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/Department Of Mathematic

2026 - 2025

University Name: Tikrit University

Faculty/Institute: Basic education in sharqat

Scientific Department: Department of Mathematics

Academic or Professional Program Name: Bachelor's degree in Mathematics

Final Certificate Name: Bachelor's degree in basic education

Academic System: Courses

Description Preparation Date: 2025 / 9 / 1

File Completion Date: 2025 / 9 / 18

Signature:

Head of Department Name:

Dr. Ayad Hamad Khalaf

Date: 18/9/2025

Signature:

Scientific Associate Name:

Dr. Saad gerges saaed

Date: 18 / 9 / 2025

The file is checked by: Dr. Ahmed Abdulsalam Hasan

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: 18/9/2025

Signature: Dr Hamid Mohammed Saleh

Date: 18 / 9 / 2025

مكتب العميد

Approval of the Dean

1

University Name: Tikrit University

Faculty/Institute: Basic education in sharqat

Scientific Department: Department of Mathematics

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Date: ٢٠٢٦/٢/١

الاستاذ الدكتور
سعد جرجيس سعيد
معاون العميد للشؤون العلمية
٢٠٢ / /

The file is checked by: Dr. Ahmed Abdulsalam Hasan

Department of Quality Assurance and University Performance

Director of the Quality Assurance and University Performance Department:

Date: ٢٠٢٦/٢/١

Signature: .Dr Hussein Abd Ismail

Date: 1 / 2 / 1

مكتب العميد

Approval of the Dean

1

2026 - 2025

Introduction:

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

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

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

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

Concepts and terminology:

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

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

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

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

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

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

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

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

Program Vision .1
Mathematics is one of the most important foundations of applied and scientific sciences in general, as most sciences are built upon its principles and rules. Therefore, anyone who takes on the role of teaching mathematics must be dation in mathematics according to specific principles equipped with a solid foun and rules, while also keeping abreast of the latest developments in the field. The department strives to advance knowledge in all branches of mathematics, whether o serve society and encourage them to pure or applied, to prepare students t . develop their abilities and potential

Program Message .2
Preparing qualified university teachers in their field of specialization and g, equipping them with the principles of knowledge, scientific and logical thinkin scientific research skills in mathematics, and the skills necessary for future communication with society in the workplace , as well as providing the student with a set of sciences and knowledge that completes the teacher's culture in cultural requirements, educational requirements, computer general, including .science, and others

Program Objectives .3
A. Raising the academic and cognitive level of mathematics students and preparing them as university teachers and researchers
B. educated -Education with its needs for university To supply the Ministry of and educational teachers specializing in mathematics
C. Keeping pace with scientific developments in the field of mathematics to .enable the department to compete with other departments
D. methods and approaches to help students master To learn about various .mathematical skills and teach mathematics
E. Preparing students specializing in mathematics by teaching them the skills .and foundations of mathematics
F. ills to contribute to To equip graduating students with sufficient personal sk .serving the community, especially with organizations
G. To equip students with the necessary skills to communicate with other scientific and engineering disciplines
H. .enceTo enable students to become familiar with the principles of pure sci
I. Reinforcing scientific concepts , and some basic terms and concepts related to mathematics
J. Understanding the theoretical foundations upon which the natural sciences .are based

K. .To equip the graduate with skills and methods in teaching and learning

Program accreditation .4
Ministry of Higher Education and Scientific Research / National Accreditation Council(CAEP)

Other external influences .5
Project to develop mathematics curricula in Iraqi universities / Ministry of Higher Scientific Research Education and .The application will be in schools for two months, including field visits to schools

Program Structure .6				
comments	Percentage	Study unit	Number of courses	Program structure
	%23	22	12	Institutional requirements
	%27	28	11	College requirements
	%43	92	32	Department requirements
	%7	12	1	Summer training
				Other

.The notes may include whether the course is core or elective *

Program Description .7				
Credit Hours		Course name	Course code	Year / Level
practical	theoretical			
	2	Human rights and democracy	Cult112	First/First semester
1	1	Number theory	Math111	
	2	Arabic	Cut 110	
1	1	computer	Math113	
	2	Developmental		

		psychology		
1	3	differentiation	Math110	
1	1	Probabilistic principles		
1	2	Foundations of Mathematics 1	Math113	
2	1	Computer Science (My Specialty)	Cult122	First/Second semester
	2	English language	Cult121	
	3	Principles of Education and Upbringing		
	2	Islamic Education/Civilization	Cult120	
1	3	integration	Math123	
	2	Arabic	Math121	
	2	matrices	Math122	
1	2	Foundations of Mathematics 2	Math120	
		Arabic	Cult 230	Second/First semester
		English language		
2	1	computer	Cult231	
1	3	linear algebra	Math232	
	3	Guidance and mental health	Edu231	
1	3	Advanced Differential	Math230	
1	3	Advanced possibilities	Math231	
	1	democracy	Cult245	Second semester
2	1	Computer (Specialized)	Math243	
	3	Educational Statistics (Specialist)	Edu241	
	2	Educational Psychology		
1	3	Advanced Integration	Math241	
	3	Engineering	Math243	
		Group theory	Math354	

	2	Arabic	350Cult	Third/First Semester
1	3	Ordinary differential equations	Math353	
	3	Research Methods	Edu350	
	2	Educational technologies	Edu351	
1	3	numerical analysis	Math350	
	2	Mathematical thinking	Math351	
	2	Tests and Measurement	Math352	
2	1	computer	Math355	
1	1	computer		Third/Second semester
	2	Measurement and evaluation		
	2	General teaching methods		
1	2	episodes		
4		Scientific education		
2	2	Mathematical analysis		
	3	Specialized teaching methods		
	3	Structural theory		
1	1	computer	Cult770	Fourth/First Semester
	2	Arabic	Cult471	
	2	Curricula and textbooks	Edu470	
	2	Educational Administration and Supervision	Edu471	
2	2	topology	Math471	
1	2	Linear programming	Math470	
2	2	Contractual analysis	Math472	
	3	teaching methods	Math473	
	3	Research project	Math474	

	12	Science Education (Application)	Edu480	Fourth/Second semester
		Graduation research project	Math480	

of the program Expected learning outcomes .8	
Knowledge	
Learning Outcomes Statement 1	Learning Outcomes 1
Skills	
Learning Outcomes Statement 2	Learning Outcomes 2
Learning Outcomes Statement 3	Learning Outcomes 3
Values	
Learning Outcomes Statement 4	Learning Outcomes 4
Learning Outcomes Statement 5	Outcomes 5 Learning
Teaching and learning strategies .9	
Assessment Methods .10	
- Daily and monthly oral and written exams - Daily assignments and extracurricular activities	
Faculty .11	
Faculty members	

Requirements/Skill (s (if any	**Specialization**	**General jurisdiction**	**Certificate**	**Scientific title**	**full name**
	Optimal and intelligent techniques	**Computational mathematics**	**PhD**	**assistant professor**	**Iyad Hamad Khalaf Ahmoud**
	numerical optimization	**Computational mathematics**	**PhD**	**teacher**	**Haneen Adel Abdulrahman Hussein**
	count	**mathematics**	**PhD**	**teacher**	**Diaa Nazim Ahmed Khalaf**

	count	count	Master's	Assistant teacher	Alaa Farhan Ahmed Azzawi
	Applied Mathematics	mathematics	Master's	Assistant teacher	Ahmed Taha Ahmed Hamid
	Correct engineering	Civil Engineering	Master's	Assistant teacher	Khalaf, Alaa Hussein Assistant
	Engineering Geology	Earth Sciences	PhD	assistant professor	Luay Musa Rawi Tarf
	Production and Marketing Management	Business Administration	Master's	Assistant teacher	Abdullah Mohammed Ahmed
	Educational Psychology	Educational and psychological sciences	PhD	assistant professor	Saber Taha Yassin Attallah
	business management	business management	Master's	Assistant teacher	Hatem Abduljabbar Ahmed
	business management	business management	Master's	Assistant teacher	Asmaa Ahmed Khalaf
	Educational Administration	Educational Sciences	Master's	Assistant teacher	Mohammed Mahmoud Ahmed Omeiri
	Political systems	Political Science	Master's	assistant professor	Emad and Kaa Ajil Ahmed
	Food technology	Food Science	Master's	Assistant teacher	Elaf Rabee Ahmed Rashid
	Modern Arabic Literature	Arabic	PhD	assistant professor	Muhammad Abdullah Ghathwan Sawadi

