			
<b>Required textbooks (curricular books</b>	1- مدخل في التحليل الدالي وتطبيقاته		
any)			
Main references (sources)	2-Introductory of functional analysis with		
	Applications		
	3-Topics in functional analysis		
	4.Functional Analysis Problems with Solutions		
Recommended books and	Functional analysis notes		
references (scientific journals,			
reports)			
Electronic References, Websites	https://www.uoanbar.edu.iq/staff-page.php?ID=1117		

1. Course Name:		
General Topology -1		
2. Course Code:		
MAT402		
3. Semester / Year:		
first semester/2023-2024		
4. Description Preparation Date:		
12/11/2023		
5. Available Attendance Forms:		
Daily, at the time specified in the schedule, and at full time		
6. Number of Credit Hours (Total) / Number of Units (Total)		

	64 hr./ 4Unit				
7. Course	7. Course administrator's name (mention all, if more than one name)				
Name:	Dr. Alaa Mahmood Farhan				
Email:	Email: <u>eps.alaamahmood.farhan@uoanbar.edu.iq</u>				
Name: Teaching assistant: Teba Rzaij Sabah					
Email:	teba.r.sabah@uoanbar.edu.iq				
8. Cours	e Objectives				
	1- Emphasizing the importance of the topic of topological spaces in relation				
	to other sciences				
Course Object	2- For students to become familiar with the types of topological spaces				
Course Object	and compact spaces				
	4. To show students the most important applications of topological spaces				
9. Teachi	and Learning Strategies				
	Learning outcomes, teaching, learning and assessment methods				
	. A- Cognitive objectives				
	1- Extrapolation				
	2- Analysis				
	3- Conclusion				
Stratogy	4-The lecture				
Sualegy	5-Empowerment				
	B - The skills objectives of the course.				
	B1 - That the student understands what is meant by topological space				
	B2 - The student should distinguish between types of topological spaces				
	B3 - For the student to recognize the relationship between continuous functions				
	and isomorphism <b>P4</b> For the student to become familiar with the types of concretion evicence				
	B4 - F or the student to become familiar with the concept of compact spaces and				
	interconnected spaces and their applications				
	C- Emotional and value goals				
	C1- Thinking that explores the truth through (question and answer)				
	C2- Managing societal problems by finding appropriate solutions to them				
	through academic concepts				
	C3- Spreading the spirit of interaction and attraction among students through				
	academic competition				
	C4- Urging students to employ what they have learned in public life				
	D - Transferable general and qualifying skills (other skills related to				
	employability and personal development).				
	D1- That the student can distinguish between different topological spaces				
	D2- That the student can distinguish between continuous, open, and closed				
	Iuncuons D2 That the student can distinguish between the origins of severation and				
	reach the relationships between these spaces				
	D4. The student must have the necessary skill to solve problems using basic				
	concents				
	D5- That the student is able to understand compact and interconnected spaces a				
	their connections to other spaces				
	<b>T</b>				

10.Course structure					
Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
Exams and daily activities	Blackboar d and data show	1-Definition (Examples) of a Topological Space. 2- Types (Examples) of Topological Spaces.	Understand the prescribed material correctly and know its applications	16	4
Exams and daily activities	Blackboar d and data show	1- Definition of a closed subsets of a topological spaces - Examples – Intersection and union of a closed sets 2-Neighborhoods: Definition of a neighborhood - Definition of a neighborhood system – Examples- Properties neighborhood - Characterizations of open sets.	Understand the prescribed material correctly and know its applications	16	4
Exams and daily activities	Blackboar d and data show	1-Closure of a Set: Definition – Examples - Properties of closure of a set.	Understand the prescribed material correctly and know its applications	16	4
Exams and daily activities	Blackboar d and data show	1-Interior of a Set: Definition – Examples – Theorems.	Understand the prescribed material correctly and know its applications	16	4
11.Course	11.Course Evaluation				
preparation,	preparation, daily oral, monthly, or written exams, reports etc				
12.Learning and Teaching Resources					
1- د. سمير بشير حديد (مقدمة في التبولوجيا العامة) مديرية دار الكتب Required textbooks (curricular books					

tbooks (curricular books	<ul> <li>د. سمير بشير حديد (مقدمة في التبولوجيا العامة) مديرية دار الكتب</li> </ul>
any)	للطباعة والنشرز 1988

	13- 2- وليام بيرفن ((أساسيات التبولوجيا العامة)). ترجمة الدكتور عطا الله ثامر. 1975.
Main references (sources)	1- General topology, by: R. S. Aggarwal, A Text Book on
	<b>Topology, 1996.</b>
	2- G. S. Guptt, S. S. Guptt, Topology, Tenth Edition,
	2000
<b>Recommended books and</b>	1- General topology, by: J.L., Kelley's.
references (scientific journals,	2-General topology, by: Bourbaki's.
reports)	3-Willard's. W., General Topology–Addison Wesley,
	eading , mass , (1970) .
Electronic References, Websites	https://www.uoanbar.edu.iq/staff-page.php?ID=1118

1. Course N	ame:
	General Topology -2
2. Course Co	de:
	<b>MAT407</b>
3. Semester /	Year:
	first semester/2023-2024
4. Description	n Preparation Date:
	12/11/2023
5. Available A	Attendance Forms:
	Daily, at the time specified in the schedule, and at full time
6. Number of	Credit Hours (Total) / Number of Units (Total)
	64 hr./ 4Unit
7. Course adu	ninistrator's name (mention all, if more than one name)
Name: Dr.	Alaa Mahmood Farhan
Email: <u>eps</u>	<u>alaamahmood.farhan@uoanbar.edu.iq</u>
Name: Tea	ching assistant: Teba Rzaij Sabah
Email: <u>teb</u> a	a.r.sabah@uoanbar.edu.ig
8. Course O	bjectives
	1- Emphasizing the importance of the topic of topological spaces in relation
Course Object	iv to other sciences
J	2- For students to become familiar with the types of topological spaces
	3-Informing students about topological spaces, the axioms of separation,
	and compact spaces.
	4-To show students the most important applications of topological spaces
9. Teaching	and Learning Strategies
I	earning outcomes, teaching, learning and assessment methods
•	A- Cognitive objectives
1	- Extrapolation
2	- Analysis
3	- Conclusion
4	-The lecture

Strategy	5-Empowerment
	<b>B</b> - The skills objectives of the course.
	B1 - That the student understands what is meant by topological space
	B2 - The student should distinguish between types of topological spaces
	<b>B3</b> - For the student to recognize the relationship between continuous functions and isomorphism
	B4 - For the student to become familiar with the types of separation axioms
	B5 - For the student to become familiar with the concept of compact spaces and interconnected spaces and their applications
	C- Emotional and value goals
	C1- Thinking that explores the truth through (question and answer)
	C2- Managing societal problems by finding appropriate solutions to them
	through academic concepts
	C3- Spreading the spirit of interaction and attraction among students through
	academic competition
	C4- Urging students to employ what they have learned in public life
	<b>D</b> - Transferable general and qualifying skills (other skills related to employability and personal development).
	D1- That the student can distinguish between different topological spaces
	D2- That the student can distinguish between continuous, open, and closed functions
	D3- That the student can distinguish between the axioms of separation and reach the relationships between these spaces
	D4- The student must have the necessary skill to solve problems using basic
	concepts
	D5- That the student is able to understand compact and interconnected spaces
	their connections to other spaces
10.Cour	rse structure

Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
Exams and daily activities	Blackboar d and data show	1-Definition (Examples) of a Topological Space. 2- Types (Examples) of Topological Spaces.	Successfully completing the application period and benefiting from this period and applying the largest number of information that the student acquired during the study period	16	4
		1- Open and Closed mappings: Examples- Results on open & closed mappings.		16	4

Exams and daily activities	Blackboar d and data show	<ul> <li>2- omeomorphisms:</li> <li>Examples- Results</li> <li>3- omeomorphisms</li> <li>Topological and Hereditary</li> <li>Property: Definition –</li> <li>Examples – Theorems.</li> </ul>		Understand the prescribed material correctly and know its applications		
Exams and daily activities	Blackboar d and data show	1- Separation Axioms: T ₀ - Property, T ₁ - Property and T ₂ - Property: Definitions - Examples - and study relationships between them. 2-Regular Space and T ₃ - Property and Normal Space and T ₄ - Property: Definitions - Examples - and study relationships between them.		Understand the prescribed material correctly and know its applications	16	4
Exams and daily activities	Blackboar d and data show	1- Compact Spaces: Definitions of a cover of a set – Open cover – Finite cover – Subcover with examples. 2-Definition of a compact			16	4
		space – Examples - Properties of compactness. 3-Connected Spaces: Separated sets – Properties of separated sets – Connected spaces- Definitions, examples		Understand the prescribed material correctly and know its		
11 Commo		and properties about connected spaces. 4-Theorems and properties about connected spaces.		applications		
Distributing th	Evaluation	of 100 acco	ording to the tasks a	ssigned to the stu	dent such	as daily
preparation, da	ally oral, mon g and Teach	thly, or write	itten exams, reports	etc		
Required text	12. Learning and Teaching Resources         1- د. سمير بشير حديد (مقدمة في التبولوجيا العامة) مديرية دار الكتب         14         12. Learning and Teaching Resources         14         12. Learning and Teaching Resources         14         1988         14         14         14         14         any)         12. Learning ad Teaching Resources         1988         14         14         adul like thore, 1975         1975					
Main references (sources)		1- General topology, by: R. S. Aggarwal, A Text Book on Topology, 1996. 2- G. S. Guptt, S. S. Guptt, Topology, Tenth Edition, 2000			Book on dition,	
Recommended books and references (scientific journals, reports)			1- General topology, by: J.L., Kelley's. 2-General topology, by: Bourbaki's. 3-Willard's. W., General Topology–Addison Wesley,			

	eading, mass, (1970).	
<b>Electronic References, Websites</b>	https://www.uoanbar.edu.iq/staff-page.php?ID=1118	

13.Cours	Name:		
		Numerical analysis 1	
14.Cours	e Code:		
MAT305			
15. Semest	r / Year:		
first semester/	2023-2024		
16. Descrip	tion Prepar	ation Date:	
12/11/2023			
17. Availal	le Attendar	ice Forms:	
Daily, at the ti	ne specified	in the schedule, and at full time	
18. Numbe	of Credit l	Hours (Total) / Number of Units (Total)	
60 hr./	Unit		
19. Course	administrat	tor's name (mention all, if more than one name)	
Name:	Dr. Moham	med Yousif Turki	
Email:	1019883@1	10anbar.edu.iq	
20.Cours	e Objectiv	es	
	This c	ourse aims to convey a general idea about:	
	• The	• The need of most researchers in various branches of knowledge, especially	
	those	who deal with approximate measurements and calculations in their	
Course Object	ves resear	research.	
	• The	• The importance of approximation is extremely important, as many topics	
	depen	depend on it, such as various statistics on population numbers.	
	Temp	eratures and humidity levels	
	Devise	e approximate means and methods for addressing solutions to a num	
	of pro	blems	
21.Teach	ng and Le	arning Strategies	
	Learning o	utcomes, teaching, learning and assessment methods	
	. A- Cognit	ive objectives	
	1 (1) ( )		
	1-The student will gain a simple overview of errors in numerical calculations		
64	and how they accumulate.		
Strategy	2-1 ne stud	ent acquires the concept of a numerical solution when arriving at the	
	impossible		
	2 The stud	inipossible.	
	common al	and optime and analyzing them	
	4. Civing th	gui minis and analyzing menn a student experience in dealing with solutions of poplinear equations	
	and linear	systems as well as inclusion and interpolation	