Professional Development
Orienting new faculty members
up by -and developmental courses, teaching qualifications, follow Mandatory .experienced professors, and evaluation
Professional development of faculty members

Encouraging the pursuit of higher degrees, writing research papers, using modern .and keeping up with technological developments ,scientific references

Admission Criteria .12

central

Key sources of information about the program .13

The program on network Internet , and its applications in Universities Similarity Link. established it Sections Quality and performance University Courses training that She around The program in various Institutes and colleges in Iraq

- .Administrative and scientific data

Program Development Plan .14

courses, and developing Developing teachers' skills through scientific and educational .study materials and curricula

Program Skills Plan

Learning outcomes required from the program

Values				Skills				Knowledge				Essential or optional	Course Name	Course code	**Year/ Level**
Q4	Part 3	Part 2	Part 1	B4	B3	B2	B1	A4	A3	A2	A1				
√	√	√	√	√	√	√	√	√	√	√	√	essential	human rights	Cult112	**First**
√	√	√	√	√	√	√	√	√	√	√	√	essential	History of Mathematics	Math111	**First**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Arabic	Cut 110	
√	√	√	√	√	√	√	√	√	√	√	√	essential	computer	Math113	**First**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Fundamentals of Psychology	Math	
√	√	√	√	√	√	√	√	√	√	√	√	essential	differentiation	Math110	**First**
√	√	√	√	√	√	√	√	√	√	√	√	essential	probability		
√	√	√	√	√	√	√	√	√	√	√	√	essential	Foundations of Mathematics	Math113	**First**

√	√	√	√	√	√	√	√	√	√	√	√	essential		Math	**First**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Computer Science (My (Specialty	Cult122	**First**
√	√	√	√	√	√	√	√	√	√	√	√	essential	English language	Cult121	**First**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Principles and foundations of basic education		**First**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Islamic Education/Civilization	Cult120	**First**
√	√	√	√	√	√	√	√	√	√	√	√	essential			**First**
√	√	√	√	√	√	√	√	√	√	√	√	essential	integration	Math123	**First**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Number theory	Math121	**First**
√	√	√	√	√	√	√	√	√	√	√	√	essential	matrices	Math122	**First**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Foundations of Mathematics	Math120	**First**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Arabic	Cult 230	**Second**
√	√	√	√	√	√	√	√	√	√	√	√	essential	English language		**Second**
√	√	√	√	√	√	√	√	√	√	√	√	essential	computer	Cult231	**Second**
√	√	√	√	√	√	√	√	√	√	√	√	essential	linear algebra	Math232	**Second**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Guidance and mental health	Edu231	**Second**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Advanced Differential	Math230	**Second**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Advanced possibilities	Math231	**Second**
√	√	√	√	√	√	√	√	√	√	√	√	essential	democracy	Cult245	**Second**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Computer (Specialized)	Math243	**Second**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Educational Statistics (Specialist)	Edu241	**Second**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Educational Psychology	Math	**Second**

√	√	√	√	√	√	√	√	√	√	√	√	essential	Advanced Integration	Math241	**Second**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Engineering	Math243	**Second**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Group theory	Math354	**Third**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Arabic	350Cult	**Third**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Ordinary differential equations	Math353	**Third**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Research Methods	Edu350	**Third**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Educational technologies	Edu351	**Third**
√	√	√	√	√	√	√	√	√	√	√	√	essential	numerical analysis	Math350	**Third**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Mathematical thinking	Math351	**Third**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Tests and Measurement	Math352	**Third**
√	√	√	√	√	√	√	√	√	√	√	√	essential	computer	Math355	**Third**
√	√	√	√	√	√	√	√	√	√	√	√	essential	computer	Math12	**Third**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Measurement and evaluation	Math	**Third**
√	√	√	√	√	√	√	√	√	√	√	√	essential	General teaching methods	Math	**Third**
√	√	√	√	√	√	√	√	√	√	√	√	essential	episodes	Math	**Third**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Scientific education	Math	**Third**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Mathematical analysis	Math	**Third**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Specialized teaching methods	Math	**Third**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Structural theory	Math	**Third**
√	√	√	√	√	√	√	√	√	√	√	√	essential	computer	Cult770	**Fourth**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Arabic	Cult471	**Fourth**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Curricula and textbooks	Edu470	**Fourth**
√	√	√	√	√	√	√	√	√	√	√	√	essent	Educational	Edu471	**Fourth**

												ial	Administration and Supervision		
√	√	√	√	√	√	√	√	√	√	√	√	essential	topology	Math471	**Fourth**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Linear programming	Math470	**Fourth**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Contractual analysis	Math472	**Fourth**
√	√	√	√	√	√	√	√	√	√	√	√	essential	teaching methods	Math473	**Fourth**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Research project	Math474	**Fourth**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Science Education (Application)	Edu480	**Fourth**
√	√	√	√	√	√	√	√	√	√	√	√	essential	Graduation research project	Math480	**Fourth**

Course Description Form

1. Course Name: Advanced Probability

2.Course code:

3. Semester/Year: Course System

4. Date of preparation of this description: 9/27/2025

5. Available forms of attendance: in-person classroom lectures

6. Number of study hours (total): 56 hours / Number of units (total): 3.5 units

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

Name: Assistant Professor Alaa Farhan Ahmed

Email :alaa.f@tu.edu.iq

8. Course objectives

1 . Identify the types of random variables (discrete random variable and continuous random variable)
2. Identify the types of functions (functions for discrete random variables and functions for continuous random variables)
3. Properties and applications of mathematical expectation (mathematical expectation in the case of a discrete random variable and mathematical expectation in the case of a continuous random variable)
4. Methods for finding moment generating functions
5. Some discrete distributions (binomial, Bernoulli, Poisson)

Strategy	Using different teaching methods, including lectures, discussion, problem-solving, cooperative learning, and others.

10. Course structure

The week	Watches	Name of the unit or topic	Required learning outcomes	Learning method	Evaluation method
February first week	4	discrete random variable	Learn the basic concepts of scientific paragraph 1	Explain and write the lecture in	Daily exam

				detail on the board.	
February second week	4	continuous random variable	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Questions and answers
February third week	4	Functions for discrete random variables	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Exam on the board
February fourth week	4	Functions for continuous random variables	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Daily exam
March first week	4	Characteristics of mathematical expectation	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Give homework questions and ask for answers
March second week	4	Mathematical expectation in the case of a discrete random variable	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Daily exam
March third week	4	Mathematical expectation in the case of a continuous random variable	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Exam on the board
March fourth week	4	First month exam			

April first week	4	Methods for finding moment generating functions	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Give homework questions and ask for answers
April second week	4	Discrete distributions	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Student participation on the board
April third week	4	Discrete distributions binomial distribution	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Give homework questions and ask for answers
April fourth week	4	Discrete distributions Bernoulli distribution	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Daily exam
May first week	4	Discrete distributions Poisson distribution	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Student participation on the board
May second week	4	Second month exam			

11. Course Evaluation

First month exam out of (15) Second month exam out of (15)

Attendance, daily exam, participation and assignments out of 10

..... We extract from them the effort score out of 40

Final written exam out of 60

Final score is 100

12. Learning and teaching resources	
Required textbooks (methodology if any)	**Mathematical Statistics** **Authored by** **Amir Hanna Hormuz** **University of Mosul**
Main References (Sources)	**1. Introduction to Statistics** **Authored by** **Dr. Khasha Al-Rawi** **University of Mosul** **2. Probability Theory** **Authored by** **Dr. Qubais Saeed Al-Fahadi** **Dr. Barlanti Jamil Shamoon** **University of Mosul**
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	

1. Course Name: Advanced Statistics
2.Course code:
3. Semester/Year: Course System
4. Date of preparation of this description: 9/15/2025
5. Available forms of attendance: in-person classroom lectures

Course Description Form

6. Number of study hours (total): 56 hours / Number of units (total): 3.5 units

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

Name: Assistant Professor Alaa Farhan Ahmed

Email :alaa.f@tu.edu.iq

8. Course objectives

1.Identify the types of discrete/continuous probability distributions (binomial, Bernoulli, Poisson, normal)
2. Identify how to design samples (random sample, systematic random sample, stratified sample)
3. Hypothesis testing (steps related to hypothesis testing, tests related to averages, tests related to proportions)
4. t-distribution
5. Chi-square distribution
6. F-distribution

Strategy	Using different teaching methods, including lectures, discussion, problem-solving, cooperative learning, and others.