10-Course structure						
Evaluatio n method	Teachin g method	Name of the unit/course or subject	Required learning outcomes	Hours	The Week	
General questions and discussion	Theoretical + practical	Elementary numerical analysis	0The concept of Numerical analysis	2theoretical + 2 practical	the first	
General questions and discussion	Theoretical + practical	The numerical error types	Absalute error, Relative errors + operation of error	2theoretical + 2 practical	the second	
General questions and discussion	Theoretical + practical	Numerical solution of Nonlinear equation	Half interval method	2theoretical + 2 practical	the third	
General questions and discussion	Theoretical + practical	Numerical solution of Nonlinear equation	False position method	2theoretical + 2 practical	the fourth	
General questions and discussion	Theoretical + practical	Numerical solution of Nonlinear equation	secant mrthod	2theoretical + 2 practical	Fifth	
General questions and discussion	Theoretical + practical	Numerical solution of Nonlinear equation	Newton_raphson method	2theoretical + 2 practical	Seventh	
General questions and discussion	Theoretical + practical	Numerical solution of Nonlinear equation	Fixed point method	2theoretical + 2 practical	eighth	
			Test first		Ninth	
General questions and discussion	Theoretical + practical	Numerical Solution of System of Linear equations	The concept of system linear equation	2theoretical + 2 practical	The tenth	
General questions and discussion	Theoretical + practical	Numerical Solution of System of Linear equations	Gaussian Elimination method	2theoretical + 2 practical	eleventh	
General questions and discussion	Theoretical + practical	Numerical Solution of System of Linear equations	Gauss-Jordan Reduced Method	2theoretical + 2 practical	twelveth	
General questions and discussion	Theoretical + practical	Numerical Solution of System of Linear equations	Jacobi Method	2theoretical + 2 practical	Thirteent h	
General questions and discussion	Theoretical + practical	Numerical Solution of System of Linear equations	Gauss-Seidel Method	2theoretical + 2 practical	fourteent h	
General questions and discussion	Theoretical + practical	Numerical Solution of System of Linear equations	Eigenvalue : The Power Method	2theoretical + 2 practical	Fifteenth	
	Theoretical + practical		Second test		sixteen	

**11.Course Evaluation** Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports ..., etc

reparation, dany orar, montiny, or written exams, reports etc			
11.Learning and Teaching Resour	ces		
<b>Required textbooks (curricular books</b>	Introduction to numerical analysis S. Baskar		
any)	2010		
	Introduction To Numerical Analysis Froberg C.		
	E 1969		
Main references (sources)	Follow up on electronic references and the Internet		
Recommended books and	Discreet websites-		
references (scientific journals,	• Virtual library-		
reports)	-Library locations in some international universities		
<b>Electronic References, Websites</b>	https://www.uoanbar.edu.iq/staff-page.php?ID=1105		

1. Course	e Name:
	Numerical analysis 2
2. Course	e Code:
MAT315	
3. Semeste	er / Year:
second semeste	er/2023-2024
4. Descrip	tion Preparation Date:
17/3/2024	
5. Availab	le Attendance Forms:
Daily, at the ti	me specified in the schedule, and at full time
6. Number	r of Credit Hours (Total) / Number of Units (Total)
60 hr./ 3	3Unit
7. Course	administrator's name (mention all, if more than one name)
Name: 1	Dr. Mohammed Yousif Turki
Email:	moh9883@uoanbar.edu.iq
8. Course	e Objectives
Course Object	ives This course aims to convey a general idea about:
	• The need of most researchers in various branches of knowledge, especially
	those who deal with approximate measurements and calculations in their
	research.
	• The importance of approximation is extremely important, as many topics
	depend on it, such as various statistics on population numbers.
	Temperatures and humidity levels
	Devise approximate means and methods for addressing solutions to a num
0	of problems
9. Teach	ing and Learning Strategies
Strategy	Learning outcomes, teaching, learning and assessment methods
	. A- Cognitive objectives
	1-1 ne student will gain a simple overview of errors in numerical calculations
	and now they accumulate.

2-The student acquires the concept of a numerical solution when arriving at the exact solution is more or less difficult
Sometimes impossible.
3-The student obtains experience in dealing with numerical methods and common algorithms and analyzing them
4-Giving the student experience in dealing with solutions of nonlinear equations

and linear systems, as well as inclusion and interpolation

10-Cou	10-Course structure						
Evaluation method	Teaching method	Name of the unit/course or subject	Required learning outcomes	Hours	The Week		
General	Theoretic	Interpolation and	Concept of	2	the first		
questions	al +	Polynomial	interpolation and	theoretical			
and	practical	Approximation	approximation	+ 2			
discussion				practical			
General	Theoretic	Interpolation	Interpolation and	<i>L</i> theoretical	the		
questions	al +	method	nolynomial		second		
discussion	practical		porynomiai	⊤ <i>4</i> nractical			
General	Theoretic	Internolation	Divided	<i>practical</i> <i>2</i>	the		
questions	al +	method	Difference	theoretical	third		
and	practical	linethou		+ 2	······		
discussion	Provincia			practical			
General	Theoretic	Interpolation	Newton Forward	2	the		
questions	al +	method	divided difference	theoretical	fourth		
and	practical			+ 2			
discussion				practical			
General	Theoretic	Interpolation	Newton Backward	2	Fifth		
questions	al +	method	divided difference	theoretical			
and	practical			+ 2			
discussion		<b>T</b> ( <b>1</b> ( <b>1</b>		practical	0 4		
General	Theoretic	Interpolation	Center divided	2	Seventh		
questions	al +	method	amerence				
discussion	practical			⊤ <i>4</i> nractical			
General	Theoretic	Approximation	Simple linear	2	eighth		
questions	al +	with least square	relation	- theoretical	eightii		
and	practical	method	Ouadrature	+ 2			
discussion	<b>F</b>		relation	practical			
General	Theoretic	Approximation	Multi linear	2	Ninth		
questions	al +	with least square	relation	theoretical			
and	practical	method		+ 2			
discussion				practical			
			First test		The		
					tenth		

General questions and discussion	Theoretic al + practical	Numerical Differentiation Methods	Methods based on finite difference operators	2 theoretical + 2 practical	eleventh
General	Theoretic	Numerical	Methods based on	2	twelvet
questions	al +	Differentiation	Interpolation,	theoretical	h
and	practical	Methods	undetermined	+ 2	
discussion			coefficients	practical	
General	Theoretic	Numerical	Rectangular	2	Thirtee
questions	al +	integral Methods	method	theoretical	nth
and	practical	_	Trapezoidal	+ 2	
discussion			method	practical	
General	Theoretic	Numerical		2	fourtee
questions	al +	integral Methods	Simpson rule	theoretical	nth
and	practical			+ 2	
discussion				practical	
General	Theoretic	Numerical		2	Fifteent
questions	al +	integral Methods	Coursian mula	theoretical	h
and	practical		Gaussian rule	+ 2	
discussion				practical	
			Second test		sixteen

11.Course Evaluation			
Distributing the score out of 100 acc	Distributing the score out of 100 according to the tasks assigned to the student such as daily		
preparation, daily oral, monthly, or w	ritten exams, reports etc		
12.Learning and Teaching Re	esources		
<b>Required textbooks (curricular books</b>	Introduction to numerical analysis S. Baskar 2010		
any)	Introduction To Numerical Analysis Froberg C.		
	E 1969		

22. Course Name:
Computer Advanced 1
23. Course Code:
MAT220
24. Semester / Year:
First Semester/2023-2024
25. Description Preparation Date:
12/11/2023
26. Available Attendance Forms:
Daily, at the time specified in the schedule, and at full time
27. Number of Credit Hours (Total) / Number of Units (Total)
60 hr./ 4Unit
28. Course administrator's name (mention all, if more than one name)

Name:	Abdul Sttar Ismail Wdaa
Email:	: sttarwdaa2019@uoanbar.edu.iq
29. Course	Objectives
<b>Course Object</b>	ives This course aims to convey a general idea about:
	Teach the student A course concerned with teaching the student the art
	programming using a languageC++ in addition to MATLAB
30. Teachin	ng and Learning Strategies
Strategy	1- Cognitive objectives
	1. Identify on How Dealing with Matrices
	2. Processes different on Matrices.
	3. Solution Functions
	B - Objectives Marathi Private By decision.
	sharing requester With issues Intellectual with finding the solution For
	this matters from Include it Derived And integration .
	C- Emotional and value goals
	C1 - Critical Thinking (Question and Answer)
	C2- Organization skill
	C3- Interaction skill
	C4- Work skill
	D - Transferable general and qualifying skills (other skills related to employability
	and personal development).
	D1- The student participates in intellectual problems and finds the solution to thes
	problems
	D2. Assignments in addition to questions during the lecture

31. Course	31. Course structure				
Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
Attendance and motivational questions	In-person lecture	C++	Arrays	2 Theoretical	1
Attendance and motivational questions	In-person lecture	C++	One dimensional array	2 applying	2
Attendance and motivational questions	In-person lecture	C++	Two dimensional array	2 Theoretical	3
Attendance and motivational questions	In-person lecture	C++	operations of array	2 applying	4
Attendance and motivational questions	In-person lecture	C++	Special matrix	2 Theoretical	5
Attendance and motivational questions	In-person lecture	C++	Function	2 applying	6
Attendance and motivational questions	In-person lecture	C++	Standard function	2 Theoretical	7
Grade	In-person lecture	C++	User defined function	2 applying	8
Attendance and motivational questions	In-person lecture	C++	matlab	2 Theoretical	9
Attendance	In-person	C++	Introduction	2 applying	10

and motivational	lecture					
questions						
Attendance and motivational questions	In-person lecture	C++		Fundamental definition	2 Theoretical	11
Attendance and motivational questions	In-person lecture	C++		Standard function	2 applying	12
Attendance and motivational questions	In-person lecture	C++		One dimension	2 Theoretical	13
Grade		0	:++	Two dimension	2 applying	14
Grade		C	\$++	One dimension	2 Theoretical	15
22 Course F	voluction					
Distributing the daily oral, mon	e score out of 1 thly, or written	00 accordin 1 exams, rep	g to the tasks orts etc	s assigned to the stud	ent such as daily prep	aration,
33. Learning	and Teaching l	Resources				
Required text any)	books (curricu	llar books	<ul> <li>Prog</li> <li>Lear</li> <li>Fundar</li> </ul>	ramming skills using n a languagec++ for mental of c++	gC++ beginners	
Main reference	s (sources)		<ol> <li>G. O. H</li> <li>T. Edit</li> <li>"Digital</li> <li>"Digital</li> <li>B. J. L</li> <li>Logic Design</li> <li>S. Scar</li> <li>J. Lam</li> <li>J. Lam</li> <li>S. A. Ja</li> <li>Editor Cont</li> <li>"A Con</li> <li>"LINE</li> <li>OPERATIN</li> </ol>	Regan, A brief Histor ion, Computer Basic Logic_And_Comput ameres, "Introduction with Verilog". gall, Programming P abert, Microsoft Word ones, "The Word 200 ents," pp. 1–11, 2013 ncise User's Guide to OF MICROSOFT V G SYSTEMS".	y computing. s. ter_Design.pdf." n to Logic Circuits & Persistent Memory. d 2019: Step by Step. 7 / 2010 Equation VINDOWS	
Recommended	books and i	references				
Electronic Refe	rences, Websit	es	https://www	.uoanbar.edu.iq/staff	-page.php?ID=1128	

13. Course	Name:
	Computer Advanced 1
14. Course	Code:
	UOA220
15. Semest	er / Year:
	Second Semester/2023-2024
16. Descrip	otion Preparation Date:
	1/2/2024
17. Availal	ble Attendance Forms:
	Daily, at the time specified in the schedule, and at full time
18. Numbe	er of Credit Hours (Total) / Number of Units (Total)
	60 hr./ 3Unit
19. Course	administrator's name (mention all, if more than one name)
Name:	Abdul Sttar Ismail Wdaa
Email:	: <u>sttarwdaa2019@uoanbar.edu.iq</u>
20. Course	Objectives
Course Object	tives This course aims to convey a general idea about:
	Teach the student A course concerned with teaching the student the art
	programming using a languageC++ in addition to MATLAB
21. Teachi	ng and Learning Strategies
Strategy	A- Cognitive objectives
	1 Identify on How Dealing with Matrices
	2. Processes different on Matrices.
	3. Solution Functions
	B - Objectives Marathi Private By decision.
	sharing requester With issues Intellectual with finding the solution For
	this matters from Include it Derived And integration .
	C- Emotional and value goals
	C1- Critical Thinking (Question and Answer)
	C2- Organization skill
	C3- Interaction skill
	C4- Work skill
	<b>D</b> - Transferable general and qualifying skills (other skills related to
	employability and personal development).
	D1: The student participates in intellectual problems and finds the solution to
	these problems
	D2. Assignments in addition to questions during the lecture