10. Course structure

The week	Watches	Name of the unit or topic	Required learning outcomes	Learning method	Evaluation method
February first week	4	Bernoulli distribution function and expectation of Bernoulli distribution	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Daily exam
February second week	4	Variance of Bernoulli distribution and moment generating function of Bernoulli distribution	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Questions and answers
February third	4	Binomial distribution	Learn the basic concepts of	Explain and write the	Exam on the board

week		function and expectation of binomial distribution	scientific paragraph	lecture in detail on the board.	
February fourth week	4	Variance of binomial distribution	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Daily exam
March first week	4	Binomial distribution moment generating function	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Give homework questions and ask for answers
March second week	4	Poisson distribution function and expectation of Poisson distribution	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Daily exam
March third week	4	Variance of Poisson distribution and the generating function of Poisson distribution moments	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Exam on the board
March fourth week	4	First month exam			
April first week	4	Normal distribu tion	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Give homework questions and ask for answers
April second week	4	Sample design method	Learn the basic concepts of scientific paragraph	Explain and write the lecture in	Student participatio n on the

				detail on the board	board
April third week	4	Steps for testing hypotheses and tests related to averages and proportions	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Give homework questions and ask for answers
April fourth week	4	t-distribution and chi-square distribution	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Daily exam
May first week	4	F distribution	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Student participation on the board
May second week	4	Second month exam			

11. Course Evaluation	
First month exam out of (15) Second month exam out of (15) Attendance, daily exam, participation and assignments out of 10 ..... We extract from them the effort score out of 40 Final written exam out of 60 Final score is 100	
12. Learning and teaching resources	
Required textbooks (methodology if any)	
Main References (Sources)	**Introduction to Statistics** **Authored by** **Dr. Khasha Al-Rawi** **University of Mosul**

Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	

Course Description Form

1. Course Name: Computer

2.Course code:

3. Semester/Year: Course System

4. Date of preparation of this description: 9/15/2025

5. Available forms of attendance: in-person classroom lectures

6. Number of study hours (total): 56 hours / Number of units (total): 2 units

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

Name: Assistant Professor Alaa Farhan Ahmed Email :alaa.f@tu.edu.iq

Assistant Professor Mohammed Khalaf Jaddoa

8. Course objectives

1. **Computer recognition**
2. **Identifying the hardware components of a computer**
3. **Identifying the software components of a computer**
4. **Familiarization with the user interface**
5. **Familiarizing yourself with the right-click menu and its components on the desktop**
6. **Learn how to clear the Recycle Bin, restore deleted files, and write, save, open, copy, print, and send documents**

Strategy	Using different teaching methods, including lectures, discussion, problem-solving, cooperative learning, and others.

10. Course structure

The week	Watches	Name of the unit or topic	Required learning outcomes	Learning method	Evaluation method
November first week	4	Introduction and definition of	Learn the basic concepts of scientific paragraph	Explain and write the lecture in	Daily exam

		computer		detail on the board.	
November second week	4	Understanding the computer and its hardware and software components	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Questions and answers
November third week	4	Familiarity with the user interface	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Exam on the board
November fourth week	4	How to shut down and restart your computer	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Daily exam
December first week	4	Working with windows, changing their properties, and controlling how their content is displayed.	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Give homework questions and ask for answers
December second week	4	Right-click menu on desktop	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Daily exam
December third week	4	The desktop and its contents, the taskbar,	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Exam on the board

		and the Start menu.			
December fourth week	4	First month exam			
January first week	4	Display properties	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Give homework questions and ask for answers
January second week	4	Creating, deleting, and copying folders	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Student participation on the board
January third week	4	Shortcut configuration	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Give homework questions and ask for answers
January fourth week	4	How to clear the Recycle Bin and restore deleted items to their previous state	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Daily exam
February first week	4	Identifying the My Computer window	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Student participation on the board
February second week	4	Second month exam			

11. Course Evaluation
First month exam out of (15) Second month exam out of (15)

Attendance, daily exam, participation and assignments out of 10 ..... We extract from them the effort score out of 40 Final written exam out of 60 Final score is 100

12. Learning and teaching resources	
Required textbooks (methodology if any)	
Main References (Sources)	Computer Fundamentals Authors: Dr. Ziad Mohammed Aboud Prof. Dr. Ghassan Hamid Abdulmajid Dr. Amir Hussein Murad Eng. Bilal Kamal Ahmed
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	

1. Course Name: Matrices
2.Course code:
3. Semester/Year: Course System
4. Date of preparation of this description: 9/15/2024
5. Available forms of attendance: in-person classroom lectures

Course Description Form

6. Number of study hours (total): 56 hours / Number of units (total): 3.5 units

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

Name: Assistant Professor Alaa Farhan Ahmed

Email :alaa.f@tu.edu.iq

8. Course objectives

1 . Learn about the system of linear equations
2. Learn about matrices and their types
3. Learn how to perform operations on matrices
4. Methods for finding the inverse of a matrix

Strategy	Using different teaching methods, including lectures, discussion, problem-solving, cooperative learning, and others.

10. Course structure

The week	Watches	Name of the unit or topic	Required learning outcomes	Learning method	Evaluation method
February first week	4	System of linear equations	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Daily exam
February second week	4	Matrices	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Questions and answers
February third week	4	Matrix collection	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Exam on the board
February fourth week	4	Subtracting matrices	Learn the basic concepts of scientific paragraph	Explain and write the lecture in	Daily exam

				detail on the board.	
March first week	4	matrix multiplication	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Give homework questions and ask for answers
March second week	4	Special arrays	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Daily exam
March third week	4	Primary matrices	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Exam on the board
March fourth week	4	First month exam			
April first week	4	Inverse matrix	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Give homework questions and ask for answers
April second week	4	Methods for finding the inverse of a matrix	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Student participation on the board
April third week	4	How to delete chaos	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Give homework questions and ask for answers
April fourth week	4	Determinants	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Daily exam

May first	4	Properties of	Learn the basic concepts of	Explain and write the	Student participatio
1. Course Name: Computers (office)					
				board	
2.Course code:					
week		exam			

11. Course Evaluation	
First month exam out of (15) Second month exam out of (15) Attendance, daily exam, participation and assignments out of 10 ..... We extract from them the effort score out of 40 Final written exam out of 60 Final score is 100	
12. Learning and teaching resources	
Required textbooks (methodology if any)	**Linear Algebra** **Authored by** **Yahya Abdul Saeed** **Dr. Nizar Hamdoun Shukr** **University of Mosul**
Main References (Sources)	
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	

Course Description Form

3. Semester/Year: Course System

4. Date of preparation of this description: 1/2/2026

5. Available forms of attendance: in-person classroom lectures

6. Number of study hours (total): 56 hours / Number of units (total): 2 units

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

Name: Assistant Professor Alaa Farhan Ahmed Email :alaa.f@tu.edu.iq

Assistant Professor Sarmad Husain Atea

8. Course objectives

1. **Creating and formatting documents**
2. **Inserting tables and graphs**
3. **Using formulas and equations**
4. **Data analysis using graphs**
5. **Creating presentations**
6. **Managing email, scheduling appointments, and tasks**

Strategy	Using different teaching methods, including lectures, discussion, problem-solving, cooperative learning, and others.

10. Course structure

The week	Watches	Name of the unit or topic	Required learning outcomes	Learning method	Evaluation method
November first week	4	Microsoft Word Creating and formatting documents	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Daily exam
Novemb	4	Using methods	Learn the basic	Explain and	Questions

er second week		and formats	concepts of scientific paragraph	write the lecture in detail on the board.	and answers
November third week	4	Insert tables and graphs	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Exam on the board
November fourth week	4	Using advanced tools such as references and sources	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Daily exam
December first week	4	Microsoft Excel Creating and formatting tables	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Give homework questions and ask for answers
December second week	4	Using formulas and equations	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Daily exam
December third week	4	Data analysis using graphs	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Exam on the board
December fourth week	4	First month exam			

January first week	4	Microsoft PowerPoint Create presentations	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Give homework questions and ask for answers
January second week	4	Slide design and media insertion	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Student participation on the board
January third week	4	Use of animations and transitions	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Give homework questions and ask for answers
January fourth week	4	Microsoft Outlook Email Management Organizing Appointments and Tasks	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Daily exam
February first week	4	Microsoft Access Creating Databases Entering Data	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Student participation on the board

		Creating Queries and Reports				
February second week	4	Second month exam				

11. Course Evaluation	
First month exam out of (15) Second month exam out of (15) Attendance, daily exam, participation and assignments out of 10 ..... We extract from them the effort score out of 40 Final written exam out of 60 Final score is 100	
12. Learning and teaching resources	
Required textbooks (methodology if any)	
Main References (Sources)	Computer Fundamentals and Office Applications Ziad Mohammed Abboud
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	

Course Description Form

1. Course Name:
Ring theory
2. Course Code:
Ring theory
3. Semester / Year:
The Second Semester/Third Term
4. Description Preparation Date:
1/09/2025
5. Available Attendance Forms:
In-person (Weekly)
6. Number of Credit Hours (Total) / Number of Units (Total)
42 hours , 3 units
7. Course administrator's name (mention all, if more than one name)
Name: Assistant teacher Ahmed Taha Ahmed **Email: ahmed.t..bes@tu.edu.iq** .....
8. Course Objectives

Course Objectives	1. The course aims to lead students to the fundamental theoretical aspect upon which they can understand the practical aspect. 2. Providing a definition of a ring and familiarizing the student with its meaning, properties, uses, and applications in daily life, as well as applying its theories in society. 3. Enabling the student to distinguish between a subgroup and a subring , and between ideals and the entire ring. 4. Developing the ability to employ various proofs to study the types and characteristics of rings. 5. Achieving the curriculum and its contents, including the skills required for the development of scientific thinking and self-learning in students.

9. Teaching and Learning Strategies

Strategy	Utilizing diverse teaching methods, including: Lecture method, Discussion method, Problem-solving method, Cooperative learning.

10. Course Structure

	Hours	Unit or subject	Required Learning Outcomes		Evaluation method
The first week of February	3	The Ring	Definition of a ring and its operation.	The lecture and explanation of the topic on the board.	Daily quiz.
The second week of February	3	Properties of Rings	Properties of a ring with proofs.	Lecture and discussion.	Questions and solutions requested.
The third week of February	3	Zero Divisors and Numerical Space	Zero divisors and numerical space and their relationship in the ring with solution steps.	Explanation and writing of the lecture.	Board exam.
The fourth week of February	3	Field and Some Proofs	Understanding the field and some proofs linking the field with numerical space and zero divisors.	Comprehensive explanation and writing of the lecture on the board.	Daily exam.
The first week of March	3	Subring	Partial ring (Subring) Definition.	Comprehensive explanation and writing of the lecture on the board.	Assigning homework: Questions and solutions requested.

The second week of March	3	Center of the Ring	Center of the Ring with Some Proofs Related to the Subring.	Lecture and discussion.	Daily exam.
The third week of March	3	The first-month exam			
The fourth week of March	3	Ideals	Understanding Ideals and Their Laws.	The lecture and problem-solving.	Student participation on the board.
The first week of April	3	Types of Ideals	Here are types of ideals along with illustrative examples.	Comprehensive explanation of the lecture on the board.	Assigning homework: Questions and solutions requested.
The second week of April	3	Proofs	Proofs about types of idealisms.	Comprehensive explanation of the lecture on the board.	Student participation on the board.
The third week of April	3	Division Ring	Division operation with some examples.	Lecture and discussion.	Assigning homework: Questions and solutions requested.
The fourth week of April	3	Division Theory Proofs	Proofs of division theory and its relation to types of idealisms.	The lecture and problem-solving.	Daily quiz.

The first week of May	2	Semi-Central Ring with Some Proofs	Secant Circle with Some Proofs.	Comprehensive explanation of the lecture on the board.	Student participation on the board.
The second week of May	3	The second- month exam			

11. Course Evaluation
"Students are assessed during the semester according to the following criteria: First-month exam: 15% Second-month exam: 15% Daily exams, attendance, and participation: 10% (The annual grade is now out of 40) Final exam: 60% Final grade: 100%"
12. Learning and Teaching Resources

Specialized Teaching Methods, Third Year :Course name .1
:Course code .2
Semester/Year: Course System .3
Date this description was prepared
2026/1/20
om lecturesperson classro-Available forms of attendance: in .5
units 3 :(Number of units (total / 45 :(Number of study hours (total .6
(Name of the course supervisor (if more than one name is mentioned .7

:Email Asst. Prof. Dr. Loay Musa Rawi :Name**loaytaref@tu.edu.iq**

Course objectives .8

onRecognit on Vocabulary Ways teaching Specialized

1- **identification mathematics As a science ?What arts do you share with it And art**
2- **Goals teaching mathematics**
3- **Calendar And its means The purpose Goals sources**
4- **Goals Bloom , table Specifications**
5- **Methods teaching ematicsmath**

1- Using different teaching methods, including lectures, solving, cooperative learning, and -discussion, problem .others	Strategy

Course Structure .10

Evaluati o method	Learning method	Required learning outcomes	Name of the unit or topic	Watc hes	The week
Classroo n performa nce	The lecture and discussion	Mathematic s teaching methods	identification Mathematics, as a science And art	3	the first
Classroo n performa nce	tureThe lec and discussion	Mathematic s teaching methods	mathematics shroud ?What is it Arts that Share With her	3	the second
Classroo n performa nce	The lecture and discussion	Mathematic s teaching methods	Goals teaching mathematics	3	the third
bClassro n performa nce	The lecture and discussion	Mathematic s teaching methods	Calendar And its means	3	Fourth
Classroo n performa nce	The lecture and discussion	Mathematic s teaching methods	sources Goals	3	Fifth
Classroo n performa nce	The lecture and discussion	Mathematic s teaching methods	Goals Bloom	3	Sixth

Classroo n performa nce	The lecture and discussion	cMathemati s teaching methods	table Specifications	3	Seventh
Classroo n performa nce	The lecture and discussion	Mathematic s teaching methods	Methods teaching mathematics	3	The eighth
Classroo n performa nce	The lecture and iscussiond	Mathematic s teaching methods	exam daily	3	Ninth
Classroo n performa nce	The lecture and discussion	Mathematic s teaching methods	road Discovery	3	tenth
Classroo n performa nce	The lecture and discussion	Mathematic s teaching methods	steps solution The problem	3	atheistic ten
Classroo n performa nce	The lecture and discussion	Mathematic s teaching methods	exam quarterly	3	twelfth
Classroo n performa nce	The lecture and discussion	Mathematic s teaching methods	road Games Educational	3	the third ten
Classroo n performa nce	The lecture and discussion	hematicMat s teaching methods	steps The method	3	Fourth ten
Classroo n performa nce	The lecture and discussion	Mathematic s teaching methods	Advantages road Games Educational For the teacher And the student	3	Fifth ten

Course Evaluation .11	
The first month exam is (15) The second month exam is (15) Attendance, daily exam, participation and assignments are 10... We extract from them the effort score is 40 Final written exam of 60 .The final grade is 100	
Learning and teaching resources .12	
nothing	Required textbooks

	(methodology if any)

Specialized Teaching Methods, Fourth :Course name .1

Methods teaching Mathematics, Fathi Khalil Hamdan - university Petra. **Written by: Magdy Dear Ibrahim - world Books For publication - Cairo - 2005**	(Main References (Sources

iption FormCourse Descr

:Course code .2

Semester/Year: Course System .3

2025/17/9 :Date of preparation of this description .4

person classroom lectures-Available forms of attendance: in .5

units 3 :(hours / Number of units (total 45 :(of study hours (total Number .6

(Name of the course supervisor (if more than one name is mentioned .7

:Email Asst. Prof. Dr. Loay Musa Rawi :Name**loaytaref@tu.edu.iq**

Course objectives .8

.sic concepts in teaching methodsTeaching students the ba -1
Teaching students teaching methods in the field of mathematics for primary -2 .education
.Teaching students some educational games in the field of mathematics -3
ons for the Teaching students successful planning of mathematics less -4 primary stage

1- Using different teaching methods, including lectures, solving, cooperative learning, and -discussion, problem .others	Strategy