22. Course	structure				
Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
Attendance and motivational questions	In-person lecture	C++	Function	2 Theoretical	1
Attendance and motivational questions	In-person lecture	C++	Standard function	2 applying	2
Attendance and motivational questions	In-person lecture	C++	User defined function	2 Theoretical	3
Attendance and motivational questions	In-person lecture	C++	matlab	2 applying	4
Attendance and motivational questions	In-person lecture	C++	Introduction	2 Theoretical	5
Attendance and motivational questions	In-person lecture	C++	Fundamental definition	2 applying	6
Attendance and motivational questions	In-person lecture	C++	Standard function	2 Theoretical	7
		C++	User defined function	2 applying	8
Attendance and motivational questions	In-person lecture	C++	matlab	2 Theoretical	9
Grade		C++	Introduction	2 applying	10

Attendance		C++					
and	In-person	C T T		Fundamental	2 Theoretical	11	
motivational	lecture			definition	2 Theoretical	11	
questions							
Attendance	<b>.</b>	C++					
and	In-person			Standard	2 applying	12	
mouvational	lecture			Tunction			
Attendance							
and	In-person	~					
motivational	lecture	C++		One dimension	2 Theoretical	13	
questions							
Attendance							
and	In-person	~					
motivational	lecture	C++		Two dimension	2 applying	14	
questions with grade							
Grade				One dimension	2 Theoretical	15	
23. Course E	valuation						
Distributing t	he score out	of 100 accord	ing to th	e tasks assigned to	) the student such a	as daily	
preparation, d	laily oral, mor	nthly, or writte	en exams	s, reports etc			
24. Learning	and Teaching	g Resources	1 D				
Required tex	tbooks (curr	icular books,	1- Pro	gramming skills us	IngC++		
any)			2- Lea	rn a languagec++ l demontel of c++	or beginners		
			4- Matlab				
Main referenc	es (sources)		[1] P. Language, Modern C ++ for Absolute				
			Beginn	ers.	T		
			[2] J. 2007	Soun, "C ++ Lange	lage Tutorial,"		
			[3] S.	Scargall, Program	ming Persistent		
		Memory.					
		[4] D. Rassokhin, "The C ++ programming					
		language in cheminformatics and					
		computational chemistry," J. Cheminform.,					
			pp. 1–1	6, 2020, doi: 10.118	6/s13321-020-0415	•	
			ع" [5]	.c++.pdf - الدليل السري	,,,,		

	[6] matlab 2019 Krok po kroku
Recommended books and references	
(scientific journals, reports)	
<b>Electronic References, Websites</b>	https://www.uoanbar.edu.iq/staff-page.php?ID=1128

34. Course	Name:
<b>Ordinary Diff</b>	erential Equations/1
35. Course	Code:
MAT202	
36. Semest	er / Year:
first semester/	2023-2024
37. Descrip	otion Preparation Date:
12/11/2023	
38. Availal	ble Attendance Forms:
Daily, at the ti	me specified in the schedule, and at full time
39. Numbe	er of Credit Hours (10tal) / Number of Units (10tal)
	odministrator's name (mention all if more than one name)
40. Course	Asst Prof Dr. Osomo Vousif Mohammad
Email.	ibrsul 2019@uoanbar edu ja
Name:	Assistant teacher. Montaser ismael adwan
Email:	Montaser.ismael@uoanbar.edu.ig
41.	Course Objectives
Course Object	tives This course aims to convey a general idea about:
	Introducing the student to what a differential equation is and how to form
	arise, as well as the types of differential equations, types of solutions and th
	practical applications.
42. Teachi	ng and Learning Strategies
Strategy	Learning outcomes, teaching, learning and assessment methods
	. A- Cognitive objectives
	1- Extrapolation
	2- Analysis
	3- Conclusion
	4-The lecture
	5-Empowerment
	B - The skills objectives of the course.
	B1 - Developing the skill in knowing the ordinary differential equation
	B2 - Developing the skill of how to calculate the narticular and general solutions
	of ODEs.
	B3 - Developing the skill of employing the properties of ODEs.
	C- Emotional and value goals
	C1- Thinking that explores the truth through (question and answer)
	C2. Managing societal problems by finding appropriate solutions to them
	C2- managing societal provients by muning appropriate solutions to them

	through academic con	cepts			
	C3- Spreading the spin	it of interaction and attraction among students through			
	academic competition				
	C4- Urging students to employ what they have learned in public life				
	D - Transferable gener	al and qualifying skills (other skills related to			
	employability and pers	sonal development).			
	D1-The skill of calcula	ting number methods			
	D2- The skill of calcula	ating the particular and general solutions of ODEs			
	D3- The skill of knowi	ng the degree and order of ODEs			
	D4- The skill of self-de	velopment by giving him information that will benefit him			
	in the academic future				
	D5- It enables the stud	ent to use what he has learned to develop himself			
43. Course E	valuation				
Distributing the	he score out of 100 acc	ording to the tasks assigned to the student such as daily			
preparation, d	aily oral, monthly, or w	ritten exams, reports etc			
44. Learning	and Teaching Resource	es			
<b>Required text</b>	books (curricular books	Methods to solve differential equations/ Khalid			
any)		Ahmed Alsameraai.			
Main r	eferences (sources)	<ul> <li>Differential Equations , Frank Ayres JR,</li> </ul>			
		McGRAW-Hill book company 1952.			
		<ul> <li>ODEs Lecture Notes, Erich Miersemann, Dep. Of</li> </ul>			
		Math, Leipzig University, version Oct. 2012.			
		<b>ODEs lecture notes, B.Neta, Department of</b>			
		Mathematics, Naval Postgraduate School,			
		Monterey, California 93943, October 10, 2002.			
Recommended	l books and				
references	(scientific journals,				
reports)					
Electronic Ref	erences, Websites	https://www.uoanbar.edu.iq/staff-page.php?ID=1131			

25. Course Name:
Ordinary differential equations/2
26. Course Code:
MAT-207
27. Semester / Year:
Second semester/2023-2024
28. Description Preparation Date:
1/2/2024
29. Available Attendance Forms:
Daily, at the time specified in the schedule, and at full time
30. Number of Credit Hours (Total) / Number of Units (Total)

60 hr./ 3Unit							
31. Course administrator's name (mention all, if more than one name)							
Name: Asst. Prof. Dr. Osama Yousif Mohammed							
Email: ibrsul_2019@uoanbar.edu.iq							
Name:	Assistant teacher. Montaser ismael adwan						
Email:	Montaser.ismael@uoanbar.edu.iq						
32.	Course Objectives						
Course Object	tives Introducing the student to higher-order differential equations and						
	presenting multiple methods for solving them for different functions, as						
	well as introducing the student to the Laplace transform						
33. Teachir	ng and Learning Strategies						
Strategy	Learning outcomes, teaching, learning and assessment methods						
	. A- Cognitive objectives						
	1- Extrapolation						
	2- Analysis						
	3- Conclusion						
	4-The lecture						
	5-Empowerment						
	B - The skills objectives of the course.						
	B1 - Developing the skill in knowing the Solving higher-order differential						
	equations and finding their complementary solution and their own solution						
	<b>B2</b> - Developing the skill of how to calculate Laplace transforms for different						
	functions such as the constant, exponential, trigonometric, and other functions.						
	<b>B3</b> - Developing the skill of employing the method of unknown coefficients for						
	different functions, such as a constant, polynomial, exponential, or triangular						
	function, as well as using the method of changing parameters, changing the						
	median, and the differential operator for the same functions						
	C-Emotional and value goals						
	C1- I hinking that explores the truth through (question and answer)						
	C2- Managing societal problems by finding appropriate solutions to them						
	through academic concepts						
	C3- Spreading the spirit of interaction and attraction among students through						
	academic competition						
	C4- Urging students to employ what they have learned in public life						
	<b>D</b> - Transferable general and qualifying skills (other skills related to amplevebility and personal development)						
	employability and personal development). D1 The skill of calculating particular and complementary solution						
	D1-The skill of calculating particular and complementary solution						
	$D_{2}^{-1}$ The skill of knowing the degree of correlation between depended and up						
	depended variables						
	D4. The skill of self-development by giving him information that will bonefit him						
	in the academic future						
	D5. It enables the student to use what he has learned to develop himself						
	D3- It chaptes the structure to use what he has learned to develop minisen						

34. Course structure					
Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
an in-person lecture, and motivational questions.	Blackboar d and data show	ODEs of order n and solutions	Understand the lecture topic	2 Theoretical + 2 practical	1
motivational questions	Blackboar d and data show	Complementary , particular and general solutions	Understand the lecture topic	2 Theoretical + 2 practical	2
motivational questions	Blackboar d and data show	Different forms of Complementary soultions depends on types of roots.	Understand the lecture topic	2 Theoretical + 2 practical	3
motivational questions	Blackboar d and data show	Undetermined coefficient method.	Understand the lecture topic	2 Theoretical + 2 practical	4
motivational questions	Blackboar d and data show	Variation constant method Differential operator method (case A,B)	Understand the lecture topic	2 Theoretical + 2 practical	5
motivational questions	Blackboar d and data show	Differential operator method (case C,D,E)	Understand the lecture topic	2 Theoretical + 2 practical	6
motivational questions	Blackboar d and data show	ODEs of order n with variables coefficients	Understand the lecture topic	2 Theoretical + 2 practical	7
motivational questions	Blackboar d and data show	Test I	General Review& test 1.	2 Theoretical + 2 practical	8

motivational	Blackboar	Laplac	e	Understand the	2 Theoretical	9
questions	d and data	Transform	ations	lecture tonic	+ 2 practical	-
questions		1 1 ansi of mations		lecture topic	+ 2 practical	
	snow					
motivational	Blackboar	Inverse of Laplace		Understand the	2 Theoretical	10
questions	d and data	Transform	ations	lecture topic	+ 2 practical	
	show					
motivational	Blackboar	Use of La	place	Understand the	2 Theoretical	11
questions	d and data	Thomas		lactura tonic	+ 2 practical	
questions				lecture topic	+ 2 practical	
	show	solve OI	DES			
motivational	Blackboar	Solve of OI	<b>DEs by</b>	Understand the	2 Theoretical	12
questions	d and data	power se	ries.	lecture topic	+ 2 practical	
	show					
motivational	Blackboar	Solve of OI	)Es bv	Understand the	2 Theoretical	13
questions	d and data	Note of ODEs by		lacture tonia	- 2 prostical	
questions.		iviaciaurin series.		lecture topic	+ 2 practical	
	show					
motivational	Blackboar	Applications		Understand the	2 Theoretical	14
questions.	d and data			lecture topic	+ 2 practical	
	show					
motivational	Blackboar				2 Theoretical	15
questions	d and data			Conoral Roview	+ ? practical	
questions		Test I	[.		+ 2 practical	
with the	snow			and Test II.		
grade						
35. Course	Evaluation					
Distributing	the score out	of 100 accord	ding to 1	the tasks assigned t	to the student such	as daily
36. Learnin	g and Teachi	ng Resources		ns, reports etc		
Required textbooks (curricular books				Methods to solve di	fferential equations	/
any)			]	Khalid Ahmed Alsa	meraai.	
Main references (sources)			• ]	Differential Equation	ons , Frank Ayres J	R,
			<b>McGR</b>	AW-Hill book comp	any 1952.	
				ODEs Lecture Note	s, Erich Mierseman	in, Dep.
			OF Wrat	Es lecture notes. B.	Neta, Department of	". f
			Mat	thematics, Naval Po	stgraduate School,	
			Mo	nterey, California 9	3943, October 10,	
			2002	2.		