Course Structure .10

Evaluation method	Learning method	Required learning outcomes	Name of the unit or topic	Watches	The week
Classroom performance	The lecture and discussio	Mathematics teaching methods	Objectives of teaching mathematics in primary school	3	the first

	n				
Classroo n performa nce	Lecture and discussio n	Mathematics teaching methods	Classification of specific goals, how to formulate them, s in and modern trend this regard	3	the second
Classroo n performa nce	The lecture and discussio n	Mathematics teaching methods	and coordinating sports topics	3	the third
Classroo n performa nce	The lecture and discussio n	Mathematics teaching methods	And compare it to the mathematics books used in .primary school	3	Fourth
Classroo n ormaperf nce	The lecture and discussio n	Mathematics teaching methods	Modern trends in the presentation and coordination of sports topics	3	Fifth
Classroo n performa nce	The lecture and discussio n	Mathematics teaching methods	First month exam	3	Sixth
Classroo m performa nce	The lecture and discussio n	Mathematics teaching methods	Methods of low student achievement in mathematics and its treatment	3	Seventh
Classroo n performa nce	The lecture and discussio n	Mathematics teaching methods	Therapeutic methods for some problems of teaching mathematics in the primary stage and their treatment	3	The eighth
Classroo n performa nce	The lecture and discussio n	matics Mathe teaching methods	Planning for teaching mathematics	3	Ninth
Classroo n performa nce	The lecture and discussio n	Mathematics teaching methods	Different teaching methods in mathematics and modern trends in it	3	tenth
Classroo n performa	The lecture and	Mathematics teaching methods	Teaching cal and mathemati geometric concepts	3	eleventh

nce	discussio n				
Classroo n performa nce	The lecture and discussio n	Mathematics teaching methods	Second month exam	3	twelfth
Classroo n performa nce	The lecture and discussio n	s Mathematic teaching methods	Denz model in games	3	thirteenth
Classroo n performa nce	The lecture and discussio n	Mathematics teaching methods	Piaget's model and mathematics education	3	fourteenth
Classroo n performa nce	The lecture and discussio n	ics Mathemat teaching methods	Exercises and examples for review	3	fifteenth

Course Evaluation .11	
The first month exam is (15) The second month exam is (15) Attendance, daily exam, participation and assignments are 10... We is 40 extract from them the effort score Final written exam of 60 .The final grade is 100	
Learning and teaching resources .12	
Methods of teaching sports in teacher training institutes	Required textbooks (methodology if any)
Educational methods and -1 eaching models in t mathematics **Teaching Science for -2 Understanding: A Constructivist Vision by Dr. Kamal Abdel Hamid Zeitoun**	(Main References (Sources
	Recommended supporting books and references (...scientific journals, reports)

	Electronic references, websites

Course Description Form

1. Course name:
Advanced Differential
2. Course code :
3. Chapter/Year:
Course system
4. Date this description was prepared:
2-9-2025
5. Available attendance forms:
In-person classroom lectures
6. Number of study hours (total):
52hours / Number of units (total): 3.5 units
7. Name of the course administrator (if more than one name is mentioned)
Dr. Ahmed Mohammed Khudhur Email: ahmed.m.khudhur@tu.edu.iq
8. Course Objectives **1.The student understands the types of functions as well as finding the domain and range of each function (polynomial, fractional or radical)** **2. The student learns the seven rules of differentiation as well as the rules of differentiation for trigonometric functions, exponential functions, logarithmic functions, inverse functions and hyperbolic functions** **3. The student learns the methods of analysis to control the subject of purpose and continuity as well as memorizing the laws of continuity** **4. Knowing the steps of drawing a variable and a limit for algebraic functions, trigonometric functions, exponential functions and logarithmic functions** **5. The student learns the differentiation of inverse trigonometric functions and hyperbolic functions and their relationship with exponential functions**

Strategy	**2- Using different teaching methods, including lectures, discussion, problem-solving, cooperative learning, and others.**

10. Course structure

The week	Watches	Name of the unit or topic	Required learning outcomes	Learning method	Evaluation method
September third week	4	Function with more than one independent	The student knows the functions with one variable, two variables,	Lecture and explanatio	

		variable	or three variables.	n of the topic on the board	
September fourth week	4	Domain and range of functions with more than one independent variable	Learn the basic concepts of domain, codomain, and range of a function.	Lecture and discussion	Questions and answers
October first week	4	The goal (and ways to solve it)	Knowing the laws of purpose and methods of analysis to get rid of zero in the denominator and how to find the unknowns, one or two unknowns	Explain and write the lecture	Daily exam
October second week	4	Continuity (rules of continuity and its connection with the goal and finding constants)	Preserving the conditions of continuity as well as their connection to the goal and finding constants	Explain and write the lecture in detail on the .board	Student participation on the board
October third week	4	Partial derivatives (for functions with more than one independent variable with related theorems)	Knowing the rules of differentiation of one variable as well as implicit differentiation of functions with two or more variables	Explain the topic on the board	Exam on the board
October fourth week	4	Exam on the board			
November first week	4	Derivatives of higher orders	Master the laws of derivatives and higher derivatives of two or more derivatives.	Explain and write the lecture	Homework Questions and answers
November second week	4	How to graph the function f(x,y)	The student learns to graph functions for one variable and then for two variables, x and y.	Explain and write the lecture in detail on the board.	Student participation on the board
November third week	4	Using a pocket calculator to graph the functions $y=Ln(x)$, $y=e^x$	Learn the basic concepts of graphing as well as the graphing rules for logarithmic and exponential functions.	Explain and write the lecture in detail on the board.	Give homework questions and ask for answers
November 4th week	4	Using a pocket calculator to plot functions y=sin x and other examples	Learn the basic concepts of graphing as well as the graphing laws of trigonometric	Lecture and discussion	Student participation on the board

		of quadratic and cubic variables	**functions.**		
January first week	**4**	**Special study of derivatives** $y = \sinh x$ $y = \cosh x$, $y = \tanh x$	**Learn the basic concepts of graphing as well as the graphing laws of trigonometric functions.**	**Explain and write the lecture**	**Give homework questions and ask for answers**
January second week	**4**	**Special study of derivatives** $y = \operatorname{csch} x$ $y = \operatorname{sech} x$ $y = \coth x$	**The student learns the derivative of trigonometric functions as well as hyperbolic functions and their relationship with .exponential functions**	**Explain and write the lecture in detail on the .board**	**Daily exam**
January third week	**4**	**Second month exam**			

11. Course Evaluation

First-month exam out of (15) Second-month exam out of (15) Attendance, daily exam, participation, and assignments out of 10 ..... We extract from them the effort score out of 40

Final written exam out of 60

The final score is 100

12. Learning and teaching resources

1. علي محمد صادق وابتسام كمال الدين " مبادئ التحليل العددي " جامعة بغداد 1985	Required textbooks (methodology if any)
.3	Main References (Sources)
1 Burden, Numerical Analysis", 1985 **.2 Froberg. C. F., " Introduction to Numerical Analysis" London, 1969.** **3. Hildebrand. F. B, " Introduction to Numerical Analysis" New York, 1974**	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

1. Course Name: MATLAB
2.Course code:
3. Semester/Year: Course System

Course Description Form

4. Date of preparation of this description: 1/2/2026

5. Available forms of attendance: in-person classroom lectures

6. Number of study hours (total): 56 hours / Number of units (total): 2 units

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

Name: Assistant Professor Alaa Farhan Ahmed

Email :alaa.f@tu.edu.iq

8. Course objectives

1. **Understanding the history of the MATLAB language**
2. **Identifying and using fixed keywords in MATLAB in simple programs**
3. **Understanding the concepts of matrix and vector**
4. **Identifying the instructions used for vectors**
5. **Identifying the commands used for arrays**
6. **Understanding functions, how to write them, and how to call them.**

Strategy	Using different teaching methods, including lectures, discussion, problem-solving, cooperative learning, and others.

10. Course structure

The week	Watches	Name of the unit or topic	Required learning outcomes	Learning method	Evaluation method
November first week	4	History of MATLAB language and data types	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Daily exam
November second week	4	Some fixed keywords in MATLAB and how to use them	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Questions and answers

		with simple programs			
November third week	4	Mathematical relationships and how to write them in MATLAB	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Exam on the board
November fourth week	4	Using certain instructions to obtain approximate and precise results	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Daily exam
December first week	4	The concept of vectors and matrices	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Give homework questions and ask for answers
December second week	4	Some commands used with vectors	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Daily exam
December third week	4	Some commands used with arrays	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Exam on the board
December fourth week	4	First month exam			
January first week	4	Identify functions	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Give homework questions and ask for answers

January second week	4	Functions, how to write them, and how to call them.	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Student participation on the board
January third week	4	Various examples of functions and their implementation	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Give homework questions and ask for answers
January fourth week	4	Finding and controlling variables	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Daily exam
February first week	4	Solving mathematical equations consisting of two or three equations using instructions	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Student participation on the board
February second week	4	Second month exam			

11. Course Evaluation
First month exam out of (15) Second month exam out of (15) Attendance, daily exam, participation and assignments out of 10 ..... We extract from them the effort score out of 40 Final written exam out of 60 Final score is 100
12. Learning and teaching resources

Required textbooks (methodology if any)	

Main References (Sources)	Programming in MATLAB and its Applications in Pure Sciences Dr. Fadhil Abdul Abbas Al-Abadi Dr. Adel Mohammed Hassan Al-Ramahi
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	

1. Course Name: MATLAB
o
2. Course code:
s
3. Course System: Term/Year

description template

4. Date this description was prepared: 2025/9/1

5. Available attendance formats: In person classroom lectures

6. Total study hours: 56 / Total units 2 hours

7. Name of the course coordinator (if there is more than one, mention it)

Name: Dr. Iyad Hamad Khalaf :Email drayadlohebe@tu.edu.iq

8. Course Objectives

1. Understanding the history of the MATLAB language
2. Identifying and using constant words in MATLAB in simple programs
3. Understanding the concept of a matrix and a vector
4. Identifying the instructions used for vectors
5. Identifying the commands used for arrays
6. Understanding functions, how to write them, and how to call them.

9. Teaching strategy	**-3 Using different teaching methods, including the lecture solving -scussion method , the problemmethod, the di .method, cooperative learning, and others**

10. Course Structure

Week	Hours	Unit or topic name	Required learning outcomes	Learning method	Evaluation Method
the first	3	History of MATLAB language and data types	the basic Learn concepts of the scientific paragraph	The lecture was explained and written in detail on the board.	Daily exam
the second	3	Some fixed keywords in MATLAB and how to use	Learn the basic concepts of the hscientific paragrap	The lecture was explained and written	Questions and reques

ts for solutio ns	in detail on .the board		them with simple programs		
Exam on the board	The lecture was explained written and in detail on .the board	Learn the basic concepts of the scientific paragraph	Mathematical relationships and how to write them in MATLAB	3	the third
Daily test	The lecture was explained and written in detail on .the board	Learn the basic concepts of the scientific paragraph	Using certain instructions to obtain approximate and precise results	3	Fourth
Giving home work questi ons and asking for solutio ns	The lecture was explained and written in detail on .the board	Learn the basic concepts of the scientific paragraph	The concept of vectors and matrices	3	Fifth
Daily test	The lecture was explained and written in detail on .the board	the basic Learn concepts of the scientific paragraph	Some commands used with vectors	3	Sixth
	The lecture was explained and written detail on in .the board	Learn the basic concepts of the scientific paragraph	Some commands used with arrays	3	Seventh
			First month exam	3	Eighth
Giving home work questi ons and asking for solutio ns	The lecture was explained and written in detail on .the board	Learn the basic concepts of the scientific paragraph	Identifying Functions	3	Ninth

Student participation on the board	The lecture was explained and written in detail on the board.	Learn the basic concepts of the scientific paragraph	Functions, how to write them, and how to call them.	3	tenth
Giving home work questions and asking for solutions	The lecture was explained and written in detail on the board.	Learn the basic concepts of the scientific paragraph	Various examples of functions and their implementation	3	eleventh
Daily test	The lecture was explained and written in detail on the board.	Learn the basic he concepts of t scientific paragraph	Finding and controlling variables	3	twelfth
Student participation on the board	ecture The l was explained and written in detail on the board.	Learn the basic concepts of the scientific paragraph	Solving mathematical equations consisting of two or three equations using instructions	3	thirteenth
			Second month exam	3	fourteenth
			Comprehensive and final exam	3	fifteenth

Course Evaluation .11
xam is out The first monthly exam is out of (15), the second monthly e of (15), attendance, daily quizzes, participation, and assignments are out of 10... The total grade is calculated out of 40. The final exam is written and out of 60 points. The final grade is 100
Learning and teaching resources .12

	xtbooks Required te (methodology, if applicable)

And its MATLAB Programming in applications in pure sciences Abadi-Dr. Fadel Abdul Abbas Al -Dr. Adel Mohammed Hassan Al Ramahi	(Main references (sources
	Recommended supporting books and references (...ls, reportsscientific journa)
	Electronic references, websites

1. Course Name: Principles of Probability
2.Course code:
3. Semester/Year: Course System
4. Date of preparation of this description: 9/15/2025

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5. Available forms of attendance: in-person classroom lectures

6. Number of study hours (total): 56 hours / Number of units (total): 3.5 units

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

Name: Assistant Professor Alaa Farhan Ahmed

Email :alaa.f@tu.edu.iq

8. Course objectives

1.Identify sets of numbers

2. Identify the experimental space

3. Identify the sample space and events

4. Identify methods of counting permutations and combinations

5. Identify the laws of probability and its properties

6. Identify Bayes' law

Strategy	Using different teaching methods, including lectures, discussion, problem-solving, cooperative learning, and others.

10. Course structure

The week	Watches	Name of the unit or topic	Required learning outcomes	Learning method	Evaluation method
November first week	4	set theory	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Daily exam
November second week	4	Operations on groups	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Questions and answers
November third week	4	Statistical experiment	Learn the basic concepts of scientific paragraph	Explain and write the lecture in	Exam on the board

				detail on the board.	
November fourth week	4	sample space	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Daily exam
December first week	4	Accidents	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Give homework questions and ask for answers
December second week	4	incompatible incidents	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Daily exam
December third week	4	Independent incidents	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board.	Exam on the board
December fourth week	4	First month exam			
January first week	4	Permutations	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Give homework questions and ask for answers
January second week	4	Combinations	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Student participation on the board
January third week	4	Law of probability	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Give homework questions and ask for answers

January fourth week	4	Properties of probability	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Daily exam	
February first week	4	Bayes' law	Learn the basic concepts of scientific paragraph	Explain and write the lecture in detail on the board	Student participation on the board	
February second week	4	Second month exam				

11. Course Evaluation	
First month exam out of (15) Second month exam out of (15) Attendance, daily exam, participation and assignments out of 10 ..... We extract from them the effort score out of 40 Final written exam out of 60 Final score is 100	
12. Learning and teaching resources	
Required textbooks (methodology if any)	
Main References (Sources)	**Probability Theory** **Authored by** **Dr. Qubais Saeed Al-Fahadi** **Dr. Barlanti Jamil Shamoon** **University of Mosul**
Recommended supporting books and references (scientific journals, reports...)	
Electronic references, websites	

scription FormCourse De

1. Course name: Mathematical Analysis
2. Course code:
3. Course System: Semester/Year
4. Date of preparation of this description: 2025/9/1
5. Available forms of attendance: in person classroom lectures
6. Number of study hours (total 56 :(hours / Number of units (total 3.5 :(units
7. Name of the course supervisor (if more than one name is mentioned (
Name: Dr. Ayad Hamad Khalaf Email: drayadlohebe@tu.edu.iq
8. Course objectives
:The aim of the course is to introduce the student to the basics of mathematical analysis, including **1- Real numbers, their description, properties and definition of the field of real numbers** **2- Ordering axioms** **3- The property of perfection and tragedy and the concept of goals and ends** **4- Continuity and regular continuity** **5- Regular convergences and convergences** **6- Riemann integration theorem** **7- Lebecq's Theorem of Integration**
9. Teaching and learning strategies

Strategy	
-4 Using different teaching methods, including lectures, cooperative learning, and solving, discussion, problem others.	