Recommended books and references	
(scientific journals, reports)	
Electronic References, Websites	https://www.uoanbar.edu.iq/staff-page.php?ID=1131

45.Course Name:					
Measurement and evaluation					
46.Course Code:					
47.Semester / Year:					
First semester/2023-2024					
48.Description Preparation Date:					
49. Available Attendance Forms:					
Daily, at the time specified in the schedule, and at full time					
50.Number of Credit Hours (Total) / Number of Units (Total)					
30 hr./ 20nit					
51. Course administrator's name (mention all, if more than one name)					
Name: assistant lecturer. Elaf Ghnee Khaleel					
Email: elarghneekhaleel@uoanbar.edu.iq					
52. Course Objectives					
Course Objectives A. terminology in measurement and evaluation and their role in the					
. educational process					
and psychomotor goals and set questions Testing affective to set cognitive					
interpreting its results and using it as feedback. Standardized testing					
C. Training them through flipped learning on the skill of analyzing					
wledge and evaluating contentmathematical kno.					
D they are trained to use teaching skills , Through flipped learning					
E. Distinguishing between different types of evaluation and their					
.relationship to measurement and testing					
F. Explaining the role of the teacher in the evaluation process in					
objective/essay ,achievement tests and their various types/ ,performance					
indicating the methods of constructing them and diagnosing the most					
,their application important weaknesses and strengths in them through					
along with explaining the most important ways to address them and improve					
.their use					
G. Introducing students to the most important steps in formulating test					
while specifying the most important ,items according to their instructions					
a for selecting them by constructing a table of specifications that criteri					
balances behavioral objectives and academic content to achieve the required					
good test validity by conducting various exploratory experiments to reach					

	.the approved basic experiment				
<b>5</b> 2 T 1	,Introducing students to the most important specifications of a good test as well as to the second ,including its types and how to apply it ,and how to conduct ,which is reliability of its various types ,characteristic ication of statistical methodsapply and achieve it through the appl.				
Strategy A Compiling biostings					
Strategy	A. : Cognitive objectives				
	1. The student should remember the information and laws . given in the course				
	2. That the student understands the course topics and related issues				
	3. The student should be able to apply what he has				
	learned to solve mathematical problems.				
	4. The student should be able to analyze the text of the				
	question and arrange the information to benefit from it in the solution and obtain correct results.				
	5. hould create problems related to the The student s				
	course topics and then arrive at a correct solution.				
	<b>6.</b> The student must have ideas about the course material .and know how to devise appropriate laws to solve it				
	B. :Skills objectives for the course				
	1. demonstrate vocabulary related to The student must .the course				
	2. The student should use the appropriate laws to solve .each problem				
	<b>3.</b> The student must be proficient in linking topics that can .be linked within the course vocabulary				
	4. ation to Linking the concepts of measurement and evalu				
	our daily lives through the types of achievement tests ,and methods of constructing and applying them .especially in our educational institutions				
	5. The student should distinguish between using different .est itemsstatistical methods to calculate achievement t				
	.Teaching and learning methods				
	1Lecture style				
	2Use brainstorming				
	3. and guided discovery method.				
	4Discussion and dialogue style				
	5. Video lectures on the teacher's YouTube channel included in electronic classes(Google Classroom)				
	Evaluation methods				

1 Only daily and monthly attendance tests
2. Assigning the student to academic tasks for which he
. will be rewarded
3. Assigning the student to make reports on mathematics
. topics
4. is duties and Assigning the student to analys
determining the types of objectives used in teaching in
the future and in the student's life process (Teacher
the future and in the student's the process (reacher
C. : based goals -Emotional and value
1. The student should show interest in the explanation the
through the video teacher provides of the subject
. uploaded to YouTube
2. The student must have sufficient conviction about the
. importance of the material he is receiving
3. That the student is able to organize his data to benefit
from the measurement subject in the rest of the
. ubiectsscientific s
4. That the student is able to organize his data to benefit
from the measurement subject in his practical life while
working in education or any other field
5 Developing the student's productive inclination towards
. methods mathematics and its teaching
· Teaching and learning methods
1. Use methods appropriate to the topic
2. Education using modern electronic means
3. Use effective education
4. Using flipped learning to strengthen the student teacher
himself
5 Use of blended learning
6 Learning by making the student a teacher to enhance
oonfidonco his solf
7 Learning through brainstorming among students
7. Learning through brainstorning among students
Evaluation methods
1. The method of discussion and dialogue between the
. student and the teacher
2 style
3Exams
4 Evaluation in collaborative teams among students
5. Measuring different capabilities
D. other skills related to )General and qualifying transferable skills
( employability and personal development

54 Course	structure	<ol> <li>Using the acquired information in the field of life</li> <li>Personal development through linking traditional .learning-education and e</li> <li>Building the personality of a competent mathematics teacher who can transfer his experiences to students in .the future</li> <li>Preparing the student scientifically and educationally .ing to solid scientific foundationsaccord</li> <li>solving skills -Develops student flexibility in problem and classroom situations</li> </ol>			
Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
+Exam activity	Blackboar d and data show	The importance of talking about measurement and evaluation	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical	1
+Exam activity	Blackboar d and data show	What do we ?measure	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical	2
+Exam activity	Blackboar d and data show	Features	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical	3
+Exam activity	Blackboar d and data	Multiple traits or abilities	Understand the subject matter	2 Theoretical	4

		show		correctly and		
				know its		
				applications in		
				other sciences		
				Understand the		
		Dlaakhaan		subject matter		
	+Exam	Diackboar	the seale	correctly and	2 Theoretical	5
	activity		the scale	know its	2 Theoretical	5
		SHOW		applications in		
				other sciences		
				Understand the		
				subject matter		
	+Exam	Blackboar		correctly and		
	activity	d and data	the test	know its	2 Theoretical	6
	Snow		applications in			
				other sciences		
				Understand the		
				subject matter		
	+Exam	Blackboar	Measurement levels	correctly and	2 Theoretical	
	activity	d and data		know its		1
		show		applications in		
				other sciences		
				Understand the		
				subject matter		
	+Exam activity show	Blackboar		correctly and		0
		d and data	Calendar	know its	2 Theoretical	8
			applications in			
				other sciences		
				Understand the		
	+Exam	+Exam Blackboar		subject matter		
	activity d and data	Evaluation	correctly and	2 Theoretical	9	
		show		know its		
	1	1				

				applications in		
				other sciences		
				Understand the		
		Blackhoar	т. с. I. I.	subject matter		
	+Exam	d and data		correctly and	2 Theoretical	10
	activity		Types of calendar	know its	2 Theoretical	10
		snow		applications in		
				other sciences		
				Understand the		
				subject matter		
	+Exam	Blackboar	** • • •	correctly and		
	activity	d and data	Variables	know its	2 Theoretical	11
		show		applications in		
				other sciences		
				Understand the		
			Types of variables	subject matter	2 Theoretical	
	+Exam	am vity		correctly and		12
	activity			know its		
		show		applications in		
				other sciences		
				Understand the		
			The role of	subject matter		
	+Exam	Blackboar	evaluation in	correctly and		12
	activity	d and data	improving the	know its	2 Theoretical	13
	snow	educational process	applications in			
			other sciences			
				Understand the		
				subject matter		
	+Exam	BlackDoar	A abianan at the t	correctly and	2 Theoretical	14
	activity	vity   d and data	Achievement test	know its		14
		show		applications in		
				other sciences		
	1	1				

	+Exam activity	Blackboar d and data show	Statistical analysis of test items	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical	15	
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56. Course Evaluation	
such as daily ,the tasks assigned	to the student Distribution of the grade according to
etc ,reports ,written exams ,monthly	,oral ,daily ,preparation.
57. Learning and Teaching Resourc	es
Required textbooks (curricular books	prepared by the assistant Lectures (Elaf Ghnee
any)	Khaleel Al-Mashhadani)
Main references (sources)	Measurement and :1882 ,Ahmed Suleiman ,Odeh
	Evaluation in the Teaching Process, .Amal -Dar Al ,Irbid
	Evaluation and ,1881 ,Mustafa and others ,Imam
	. Hekma Press-Dar Al ,Baghdad ,Measurement
	Fundamentals of ,2334Musa ,Nabhan-Al
	Amman ,Measurement in Behavioral Sciences,
	.Shorouk-Dar Al
Recommended books and	All sources related to the topic are in libraries and electron
references (scientific journals,	the circumstances depending on ,libraries
reports)	
<b>Electronic References, Websites</b>	Measurement and evaluation in psychology
	https://www.noor-book.com
	Saleh )and psychological measurement and evaluation
	(Lam .Din Mahmoud A-al
	9870 :Product codeb Skn
	https://ketabpedia.com
	Amin - Mohamed Al) measurement and evaluation
	(Khatib-Mustafa Al
	https://arabpsychology.com/kb/

1. Course Name:						
Foundations o	f education					
2. Course	Code:					
3. Semest	er / Year:					
First semester	/2023-2024					
4. Descrip	otion Preparation Date:					
10-9-2023						
5. Availal	ble Attendance Forms:					
Daily, at the ti	me specified in the schedule, and at full time					
6. Numbe	r of Credit Hours (Total) / Number of Units (Total)					
<u>30 hr./</u>	2Unit					
7. Course	administrator's name (mention all, if more than one name)					
Name:	assistant lecturer. Elaf Ghnee Khaleel					
Email:	elafghneekhaleel@uoanbar.edu.iq					
8. Course	Objectives					
Course Object	<b>ives</b> A. The student should know the principles of generaleducation					
	<b>B.</b> .That the student is able to know the foundations of education					
	C. For the student to be able to know the schools of education					
	.throughout the ages					
	<b>D. D.</b> That the student is able to apply the principles of education he has					
	learned					
9. Teachi	ng and Learning Strategies					
Strategy	A. :Cognitive objectives					
	1. The student should remember the information and laws					
	. given in the course					
	2. course topics and That the student understands the					
	.related issues					
	3. The student should be able to apply what he has					
	learned to solve mathematical problems					
	4 The student should be able to analyze the toxt of the					
	<b>4.</b> The student should be able to analyze the text of the question and annuage the information to henefit from it					
	question and arrange the information to benefit from it					
	ain correct results in the solution and obt					
	5. The student should create problems related to the					
	course topics and then arrive at a correct solution.					
	6. The student must have ideas about the course material					
	.and know how to devise appropriate laws to solve it					
	B. : the course Skills objectives for					
	1. The student must demonstrate vocabulary related to					
	the course					
	The student should use the annuantists laws to ask					
	2. The student should use the appropriate laws to solve					

_	.each problem				
3.	The student must be proficient in linking topics that can				
4	.be linked within the course vocabulary				
4.	epts of measurement and evaluation to Linking the conc				
	our dany lives through the types of achievement tests				
	associally in our educational institutions				
5	The student should distinguish between using different				
5.	.ds to calculate achievement test itemsstatistical metho				
.Teaching and learning methods					
1.	.Lecture style				
2.	.Use brainstorming				
3.	and guided discovery method.				
4.	.Discussion and dialogue style				
5.	Video lectures on the teacher's YouTube channel				
	included in electronic classes(Google Classroom)				
<b>Evaluation methods</b>					
1.	. Only daily and monthly attendance tests				
2.	Assigning the student to academic tasks for which he				
	. will be rewarded				
3.	tudent to make reports on mathematics Assigning the s				
	. topics				
4.	Assigning the student to analysis duties and				
	determining the types of objectives used in teaching in				
	the future and in the student's life process (leacher				
C. : based goals -Em	notional and value				
1.	should show interest in the explanation the The student				
	teacher provides of the subject through the video				
	. uploaded to YouTube				
2.	The student must have sufficient conviction about the				
-	. importance of the material he is receiving				
3.	data to benefit That the student is able to organize his				
	from the measurement subject in the rest of the				
4	. scientific subjects				
4.	I hat the student is able to organize his data to benefit				
	from the measurement subject in his practical life while				
F	. working in education or any other field student's productive inclination towards. Developing the				
5.	succent's productive inclination towards Developing the mathematics and its teaching methods				
	· mathematics and its teaching memous				
: Teaching and learning	methods				
1.	. Use methods appropriate to the topic				