10. Course Structure

The week	Watches	Name of the unit or topic	Required learning outcomes	Learning method	Evaluation

method					
Daily exam	**Lecture and explanation of the topic on the board**	**Learn the basic concepts of scientific paragraph**	**Real numbers, their description, properties and definition of the field eal of r numbers**	**4**	**February first week**
Questions and answesr	**Lecture and discussion**	**Learn the basic concepts of scientific paragraph**	**Ordering axioms**	**4**	**February second week**
Exam on the board	**Explain and write the lecture**	**Learn the basic concepts of scientific paragraph**	**Perfection and Tragic Property**	**4**	**February third week**
Daily exam	**Explain and write the lecture in detail on .the board**	**Learn the basic concepts of raphscientific parag**	**The concept of goals and ends**	**4**	**February fourth week**
Give home work questions and ask for answers	**Explain and write the lecture in detail on .the board**	**Learn the basic concepts of scientific paragraph**	**Continuity**	**4**	**March first week**
Daily exam	**Lecture and discussion**	**Learn the basic concepts of scientific paragraph**	**and regular continuity**		**second March week**
	Explain and write the lecture	**Learn the basic concepts of scientific paragraph**	**First month exam**	**4**	**March third week**
Student participation on the board	**Explain and write the lecture in detail on .the board**	**Learn the basic concepts of scientific paragraph**	**Convergences**	**4**	**March fourth week**

Give home work questions and ask for answers	nd Explain a write the lecture in detail on .the board	Learn the basic concepts of scientific paragraph	Regular convergences	4	April first week
Student participation on the board	Lecture and discussion	Learn the basic concepts of scientific paragraph	Riemann integration theorem	4	April second week
Give home work questions and ask for answers	Explain and write the lecture	Learn the basic concepts of scientific paragraph	Riemann Theorem Exercises	4	hird April t week
Daily exam	Explain and write the lecture in detail on .the board	Learn the basic concepts of graphscientific para	Lebecq's Theorem of Integration	4	April 4th week
Student participation on the board	Explain and write the lecture in detail on .the board	Learn the basic concepts of scientific paragraph	Liebeck theory exercises	4	May first week
			Second month exam	4	ay second M week

Course Evaluation .11
The first month exam is (15) The second month exam is (15) Attendance, daily exam, participation and assignments are 10... We extract from them the effort score is 40 Final written exam of 60 .he final grade is 100T

Learning and teaching resources .12	
Adel Ghassan Naoum, "Introduction to Mathematical Analysis", University of 1986-Iraq - Baghdad	Required textbooks (methodology if any)
-Apostol, " Mathematical Analysis **", 2nd 1974** **- Edwin Hewitt Karl Stromberg, "** Real and Abstract Analysis **", 1978**	(Main References (Sources
Scott , D.B., and Tims , S.R., " Mathematical Analysis An Introduction", **1966.**	Recommended supporting books and references (...scientific journals, reports)
	rences, Electronic refe websites

1. Course name :Numerical Analysis
2. Course code:
3. Course System :Semester/Year
4. Date of preparation of this description :2025-9-2
5. Available forms of attendance: in classroom lecturesperso-n
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6. Number of study hours (total 56 :(Number of units (total 3.5 :(hours / units

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(Name of the course supervisor (if more than one name is mentioned .7

Dr. Ahmed Mohammed Khudhur Email: ahmed.m.khudhur@tu.edu.iq

ectivesCourse obj .8

, Raphson method -Solutions of nonlinear equations, determination of root locations, Newton .1 convergence
Finding roots of a polynomial ,Iterative methods
Jordan method-Solutions of linear equations, Gauss elimination method, Gauss .2
tegration and Differentiation: Numerical Differentiation Newton's Formulas Numerical In .3 mson sb base , for Numerical Differentiation
Kutta Method-Solving Ordinary Differential Equations, Runge .4

Using different teaching methods, including lectures, -5 solving, cooperative learning, and -problem , discussion .others	Strategy

Course Structure .10

The week	Watches	Name of the unit or topic	Required learning outcomes	Learning method	Evaluation method
February first week	4	Solutions of nonlinear equations	Learn the basic cepts of con scientific paragraph	Lecture and explanation of the topic on the board	Daily exam
February second week	4	Root location mapping	Learn the basic concepts of scientific paragraph	Lecture and discussion	Questions and answers
February third week	4	Newton Raphson method	Learn the basic concepts of scientific paragraph	Explain and write the lecture	Exam on the board
February fourth week	4	rapprochement Iterative methods	Learn the basic concepts of scientific paragraph	Explain and write the in lecture detail on .the board	Daily exam

Give home work questions and sk for answers	Explain and write the lecture in detail on .the board	Learn the basic concepts of scientific paragraph	Finding roots of a polynomial	4	March first week
Daily exam	Lecture and discussion	Learn the basic concepts of scientific paragraph	olutions of S linear equations		March second week
	Explain and write the lecture	Learn the basic concepts of scientific paragraph	How to delete a clown	4	March third week
Stude nt partici ɔation ɔn the board	Explain and write the lecture in detail on .the board	Learn the basic concepts of scientific paragraph	The Kaos Jordan Method	4	March fourth week
Give home work questi ons and sk for answe rs	Explain and write the lecture in detail on .the board	Learn the basic concepts of hscientific paragrap	Numerical differentiation	4	April first week
Stude nt partici ɔation ɔn the board	Lecture and discussion	Learn the basic concepts of scientific paragraph	Numerical integration	4	April second week
Give home work questi ons and sk for answe rs	Explain and write the lecture	Learn the basic concepts of scientific paragraph	Numerical differentiation Newton's formulas for numerical differentiation	4	il third Apr week
Daily exam	Explain and write the lecture in detail on .the board	basic Learn the concepts of scientific paragraph	Mson base B S	4	April 4th week

Student participation on the board	Explain and write the lecture in detail on the board.	Learn the basic concepts of scientific paragraph	Solving Ordinary Differential Equations, Kutta -Runge Method	4	May first week	
			Second month exam	4	May second week	

Course Evaluation .11	
The first month exam is (15) The second month exam is (15) e Attendance, daily exam, participation and assignments are 10... W extract from them the effort score is 40 Final written exam of 60 .The final grade is 100	
Learning and teaching resources .12	
1. Ali Muhammad Sadiq and Ibtisam Din "Principles of Numerical -Kamal Al 1985 ersity of BaghdadAnalysis" Univ	Required textbooks (methodology if any)
.4 -Kazem Mohammed Hussein Al Lami "Introduction to Numerical Analysis" University of Basra 1987 .5 Kendall E. Atkinson, laciremuN ot noitcudortnl" Analysis," translated by Kazem Mohammed Hussein and 1988. ,gesMontaha Ger	(Main References (Sources
.1 Burden, Numerical Analysis", 1985 .2 Froberg . C.F., "Introduction to Numerical Analysis," London, 1969. 3. Hildebrand. F. B, "Introduction to Numerical Analysis" New York, 1974.	Recommended supporting books and references (...scientific journals, reports)
	Electronic references, websites

1. Psychology **Educational :** Course name
2. : Course code
3. **2026- 5Second grade) Second semester 202)** Chapter/ Year
4. **2024/2/1:** Date this description was prepared
5. **person / Online class-In :** ance formsAvailable attend
6. **hours / 3 units 45** : (Number of study hours (total) / Number of units (total
7. (Name of the course administrator (if more than one name is mentioned
Asst. Prof. Dr. Saber Taha Yassin **sapr87@tu.edu.iq**
8. objectives Course

Defining the concept of educational psychology and students' acquisitio of organizational skills **Logical.** **Employing the ideas of educational psychology in practical application in** **Preserving the human species** **most important educational psychological processes and Study of the their relationship to the educational process** **Psychological**	**Subject objectives**
9. Teaching and learning strategies	
Dialogue, discussion and problem solving	**Strategy**

10. Course structure

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	The week
and Questic answer And . homewor	lecture a	entry to the n basics of scien Educational psychology	Get to know the introductio to Basics of Psychology Educational	3	the firs
Daily exan	discussio	Goals of Psychology Educational/ Psychology Relationship Educational E other science	know the objectives of T science Educational Psychology / Relationship Educational Psychology In other sciences	3	condse t
Question an answer And . homewor	a lecture	The importanc of educational psychology / Personal characteristic Desired teach	ortance of know the imp T science Educational psychology/characteristic Desired teacher personalit In it	3	the thir
and a questi Answer And . homewor	discussio	The educationa process and science Educational psychology	learn about the process T Educational and Psychological Educational	3	Fourth
Daily exan	a lecture	affecting Facto Effectiveness c	Identify the factors Influencing the effectivenes	3	fifth Th

		the educationa process	ssof the proce Educational		
Question ar answer And . homewor	**discussio**	. Motivation .Know it Its functions. It .strategies	know the motivation To Its definition and function and its strategies	3	sixth Th
Daily exan	**a lecture**	Memory. Definition . .Importance Her study	learn about memory To Its definition and the importance of studying it	3	The seventl
Question an answer And . homewor	**discussio**	temporary con a perspectives In the interpretation c memory	learn about the views To Contemporary interpretatio of memory	3	eighth T
Daily exan	**a lecture**	Memory . mechanisms Factors affectin it .S to ways improve it	learn about the To mechanisms of action Memory and Influencing Factors In it and ways to improve	3	ninth Th
Question an answer And . homewor	**discussio**	. Forgetfulnes Definition. Causes His theories	know about forgetting To Its definition and causes And his theories	3	tenth Th
Daily exan	**a lecture**	Transfer of learning effect .Its importanc . Its . definitic	the know the transfer of T effect Learning Its importance an definition	3	single A ten