			2 Educati	on using modern el	ectronic means				
			3. Use effective education						
		4. learning to strengthen the student teacher Using flipped . himself							
			5 Use of blended learning						
			6. Learning by making the student a teacher to enhance						
			. confidence-his self 7 Lograning through hypinstorming among students						
		<b>.</b>	/Learning through brainstorming among students						
		Evaluation	Evaluation methods						
			1. discussion and dialogue between the The method of student and the teacher						
			2 style	und the teacher					
			3Exams						
			4 Evaluat	tion in collaborative	e teams among stude	ents			
		5. Measuring different capabilities							
		D. othe	r skills related to	)General and qua	lifying transferable	e skills			
		( employability and personal development							
			1. Using the acquired information in the field of life						
		2. Personal development through linking traditional							
			.learning-education and e						
			3. personality of a competent mathematics Building the						
			teacher who can transfer his experiences to students in						
			une nume 4. Preparing the student scientifically and educationally						
			- according to solid scientific foundations						
			5. kills solving s -Develops student flexibility in problem						
		and classroom situations							
T	10. Course	structure							
			Nome of	Dogwinod					
	Evaluation	Teaching	unit/course or	learning	Hours	Week			
	memou	method	subject	outcomes	nours				
			J						
				Understand the					
	+Exam	Blackboar	The meaning and	correctly and					
	activity	d and data	goals of education	know its	2 Theoretical	1			
	•/	show		applications in					
				othon acionaca					
				outer sciences					
	+Exam	Blackboar	Educational	Understand the	2 Theoretical	2			

	activity	d and data	necessities	subject matter		
		show		correctly and		
				know its		
				applications in		
				other sciences		
		Blackboar	Educational theories	Understand the		
				subject matter		
	+Exam			correctly and		
	activity			know its	2 Theoretical	3
		SHOW		applications in		
				other sciences		
				Understand the		
			Education jobs	subject matter	2 Theoretical	4
	+Exam	blackboar		correctly and		
	activity	d and data		know its		
		SHOW		applications in		
				other sciences		
	+Exam activity	Blackboar d and data	Characteristics of education	Understand the		
				subject matter	2 Theoretical	5
				correctly and		
				know its		
		SHOW		applications in		
				other sciences		
+Exam activity				Understand the		
		Blackboar d and data show	Historical foundations of education	subject matter	2 Theoretical	6
	+Exam activity			correctly and		
				know its		
				applications in		
				other sciences		
	+Exam activity	Blackboar	Education in	Understand the		7
		d and data	ancient	subject matter	2 Theoretical	
		show	:civilizations	correctly and		
	L	1				
		Education in	know its			
----------	---------------------------------	-------------------	-----------------	---------------	----	
		Mesopotamia	applications in			
			other sciences			
			Understand the			
	Dlaalzhaan	Education among	subject matter			
+Exam		Education among	correctly and		0	
activity	d and data	the ancient	know its	2 Theoretical	ð	
	snow	Egyptians	applications in			
			other sciences			
			Understand the			
	Dlaalzhaan		subject matter			
+Exam	Diackboar	Chinage education	correctly and	2 Theoretical	0	
activity		Chinese education	know its	2 Theoretical	9	
	Show		applications in			
			other sciences			
	Blackboar d and data show	Indian education	Understand the			
			subject matter			
+Exam			correctly and	2 Theoretical	10	
activity			know its		10	
			applications in			
			other sciences			
			Understand the			
	Blackhoar		subject matter			
+Exam	d and data	Greek education	correctly and	2 Theoretical	11	
activity	show	Greek cuttation	know its	2 monthead		
	SHOW		applications in			
			other sciences			
			Understand the			
+Exam	Blackboar		subject matter			
activity	d and data	Islamic education	correctly and	2 Theoretical	12	
activity	show		know its			
			applications in			

-1	<b></b>	r	· · · · · · · · · · · · · · · · · · ·		
			other sciences		
+Exam activity	Blackboar d and data show	Education in the Middle Ages	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical	13
+ Exam activity	Blackboar d and data show	Modern education	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical	14
+Exam activity	Blackboar d and data show	Modern educational applications	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical	15
 12. Course	Evaluation				

such as daily ,assigned to the student Distribution of the grade according to the tasks etc ,reports ,written exams ,monthly ,oral ,daily ,preparation.

13. Learning and Teaching Resources			
<b>Required textbooks (curricular books</b>	prepared by the assistant Lectures (Elaf Ghnee		
any)	Khaleel Al-Mashhadani)		
Main references (sources)	<ul> <li>Dr ,Foundations and principles of education</li> </ul>		
	. Shuwaili-Faisal Abd Munshid Al		
	. Other		
Recommended books and	All sources related to the topic are in libraries and electron		
references (scientific journals,	depending on the circumstances ,libraries		
reports)			
<b>Electronic References, Websites</b>			

1. Co	ourse Name:
	Teaching methods
2. Co	ourse Code:
<b>3.</b> Set	mester / Year:
First sem	ester/2023-2024
4. De	scription Preparation Date:
10-9-2023	
5. AV	allable Attendance Forms:
Daily, at t	the time specified in the schedule, and at full time
0. NU 20	hander of Credit Hours (10tal) / Number of Units (10tal)
	nr./ 20mi
7. CO	urse administrator's name (mention an, il more than one name)
Ina En	nail: elafahneekhaleel@uoanhar.edu.ja
	urse Objectives
Course O	biectives A. The student should know general teaching methods
course o	B That the student is able to know teaching methods
	C For the student to be able to know the schools of education
	throughout the ages
	The set of the ages
	<b>D.</b> I hat the student is able to apply what he has studied
9. Te	aching and Learning Strategies
Strategy	A. :Cognitive objectives
	1. student should remember the information and laws The
	. given in the course
	2. That the student understands the course topics and
	.related issues
	3. The student should be able to apply what he has
	learned to solve mathematical problems
	4 a analyze the text of the The student should be able t
	aussion and avenues the information to herefit from it
	in the solution and abtain correct results
	.in the solution and obtain correct results
	5. The student should create problems related to the
	course topics and then arrive at a correct solution.
	6. s about the course material The student must have idea
	and know how to devise appropriate laws to solve it.
	B. :Skills objectives for the course
	1. The student must demonstrate vocabulary related to
	.the course
	2. The student should use the appropriate laws to solve

3	.each problem
5.	.be linked within the course vocabulary
4.	Linking the concepts of measurement and evaluation to
	our daily lives through the types of achievement tests
	and methods of constructing and applying them
5	ally in our educational institutionsespeci The student should distinguish between using different
5.	.statistical methods to calculate achievement test items
.Teaching and learning	methods
l. 2	Lecture style
<i>2</i> .	.Use brainstorming
3. A	Discussion and dialogue style
	.Discussion and dialogue style Video lectures on the teacher's VouTube channel
	included in electronic classes(Google Classroom)
<b>Evaluation methods</b>	
1.	. Only daily and monthly attendance tests
2.	academic tasks for which he Assigning the student to . will be rewarded
3.	Assigning the student to make reports on mathematics . topics
4.	Assigning the student to analysis duties and
	determining the types of objectives used in teaching in the future and in the student's life process ( Teacher
C · based goals -Fr	notional and value
1.	The student should show interest in the explanation the
-	teacher provides of the subject through the video uploaded to YouTube
2.	The student must have sufficient conviction about the
	. he is receiving importance of the material
3.	That the student is able to organize his data to benefit
	from the measurement subject in the rest of the . scientific subjects
4.	That the student is able to organize his data to benefit
	ile from the measurement subject in his practical life wh
	. working in education or any other field
5.	Developing the student's productive inclination towards . mathematics and its teaching methods
: Teaching and learning	methods
1.	. Use methods appropriate to the topic
	-

		2. electron	ic means Education	n using modern		
		3. Use effe	ective education			
		4. Using flipped learning to strengthen the student teacher . himself				
		5. Use of blended learning				
		6. Learning	g by making the st	udent a teacher to	enhance	
		. confide	nce-his self			
		7sLearnii	ng through brainsto	orming among stude	nı	
	Evaluation	methods			_	
		1. The met	hod of discussion	and dialogue betw	een the	
		. student	and the teacher			
		2 style				
		JExains 4 Fyslust	ion in collaborative	teams among stude	onts	
		5. Measuri	ng different canabi	lities		
		c. muusun	ing uniterent cupust			
	D. othe	r skills related to	)General and qua	lifying transferable	e skills	
	( employability and personal development					
		1. Using the acquired information in the field of life				
		2. Personal development through linking traditional				
		.learning-education and e				
		5. personality of a competent mathematics Building the teacher who can transfer his experiences to students in				
		the future				
		4. Preparing the student scientifically and educationally				
		. according to solid scientific foundations				
	5. kills solving s -Develops student flexibility in problem					
		and classroom situations				
10. Course	structure					
Evaluation	Teaching	Name of	Required		Week	
method	method	unit/course or	learning	Hours	VV CCK	
		subject	outcomes			
			Understand the			
			subject matter			
+Exam	BIACKDOAR d and data	I ne concept of	correctly and	2 Theoretical	1	
activity	show	curriculum	know its			
			applications in			
			other sciences			
+ Exam	Blackboar	Foundations of	Understand the	2 Theoretical	2	
1			1			

ac	ctivity	d and data	curriculum	subject matter		
		show	construction	correctly and		
				know its		
				applications in		
				other sciences		
				Understand the		
		Blackhoar	Mathads of	subject matter		
+I	Exam	d and data	organizing the	correctly and	2 Theoretical	3
ac	ctivity	show		know its	2 Incordical	5
		5110 W	curriculum	applications in		
				other sciences		
				Understand the		
				subject matter		
+I	+Exam activity show	d and data	Types of curricula	correctly and	2 Theoretical	4
ac		u anu uata	Types of curricula	know its	2 Theoretical	-
			applications in			
				other sciences		
				Understand the		
		Dlaakhaan	Elements or	subject matter		
+ <b>I</b>	+Exam	d and data		correctly and	2 Theoretical	5
ac	activity			know its	2 Theoretical	3
		5110 W	curriculum	applications in		
				other sciences		
				Understand the		
		Rlackhoar	Standards of	subject matter		
+I	+Exam activity	d and data	educational	correctly and	2 Theoretical	6
ac		show	objectives and their	know its	2 montha	Ū
		5110 W	characteristics	applications in		
				other sciences		
	Fyam	Blackboar	Levels of	Understand the		
	unam stivity	d and data	educational	subject matter	2 Theoretical	7
		show	objectives	correctly and		

			know its applications in		
			other sciences		
+Exam activity	Blackboar d and data show	Content	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical	8
+Exam activity	Blackboar d and data show	Teaching aids and teaching methods	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical	9
+Exam activity	Blackboar d and data show	Technical means in the era of globalization	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical	10
+Exam activity	Blackboar d and data show	Teaching	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical	11
+Exam activity	Blackboar d and data show	Teaching strategy	Understand the subject matter correctly and know its applications in	2 Theoretical	12

				other sciences			
				Understand the			
		Dlaakhaan		subject matter			
	+Exam	d and data	<b>Classification of</b>	correctly and		13	
	activity	u anu uata	teaching methods	know its	2 Theoretical	15	
		5110 W		applications in			
				other sciences			
				Understand the			
		Dlaalshaan		subject matter			
	+Exam	d and data	Dian da di la annin a	correctly and	2 Theoretical	14	
	activity	d and data show	blended learning	know its	2 Theoretical	14	
				applications in			
				other sciences			
		Blackboar		Understand the	2 Theoretical		
				subject matter			
	+Exam		Cooperative	correctly and			
	activity	d and data	learning	know its		15	
		show		applications in			
				other sciences			
	12. Course	Evaluation					
	such as daily	y ,Distributi	on of the grade acc	ording to the tasl	ks assigned to the	student	
	etc ,reports ,written exams ,monthly ,oral ,daily ,preparation.						
	13. Learnin	g and Teachi	ng Resources	· · · · · · · ·			
	Required textbooks (curricular books prepared by the assistant Lectures (Elaf Ghnee						
	Main referen	ces (sources)	curriculu	n and teaching met	hods .Course book		
	Recommende	ed books	and electronic	All sources related	to the topic are in li	braries a	
	references	(scientific	journals, depending	g on the circumstan	ces,libraries		

 Electronic References, Websites
 https://www.uoanbar.edu.iq/staff-page.php?ID=1970

58. Course	Nan	ne:	
Advanced diff	eren	tiation and integration1	
59. Course	Cod	e:	
MAT201			
60. Semest	er / Y	/ear:	
first semester/	2023	-2024	
61. Descrip	otion	Preparation Date:	
2/9/2023			
62. Availat	ole A	ttendance Forms:	
Daily, at the ti	me s	pecified in the schedule, and at full time	
63. Numbe	r of	Credit Hours (Total) / Number of Units (Total)	
75 hr./	4Uni	t	
64. Course	adm	linistrator's name (mention all, if more than one name)	
Name:		Alaa Adnan Auad & M.r. Maemoon Ismaeal	
Lillall. Name:	A sei	stant teacher: Mimoon Ibrahim Ismael	
Email.	mim	oon ismael@uoanbar.edu.iq	
65 Course	Ohi	ectives	
Course Objectiv		The course aims to study the main topics:	
	103	1- Understanding the types of conic sections, how to derive equations	
		for rotating axes.	
		2- Understanding the meaning of polar coordinates, how to draw polar	
		2- Onderstanding the incaring of polar coordinates, now to draw pol	
		equations, finding areas and the length of their curves, as well as	
		understanding sequences (series).	
		3. Knowing when sequences (series) are convergent or divergent, with	
		knowledge of the two most famous series, which are Taylor and McLaurin	
		prepared these topics for use in the third grade.	
		4- The most famous Taylor.2- The student will be familiar with the concept	
		of metric and metaphorical spaces.	
66. Teachi	ng ar	nd Learning Strategies	
Strategy	A- (	Cognitive objectives	
	1- T	eaching the student how to think about solving engineering problems	
	<b>2-</b> A	nalysis	
	3- 0	Conclusion	
	<b>4-</b> T	he lecture	
	5-E	mpowerment	
	<b>B</b> -	The skills objectives of the course.	
	<b>B1</b> - It makes students skilled by giving abbreviations to prove problems and		
	solve them in a simple way		
	<b>B2</b> Gaining the ability to interact in society.		
	ВЗ	- Kaising the student's ability to express his ideas through dialogue or writing	
	and	now to solve problems in artistic ways.	
	U-1	Emotional and value goals	
C1- Thinking that explores the truth through (question and answer)		I ninking that explores the truth through (question and answer)	

C2- Managing societal problems by finding appropriate solutions to them through academic concepts C3- Spreading the spirit of interaction and attraction among students through academic competition C4- Urging students to employ what they have learned in public life D - General and qualifying transferable skills (other skills related to employability and personal development). D1--The student's response to the main goal of the course, which is to develop his four skills. D2- That the student understands and differentiates between various basic concepts, links them together, and benefits from them socially. D3- Enhancing the student's self-confidence by distinguishing the different topics that were dealt with in the course and choosing those that suit his personality and society. D4- The skill of self-development by giving him information that will benefit him in the academic future D5- It enables the student to use what he has learned to develop himself

**67.** Course structure Name of Required **Evaluation** Teaching Week method unit/course or learning Hours method subject outcomes **Definitions of quadratic** Blackboar Understand the **2** Theoretical an in-person 1 d and data equations in the plane lecture. and lecture topic + 2 practical show motivational questions. motivational Blackboar **Sectional equations Understand the 2** Theoretical 2 questions d and data lecture topic + 2 practical show 2 Theoretical motivational Blackboar **Sectional equations** Understand the 3 lecture topic questions d and data + 3 practical show **Sectional equations Understand the 2** Theoretical 4 motivational **Blackboar** questions d and data lecture topic + 3 practical show motivational Blackboar **Sectional equations** Understand the **2** Theoretical 5 questions d and data lecture topic + 3 practical show motivational Blackboar **Polar coordinates Understand the** 2 Theoretical 6

questions	d and data		lecture topic	+ 3 practical	
	show				
motivational	Blackboar	Polar coordinates	Understand the	2 Theoretical	7
questions	d and data		lecture topic	+ 3 practical	
	show				
motivational	Blackboar	Polar coordinates	Understand the	2 Theoretical	8
questions	d and data		lecture topic	+ 3 practical	
	show				
motivational	Blackboar	Polar coordinates	Understand the	2 Theoretical	9
questions	d and data		lecture topic	+ 3 practical	
	show				
motivational	Blackboar	Follow-ups	Understand the	2 Theoretical	10
questions	d and data		lecture topic	+ 3 practical	
	show				
motivational	Blackboar	Sequences	Understand the	2 Theoretical	11
questions	d and data		lecture topic	+ 3 practical	
	show				
motivational	Blackboar	finite series	Understand the	2 Theoretical	12
questions	d and data		lecture topic	+ 3 practical	
	show				
motivational	Blackboar	finite series	Understand the	2 Theoretical	13
questions.	d and data		lecture topic	+ 3 practical	
	show				
motivational	Blackboar	exams, questions	Understand the	2 Theoretical	14
questions.	d and data	and answers	lecture topic	+ 3 practical	
	show				
motivational	Blackboar	Definitions of	Understand the	2 Theoretical	15
questions with	d and data	quadratic equations	lecture topic	+ 3 practical	
the grade	show	in the plane			
68. Course I	Evaluation	C 100 11	1 . 1 . 1		1 .1

Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports .... etc

69. Learning and Teaching Resources				
<b>Required textbooks (curricular books</b>	15- التفاضل والتكامل المتقدم لطلبة العلوم والهندسة			
any)				
Main references (sources)	Schaum's Abstracts Series: Theories and			
	Problems in Calculus, Frank Eiser, Cairo,			
	1990.			
Recommended books and	Calculus with analytical geometry, i.e. J. Persal, Part Ty			
references (scientific journals,	translated by Ali Azizo Yahya Abd Saeed, second editi			
reports)	Baghdad, 1983.			
Electronic References, Websites	https://www.uoanbar.edu.iq/staff-page.php?ID=1117			

37.Course Name:					
Advanced differentiation and integration-2					
38.Course Code:					
MAT206					
39.Semester / Year:					
Second semester/2023-2024					
40.Description Preparation Date:					
1/2/2024					
41.Available Attendance Forms:					
Daily, at the time specified in the schedule, and at full time					
42.Number of Credit Hours (Total) / Number of Units (Total)					
75 hr./ 4Unit					
43.Course administrator's name (mention all, if more than one name)					
Name: Dr. Alaa Adnan Auad & M.r. Maemoon Ismaeal					
Email: alaa.adnan.auad@uoanbar.edu.iq					
Name: Assistant teacher: Mimoon Ibrahim Ismael					
Email: mimoon.ismael@uoanbar.edu.iq					
44. Course Objectives					
Course Objectives The course aims to study the main topics:					
1- The student's understanding of functions that depend on more than one					
variable, understanding the concept of their objective and their partial					
derivatives.					
2- Their applications, understanding double and triple integrals and their					
applications such as areas and volumes, benefiting from what he learned in					
the first stage and applying them to the secon					
3- subject, as well as studying cylindrical and spherical coordinates and					
studying integration on Path and Crane's theory and its applications					
strangenergenergenergenergenergenergenerge					
45. Teaching and Learning Strategies					
Strategy Learning outcomes, teaching, learning and assessment methods					
. A- Cognitive objectives					

1-Teaching the student how to think about solving engineering
2- Analysis
3- Conclusion
4-The lecture
5-Empowerment
<b>B</b> - The skills objectives of the course.
<b>B1</b> - Developing the skill in knowing the distribution of random variables and
using them in the practical aspect
<b>B2</b> - Developing the skill of how to calculate the distribution of a function in
terms of its random variables
<b>B3</b> - Developing the skill of employing the properties of random distributions for
use in the practical aspect of life
C- Emotional and value goals
C1- Thinking that explores the truth through (question and answer)
C2- Managing societal problems by finding appropriate solutions to them
through academic concepts
C3- Spreading the spirit of interaction and attraction among students through
academic competition
C4- Urging students to employ what they have learned in public life
D - Transferable general and qualifying skills (other skills related to
employability and personal development).
D1-The skill of calculating number methods
D2- The skill of calculating the probability of certain events
D3- The skill of knowing the degree of correlation between variables
D4- The skill of self-development by giving him information that will benefit him
in the academic future
 D5- It enables the student to use what he has learned to develop himself
46. Course structure

40. Course structure					
Evaluation method method		Name of unit/course or subject	Required learning outcomes	Hours	Week
an in-person	Blackboar	Definition of	Understand the	2 Theoretical	1
lecture, and data show		parametric	lecture topic	+ 2 practical	
motivational		equations in the			
questions.		Cartesian plane			
motivational Blackboar Definition of		Understand the	2 Theoretical	2	
questions	questions d and data vectors in the plane		lecture topic	+ 2 practical	
	show	and operations on			
		them			
motivational	Blackboar	Definition of	Understand the	2 Theoretical	3
questions	d and data	vectors in	lecture topic	+ 2 practical	

	show	triangular space			
		and their properties			
		in triangular space			
motivational	Blackboar	How to calculate	Understand the	2 Theoretical	4
questions	d and data	vector	lecture topic	+ 2 practical	
	show	multiplication	-	-	
		numerically and			
		directionally			
motivational	Blackboar	Calculating the	Understand the	2 Theoretical	5
questions	d and data	equation of the	lecture topic	+ 2 practical	
questions	show	narallel line of a			
	5110 11	vector in a			
		triangular snace			
motivational	Blackhoor	Calculating the	Understand the	2 Theoretical	6
avostions	d and data	calculating the		2 Theoretical	U
questions			lecture topic	+ 2 practical	
	snow	parallel plane of a			
		vector in a			
		triangular space			
motivational	Blackboar	Definition of	Understand the	2 Theoretical	7
questions	d and data	continuity and	lecture topic	+ 2 practical	
	show	limits of functions			
		with two variables			
motivational	Blackboar	Definition of	Understand the	2 Theoretical	8
questions	d and data	continuity and	lecture topic	+ 3 practical	
	show	limits for functions			
		of three variables			
motivational	Blackboar	Calculate the	Understand the	2 Theoretical	9
questions	d and data	partial derivatives	lecture topic	+ 3 practical	
	show	of functions with			
		two or more			
		variables using the			
		8			1

motivational	Blackboar	Partial d	erivatives	Understand the	2 Theoretical	10
questions	d and data			lecture topic	+ 3 practical	
	show					
motivational	Blackboar	Double	integrals	Understand the	2 Theoretical	11
questions	d and data		8	lecture topic	+ 3 practical	
4	show				· · · ·	
motivotional	Dlaakhaan	Undong	tand the	Colculating	2 Theoretical	12
motivational	Blackboar	Unders	iand the	Calculating	2 Theoretical	12
questions	d and data	lectur	e topic	double integrals	+ 3 practical	
	show			for functions		
				with two		
				variables		
motivational	Blackboar	Unders	tand the	Calculating	2 Theoretical	13
questions	d and data	lectur	e topic	double integrals	+ 3 practical	
	show			for functions of		
				three variables		
motivational	Blackboar	Unders	tand the	Monthly exams	2 Theoretical	15
questions	d and data	lacture topic			+ 3 practical	10
questions	show	iceture topic			r 5 practical	
	SIIUW					
47. Course	Evaluation	6 100	1			1 .1
Distributing preparation.	the score out daily oral, mo	of 100 acconthly, or w	vritten exan	the tasks assigned in the tasks assigned in the tasks assigned in the tasks assigned in the tasks as the tas the tasks as the tasks as	to the student such	as daily
48. Learnin	g and Teachi	ng Resourc	es			
Required tex	tbooks (curri	cular books	ىية	متقدم لطلبة العلوم والهند	التفاضل والتكامل ال	-1
any) Main references (sources) Schaum's Abstracts Series: Theories and						
			Proble	ems in Calculus, Fra	ank Eiser, Cairo,	
			1990.			
Recom	mended books	s and	Calculus	with analytical geo	metry, i.e. J. Persa	l, Part T
references (scientific journals,			translated	by Ali Azizo Yal 1983	hya Abd Saeed, see	cond edit
Electronic R	Electronic References, Websites			w.uoanbar.edu.iq/sta	aff-page.php?ID=111	7
	Electronic Kelerences, websites					

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70. Course Name:							
Group Algebra 1							
71. Course Code:							
MAT203							
72. Semester / Year:							
First semester/2023-2024							
73. Description Preparation Date:							
12/11/2023							
74. Available Attendance Forms:							
Daily, at the time specified in the schedule, and at full time							
75. Number of Credit Hours (Total) / Number of Units (Total)							
64 hr./ 3Unit							
76. Course administrator's name (mention all, if more than one name)							
Name: Dr. Firas Shaker Fandi							
Email: <u>Firassh@uoanbar.edu.iq</u>							
77. Course Objectives							
Course Objectives his course aims to study the concept of group, the concept of subgroups, as							
well as periodic and regular gr							
78. Teaching and Learning Strategies							
Strategy Learning outcomes, teaching, learning and assessment methods							
A-Knowledge and understanding							
<b>1-</b> The student will be familiar with the concept of definition of group							
2- For the student to become familiar with the concept of subgroup							
<b>3-</b> That the student understands what is meant by normal subgroup .							
4- That the student knows the meaning of							
5- That the student understands what is meant by normal subgroup							
<b>B</b> - The skills objectives of the course.							
1- The skill of knowing the use of algebra in his scientific life through knowledge							
of the laws							
3- That the student can distinguish between the types of systems he studies							
79. Course structure							

Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week				
an in-person lecture, and motivational questions.	Blackboar d and data show	Binary operation	Understand the subject matter correctly and know its applications in	2 Theoretical + 2 practical	1				

			other sciences		
motivational	Blackboar		Understand the	2 Theoretical	
questions	d and data		subject matter	+ 2 practical	
	show	The group and its	correctly and		2
		conditions	know its		2
			applications in		
			other sciences		
			Understand the		
	Blackhoar		subject matter		
motivational	d and data	Various examples	correctly and	2 Theoretical	3
questions	u anu uata	of groups	know its	+ 2 practical	5
	SHOW		applications in		
			other sciences		
			Understand the		
	Blackhoar		subject matter		
motivational	d and data	Subarouna	correctly and	2 Theoretical	4
questions	show	Subgroups	know its	+ 2 practical	4
			applications in		
			other sciences		
			Understand the		
	Blackhoar		subject matter		
motivational	d and data	Various examples	correctly and	2 Theoretical	5
questions	show	of subgroups	know its	+ 2 practical	5
	5110 W		applications in		
			other sciences		
			Understand the		
	Blackhoar		subject matter		
motivational	d and data	Group rank and	correctly and	2 Theoretical	6
questions	show	element rank	know its	+ 2 practical	Ū
	SHOW		applications in		
			other sciences		
motivational	Blackboar	Various examples	Understand the	2 Theoretical	7

questions	d and data	and some theorems	subject matter	+ 2 practical	
	show	on rank	correctly and		
			know its		
			applications in		
			other sciences		
			Understand the		
	Dlaakhaan	The eviews of	subject matter		
motivational	d and data	andon The conton of	correctly and	2 Theoretical	Q
questions		the group	know its	+ 2 practical	o
	SHOW	the group	applications in		
			other sciences		
			Understand the		
	Dissistant		subject matter		
motivational	blackboar	analia anona	correctly and	2 Theoretical	0
questions		ta cyche group	know its	+ 2 practical	9
	SHOW		applications in		
			other sciences		
			Understand the		
	Plaakhoor	Various avamplas	subject matter		
motivational	d and data	and some theorems	correctly and	2 Theoretical	10
questions		on rank	know its	+ 2 practical	10
	SHOW		applications in		
			other sciences		
			Understand the		
	Blackboar		subject matter		
motivational	d and data	The normal group	correctly and	2 Theoretical	11
questions		The normal group	know its	+ 2 practical	11
	SHOW		applications in		
			other sciences		
motivational	Blackboar	Adding,	Understand the	2 Theoretical	
ausstions	d and data	subtracting, and	subject matter	$\perp 2$ provided	12
questions	show	show comparing angles	correctly and	⊤ 2 pi acticai	

			know its		
			applications in		
			other sciences		
motivational questions.	Blackboar d and data show	Various examples and some theorems on rank	Understand the subject matter correctly and know its applications in	2 Theoretical + 2 practical	13
			other sciences		
motivational questions.	Blackboar d and data show	division groups	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	14
motivational questions with the grade	Blackboar d and data show	Monthly exam	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	15
80. Course	Evaluation				<u> </u>
Distributing	the score out	of 100 according to t	he tasks assigned t	to the student such	as daily
81. Learning and Teaching Resources					

Required textbooks (curricular books	1Basic concepts in algebra
any)	2 Modern abstract algebra
Main references (sources)	<b>GROUP THEOREM</b>
Electronic References, Websites	www. mathwords.com
	https://www.uoanbar.edu.iq/staff-page.php?ID=1715

13. Course	Name:						
Group Algebr	Group Algebra-2						
14. Course	14. Course Code:						
MAT208							
15. Semest	er / Year:						
Second semest	ter/2023-2024						
16. Descrij	otion Preparation Date:						
1/2/2024							
17. Availa	ble Attendance Forms:						
Daily, at the ti	me specified in the schedule, and at full time						
18. Numbe	er of Credit Hours (Total) / Number of Units (Total)						
64 hr./	3Unit						
19. Course	e administrator's name (mention all, if more than one name)						
Name:	Dr. <u>Firassh@uoanbar.edu.iq</u>						
Email:	Firassh@uoanbar.edu.iq						
20. Course	Objectives						
Course Object	tives This course aims to convey a general idea about:						
	This course aims to study This course aims to study homomorphism,						
	isomorphism, and many theorems.						
21. Teachi	ng and Learning Strategies						
Strategy	Learning outcomes, teaching, learning and assessment methods						
	A-Knowledge and understanding						
	1- The student will be familiar with the concept of homomorphism.						
	2- For the student to become familiar with the concept of isomorphism .						
	<b>3-</b> That the student understands what is meant kernal of f.						
	4- That the student knows the meaning of a homomorphism and find the kernel						
	off.						
	5- That the student understands what is meant The first fundamental theorem of						
	isomorphism						
	o- 1 nat the student knows the meaning he second basic theorem of isomorphism 7. That the student knows have to use Distinguish between here and the						
	/- That the student knows now to use Distinguish between nomomorphism and						
	ISOMOTPHISM>						
	<b>B</b> - The skills objectives of the course.						

22. Course structure					
Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
an in-person lecture, and motivational questions.	Blackboar d and data show	Definition of homomorphism and some examples	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	1
motivational questions	Blackboar d and data show	The relationship of groups between a domain and the codomain	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	2
motivational questions	Blackboar d and data show	Definition of the kernel and some examples. An in- person lecture	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	3
motivational questions	Blackboar d and data show	some theorems of isomorphism	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	4
motivational questions	Blackboar d and data show	hypotheses, axioms, and some flaws in this system	Understand the subject matter correctly and know its	2 Theoretical + 2 practical	5

- i					
			applications in		
			other sciences		
			Understand the		
	Blackhoar	Homomorphisms	subject matter		
motivational	d and data	and isomorphims	correctly and	2 Theoretical	6
questions	u allu uata		know its	+ 2 practical	U
	SHOW	Set	applications in		
			other sciences		
			Understand the		
	Dissisters		subject matter		
motivational	Blackboar	The first theorem of	correctly and	2 Theoretical	_
questions	d and data	homomorphism	know its	+ 2 practical	1
	show		applications in		
			other sciences		
			Understand the		
			subject matter		
motivational	Blackboar	The second	correctly and	2 Theoretical	0
questions	d and data	theorem of	know its	+ 2 practical	8
	show	isomorphism	applications in		
			other sciences		
			Understand the		
			subject matter		
motivational	Blackboar	The third theorem	correctly and	2 Theoretical	0
questions	d and data	of isomorphism	know its	+ 2 practical	9
	snow		applications in		
			other sciences		
			Understand the		
	Dissisters		subject matter		
motivational	blackboar		correctly and	2 Theoretical	10
questions		r irst exam	know its	+ 2 practical	10
	SNOW		applications in		
			other sciences		

motivational questions	Blackboar d and data show	Cayley theorem	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	11
motivational questions	Blackboar d and data show	The commutator between the two elements	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	12
motivational questions.	Blackboar d and data show	Simple groups	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	13
motivational questions.	Blackboar d and data show	External angles, uprights and constructions	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	14
motivational questions with the grade	Blackboar d and data show	Monthly exam	Understand the subject matter correctly and know its applications in other sciences	2 Theoretical + 2 practical	15
23. Course Evaluation Distributing the score out of 100 according to the tasks assigned to the student such as daily preparation, daily oral, monthly, or written exams, reports etc 24. Learning and Teaching Resources					

Required textbooks (curricular books	1- Basic concepts in algebra
any)	
Main references (sources)	Modern abstract algebra
Recommended books and references (scientific journals, reports)	GROUP THEOREM
Electronic References, Websites	www.mathwords.com https://www.uoanbar.edu.iq/staff-page.php?ID=1715

82. Course	Name:				
Mathematical	Analysis 1				
83. Course	Code:				
<b>MAT301</b>					
84. Semest	er / Year:				
first semester/	2023-2024				
85. Descrip	otion Preparation Date:				
12/11/2023					
86. Availat	ble Attendance Forms:				
Daily, at the ti	me specified in the schedule, and at full time				
87. Numbe	r of Credit Hours (Total) / Number of Units (Total)				
60 hr./	3Unit				
88. Course	administrator's name (mention all, if more than one name)				
Name:	Dr. Nadia Ali Nadhim				
Email:	mad772918@uoanbar.edu.iq				
Name:	Assistant teacher: AHMED MOHAMMED MUSTAFA				
Email:	ahmed78m@uoanbar.edu.iq				
89. Course	Objectives				
Course Object	ives This course aims to convey a general idea about:				
	1-Identify real numbers and their mathematical properties				
	2-Identify applications of real numbers in different fields				
	3-To learn about sequences and some of their different types				
	4-Identify real sequences and calculate their limits				
	5-To verify the convergence of a convergent sequence				
	6-To recognize the convergence of series and their different periods of				
	convergence				
	7-The ability to deal with some concepts in real analysis, such as sequen				
	limits, and complete dusty spaces lite				
90. Teachin	ng and Learning Strategies				
Strategy	Learning outcomes, teaching, learning and assessment methods				
	. A- Cognitive objectives				
	1- Extrapolation				
	2- Analysis				
	3- Conclusion				
	4-1 ne lecture				
	5-Empowerment				

**B** - The skills objectives of the course. **B1-Managing the lecture in an applied manner linked to the reality of daily life** to attract the student to the topic of the lesson without. B2-straying from the core of the topic so that the material is flexible and amenable to understanding and analysis **B3-Assigning the student to some group activities and duties** B4-Allocate a percentage of the grade to daily assignments and tests **B5-Manage the lecture in a way that makes time feel important C- Emotional and value goals** C1-Active participation in class is evidence of the student's commitment and responsibility C2-Commitment to the deadline for submitting assignments and research C3-Semester and final exams express commitment and cognitive and skill **D** - Transferable general and qualifying skills (other skills related to employability and personal development). D1-Developing the student's ability to recognize types of groups **D2-Developing the student's ability to deal with the Internet** D3-Developing the student's ability to find solutions and evidence D4-Developing the student's ability to dialogue and discuss D5-Developing the student's ability to recognize types of functions

91. Course structure					
Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
an in-person lecture, and motivational questions.	Blackboar d and data show	Axioms of arithmetic - axioms of order - axioms of perfection with examples.	Axioms of real numbers	2 Theoretical + 2 practical	1
motivational questions	Blackboar d and data show	Definition - examples - some theorems - trigonometric inequality	absolute value	2 Theoretical + 2 practical	2
motivational questions	Blackboar d and data show	The highest constraint - the smallest top constraint - the bottom constraint -	Restrictions	2 Theoretical + 2 practical	3

		the largest bottom			
		constraint -			
		examples - theories			
		•			
motivational	Blackboar	Definition with	Rational	2 Theoretical	4
questions	d and data	examples and basic	numbers and	+ 2 practical	
	show	theories	irrational		
			numbers		
motivational	Blackboar		Exam		5
questions	d and data				
	show				
motivational	Blackboar	Its definition and	Metric spaces	2 Theoretical	6
questions	d and data	examples - semi-	_	+ 2 practical	
	show	dusty spaces -		-	
		Euclidean spaces -			
		equivalent metric			
		spaces			
motivational	Blackboar	Definitions -	Open and closed	2 Theoretical	7
questions	d and data	examples - union	groups	+ 2 practical	
	show	and intersection of			
		a finite or infinite			
		number of such			
		groups			
motivational	Blackboar	Some basic	Metric and	2 Theoretical	8
questions	d and data	principles in	biological space	+ 2 practical	
	show	topology and its			
		relationship to			
		metric space, with			
		examples and			
		theories.			
motivational	Blackboar	Definitions with	Points of	2 Theoretical	9
questions	d and data	examples- Derived	purpose and	+ 2 practical	

	show	and closed sets and closure			
		the relationship			
		between them			
motivational	Blackboar	Stacked groups -	Lined spaces	2 Theoretical	10
questions	d and data	examples - some		+ 2 practical	
	show	important theorems			
		in stacking			
motivational	Blackboar	Its definition,	Infinite series	2 Theoretical	11
questions	d and data	examples, and some	and convergence	+ 2 practical	
	show	special infinite			
		series, harmonic-			
		geometric-			
		alternating series -			
		the concept of			
		convergence -			
		examples -			
		theorems.			
motivational	Blackboar	Comparison testSeries test -2 Theoretical		12	
questions	d and data		number e	+ 2 practical	
	show	- P test - Root			
		comparison test -			
		Ratio test - Root			
		test - Definition of			
		number - Basic			
		theorems about the			
		number E			
motivational	Blackboar	<b>Definitions</b> -	Absolute	2 Theoretical	13
questions.	d and data	examples and some	convergence and	+ 2 practical	
	show	theorems to clarify	conditional		
		the relationship	convergence		
		between them			
motivational	Blackboar	<b>Definition -</b>	Multiplying	2 Theoretical	14
questions.	d and data	examples and basic	Series - Power	+ 2 practical	

	show	theorems		Series			
motivational	Blackboar			Understand the	2 Theoretical	15	
questions	d and data			lecture topic	+ 2 practical		
with the	show						
grade							
92. Course	Evaluation						
Distributing	the score out	of 100 acc	ording to the tasks assigned to the student such as daily				
preparation,	daily oral, mo	onthly, or w	ritten exan	ns, reports etc			
93. Learnin	g and Teachi	ng Resource	es				
Required tex	tbooks (curri	cular books	عة	في التحليل الرياضي" جاه	عادل غسان نعوم "مقدمة	-1	
any)				١٩٨٦ الطبعة الأولى	. بغداد - العراق		
			في	تحليل الحقيقي'' دار الأول	انة واخرون :مقدمة في ال	2-انواربدر	
			.19	نشر والتوزيع الاردن ٩٢	ונ		
Main references (sources)			1- 3-Apostol. T.M., "Mathematical				
			Anala	ysis"2nd, 1974, Lon	don.		
			2- 4-Ash	, R. B. ,"Real analy	sis and probability'	,	
			<b>1972.</b> I	New York.			

Recommended books and	
references (scientific journals,	- 5-Royden. H. L.,"Real Analysis", 1988. London
reports)	
Electronic References, Websites	https://www.uoanhar.edu.jg/staff-page.php?ID=1160

49. Course Name:
Mathematical Analysis 2
50. Course Code:
MAT306
51. Semester / Year:
Second semester/2023-2024
52. Description Preparation Date:
1/2/2024
53. Available Attendance Forms:
Daily, at the time specified in the schedule, and at full time
54. Number of Credit Hours (Total) / Number of Units (Total)
60 hr./ 3Unit
55. Course administrator's name (mention all, if more than one name)
Name: Dr. Nadia Ali Nadhim
Email: <u>mad772918@uoanbar.edu.iq</u>

Name:	Name: Assistant teacher: AHMED MOHAMMED MUSTAFA				
Email: <u>ahmed78m@uoanbar.edu.iq</u>					
56. Course Objectives					
Course Object	ives This course aims to convey a general idea about:				
	1-Identify the basic concepts of the derivative and how to find them using				
	the definition and its applications				
	2-Learn about the Riemann integral of functions and how to find them				
	using the definition and its properties				
	3-Identify function sequences, their dotted and regular convergence, and				
	how to replace limits with integration				
	4-The identifier for measuring subsets of the set of real numbers				
	5-Identify measurable functions and their properties				
	6-Identify the Riemann-Estelle's integral and compare it with the Riemann				
	Integral 7 Identify the Diemony integral and its most important properties and comp				
	<i>it with the Diamann integral L ife</i>				
57 Teachi	a and Learning Strategies				
Stratogy	I corning outcomes teaching learning and assessment methods				
Strategy	A - Cognitive objectives				
	1. Extranolation				
	2- Analysis				
	3- Conclusion				
	he lecture				
	mpowerment				
	<b>B</b> - The skills objectives of the course.				
	B1-Gaining experience and knowledge in sports analysis				
	Linking the different topics of mathematics and their relationship to each				
	other, where each topic is considered complementary to the other.				
	B3-Teaching the student to master the skills acquired over time and to have				
	sound intuitive perception to a reasonable extent				
	C- Emotional and value goals				
	C1-Developing the student's ability to work on performing assignments and				
	submitting them on the scheduled date				
	C2-To think logically and mathematically in finding solutions to problems				
	C3-Analyze the problem, solve it mathematically, and find solutions using the				
	available information and theorems				
	C4- Developing the student's ability to dialogue and discussC4- Urging students				
to employ what they have learned in public life					
	<b>D</b> - Transferable general and qualifying skills (other skills related to				
	employability and personal development).				
	D1-Developing the student's ability to deal with the Internet				
	D2-Developing the student's ability to find solutions and avidence				
	D3-Developing the student's ability to dialogue and discuss				
	D4-Developing the student's ability to recognize types of functions				
	Do-Developing the student's ability to recognize types of functions				

58. Course structure					
Evaluation method	Teaching method	Name of unit/course or subject	Required learning outcomes	Hours	Week
an in-person lecture, and motivational questions.	Blackboar d and data show	Axioms of arithmetic - axioms of order - axioms of perfection with examples.	Continuity	2 Theoretical + 2 practical	1
motivational questions	Blackboar d and data show	Definition - examples - some theorems - trigonometric inequality	Continuity	2 Theoretical + 2 practical	2
motivational questions	Blackboar d and data show	The highest constraint - the smallest top constraint - the bottom constraint - the largest bottom constraint - examples - theories	Derived	2 Theoretical + 2 practical	3
motivational questions	Blackboar d and data show	Definition with examples and basic theories	Derived	2 Theoretical + 2 practical	4
motivational questions	Blackboar d and data show	Definition with examples and basic theories	<b>Riemann</b> integral	2 Theoretical + 2 practical	5
motivational questions	Blackboar d and data show	Its definition and examples - semi- dusty spaces -	Riemann integral	2 Theoretical + 2 practical	6

		Euclidean spaces -			
		equivalent metric			
		spaces			
motivational	Blackboar	Definitions -	Riemann	2 Theoretical	7
questions	d and data	examples - union	integral	+ 2 practical	
	show	and intersection of			
		a finite or infinite			
		number of such			
		groups.			
motivational	Blackboar	Some basic	Riemann	2 Theoretical	8
questions	d and data	principles in	integral	+ 2 practical	
	show	topology and its			
		relationship to			
		metric space, with			
		examples and			
		theories			
motivational	Blackboar	Definitions with Introduction to 2 Th		2 Theoretical	9
questions	d and data	examples- Derived	measurement	+ 2 practical	
	show	and closed sets and	theory		
		the relationship			
		between them			
motivational	Blackboar	Stacked groups -	Measurable	2 Theoretical	10
questions	d and data	examples - some functions + 2 prac		+ 2 practical	
	show	important theorems			
		in stacking			
motivational	Blackboar	Its definition, Integration of 2 Theoretical		2 Theoretical	11
questions	d and data	examples, and some	Lebegue	+ 2 practical	
	show	special infinite			
		series, harmonic-			
		geometric-			
		alternating series -			
		the concept of			

		convergenc	e -			
		examples -				
		theorems				
	<b>DI 11</b>	tneorems.				10
motivational	Blackboar			Integration of	2 Theoretical	12
questions	d and data			Lebegue	+ 2 practical	
	show					
		Comparison test				
		- P test - Root				
		comparison	test -			
		Ratio test -	Root			
		test - Definition of				
		number - Basic				
		theorems about the				
		number E				
motivational	Blackboar	Definitions -		Integration of	2 Theoretical	13
questions.	d and data	examples and some		Lebegue	+ 2 practical	
	show	theorems to clarify				
		the relationship				
		between them				
motivational	Blackboar	Definition -		Functions are	2 Theoretical	14
questions.	d and data	examples and basic		covariance	+ 2 practical	
	show	theorems		bound		
motivational	Blackboar	the final evaluation		Understand the	2 Theoretical	15
questions	d and data	is an in-person		lecture topic	+ 2 practical	
with the	show	lecture, and the				
grade		grade				
59. Course	Evaluation					
Distributing the score out of 100 according to the tasks assigned to the student such as daily						
60. Learning and Teaching Resources						
Required textbooks (curricular books عادل غسان نعوم "مقدمة في التحليل الرياضي" جامعة -1						
بغداد- العراق ١٩٨٦ الطبعة الأولى.						
			ول	ي التحليل الحقيقي'' دار الا	بدرانه واخرون :مقدمه هر مر والتوزيع الأردن ۲ ۹۹	<ol> <li>2 - 2-انوار</li> <li>فى النش</li> </ol>

Main references (sources)	<ol> <li>3-Apostol. T.M., "Mathematical Analaysis"2nd, 1974, London.</li> <li>4-Ash, R. B. ,"Real analysis and probability", 1972. New York.</li> </ol>
Recommendedbooksandreferences(scientificjournals,reports)	Royden. H. L.,"Real Analysis", 1988. London
Electronic References, Websites	https://www.uoanbar.edu.iq/staff-page.php?ID=1160