		.Its dimension	And its dimensions		
Question an answer And . homewor	**discussio**	of Theories transfer of .learning Feedback . . Definition Its dimension	learn about theories To Transfer of learning and nutrition y, its definition and Aposta dimensions	3	second t ten
Daily exan	**a lecture**	of Types kfeedbac Learning. Definition . Conditions	Identify the types Feedback and learning Its definition and conditio	3	third th ten
Question an answer And . homewor	**discussio**	Educational applications For learning theories	learn about applications T Educational learning theori	3	Fourth evil O
Daily exan	**midterm exam course**	course -mid A exam	se examcour-Mid	3	fifth Th evil O

11.Course Evaluation	
marks the final exam /40 marks represent the student's effort 60	
12.Learning and teaching resources	
nothing	**(Required textbooks (methodology if any**
related to educational psychology Sources	**(Main References (Sources**
Educational Psychology Book and Approved Workbook that includ all Subject vocabulary	**Recommended supporting books and references (.scientific journals, reports, etc)**

nothing	**Electronic references , websites**

Course Description Form

1. Course Name:
Foundation Math II
2. Course Code:
3. Semester / Year:
Second Semester/ First year
4. Description Preparation Date:
2026/2/1 ....
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
7. Course administrator's name (mention all, if more than one name)
Name: Dr.Haneen Adel Alashoor Email: haneen19921006@gmail.com
8. Course Objectives

Course Objectives	Teaching student the basics of the foundation of mathematics

9. Teaching and Learning Strategies

Strategy	Lectures received Advance Probabilities theoretical material and practical at the same time and by four hours per week

10. Course Structure

Course Description Guide	**Hours**	**Required Learning Outcomes**	Course Description Guide		**Evaluation method**
First	4	Introduction to the application or function	The applications	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Second	4	Types of applications	Types of applications	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Third	4	Examples of application types	examples	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Fourth	4	Composite mappings	Composite mappings	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Fifth	4	Self-mapping +fixed	Self-mapping +fixed	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Sixth	4	Fundamental numbers	Fundamental numbers	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Seventh	4	First month exam			
Eighth		natural numbers	natural numbers	Paper lecture, display	Daily and monthly

				screen, whiteboard and pen	exams and homework
Ninth	4	Infinite sets	Infinite sets	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Tenth	4	Uncountable sets	Uncountable sets	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Eleventh	4	Binary operations	Binary operations	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Twelfth	4	Mathematical system	Mathematical system	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Thirteenth	4	Group and its conditional	Group and its conditional with examples	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Fourteenth		Second month exam			
Fifteenth		Final exam			

11. course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily etc..... preparation, daily oral, monthly, or written exams, reports	
12.Learning and Teaching Resoures	
Required textbooks (curricular Books,if any	Introduction to the foundations of mathematics Part Two + Modern Algebra

Main references (sources)	Book foundations of mathematics by Dr. Hadi Jabr , Dr. Nader George, Dr. Riadh shaker Naoum
Recommended Books and references (scientific journais, reports…)	None
Electronic References ,Websites	None

Course Description Form

1. Course Name:
Foundation Math I
2. Course Code:
3. Semester / Year:
First Semester/ First year
4. Description Preparation Date:
2025/9/15
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
....
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Haneen Adel Alashoor Email: haneen.adil.a@tu.edu.iq

8. Course Objectives	
Course Objectives	Teaching student the basics of the foundation of mathematics

9. Teaching and Learning Strategies	
Strategy	Lectures received Advance Probabilities theoretical material and practical at the same time and by four hours per week

10. Course Structure

First	4	Introduction to mathematical logic and different number groups	The number groups	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Second	4	Logical expressions and their types	The logical expressions	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Third	4	Truth tables	Truth tables	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Fourth	4	Logical equivalence	Logical equivalence	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Fifth	4	Algebra expressions + examples	Algebra expressions	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Sixth	4	Mathematical dialogue + quantifiers	Quantifiers	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Seventh	First month exam				
Eighth		The sets and their types	The sets	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Ninth	4	The operations on sets	The operations on sets	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework

Tenth	4	Sets algebra and some theorems	Sets algebra	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Eleventh	4	Relations and their types	Relations	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Twelfth	4	Various examples of relations	Various examples of relations	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Thirteenth	4	Cartesian multiplication	Cartesian multiplication	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Fourteenth		Second month exam			
Fifteenth		Final exam			

11. course Evaluation	
Distributing the score out of 100 according to the tasks assigned to the student such as daily etc.....preparation, daily oral, monthly, or written exams, reports	
12.Learning and Teaching Resoures	
Required textbooks (curricular Books,if any	Introduction to the foundations of mathematics Part Two + Modern Algebra
Main references (sources)	Book foundations of mathematics by Dr. Hadi Jabr , Dr. Nader George, Dr. Riadh shaker Naoum
Recommended Books and references (scientific journais, reports…)	None
Electronic References	

,Websites	None

1. Course name:
Advanced Integration
2. Course code :
3. Chapter/Year:
Course system
4. Date this description was prepared:
2025 /9 /1
5. Available attendance forms:
In-person classroom lectures
6. Number of study hours (total):
52hours / Number of units (total): 3.5 units
7. Name of the course administrator (if more than one name is mentioned)
Name: M.M. Ahmed Taha Ahmed **Email** :ahmed.t.a.bes@tu.edu.iq
8. Course Objectives **.1To familiarize the student with the laws of derivation and the basic laws of integration** **.2To enhance the students' understanding of the basic concepts of integration and related concepts** **.3To teach the student how to use advanced integration laws such as integration by parts and integration of partial fractions** **4. To develop skills in solving complex mathematical problems using integration, including applications in engineering and physics**

Strategy	**6- Using different teaching methods, including lectures, discussion, problem-solving, cooperative learning, and others.**

10. Course structure

The week	Watches	Name of the unit or topic	Required learning outcomes	Learning method	Evaluation method
September third week	4	Re-topics of integration methods and definite integration	Learn the basic concepts of integration laws and their connection to derivation rules	Lecture and explanation of the topic on the board	
September fourth week	4	Integration of Inverse Functions	Learn the basic concepts of separation of variables and control of integration methods.	Learn the basic concepts of scientific paragraph	Questions and answers
October first week	4	Some Theorems Used for Double Integrals	The student should be able to distinguish between the two methods, as well as the previous method, and how to convert non-homogeneous equations into homogeneous .equations	Learn the basic concepts of scientific paragraph	Daily exam
October second week	4	Finding Volumes Using Single Integrals Using Diske's Method First Month Exam)	The student should be able to distinguish between the two methods, as well as with the previous method, and how to convert non-linear equations (Bernoulli) into linear equations.	Learn the basic concepts of scientific paragraph	Student participation on the board
October third week	4	First-month exam		Learn the basic concepts of scientific paragraph	
October fourth week	4	Finding Volumes Using Single Integrals Using Washer's Method	Learn the basic concepts of analysis methods to control the general solution and memorize the	Learn the basic concepts of scientific	Daily exam

			hypotheses of the .specific solution	paragraph	
November first week	4	Finding Volumes Using Single Integrals Using Shell's Method	Learn the basic concepts of scientific paragraph	Learn the basic concepts of scientific paragraph	Homework Questions and answers
November second week	4	Finding Length Using Integration specific solution of a homogeneous equation	Learn the basic concepts of scientific paragraph	Learn the basic concepts of scientific paragraph	Student participation on the board
November third week	4	Finding the surface area	Learn the basic concepts of scientific paragraph	Learn the basic concepts of scientific paragraph	Give homework questions and ask for answers
November 4th week	4	Solving general exercises and special curriculum exercises in length and surface area	Learn the basic concepts of scientific paragraph	Learn the basic concepts of scientific paragraph	Student participation on the board
January first week	4	Double integrals in polar coordinates	Learn the basic concepts of scientific paragraph	Learn the basic concepts of scientific paragraph	Give homework questions and ask for answers
January second week	4	Concept and integration of dual (functions f(x,y	Learn the basic concepts of scientific paragraph	Learn the basic concepts of scientific paragraph	Daily exam
January third week	4	Second month exam			

11. Course Evaluation

First-month exam out of (15) Second-month exam out of (15)

Attendance, daily exam, participation, and assignments out of 10 ..... We extract from them the effort score out of 40

Final written exam out of 60

The final score is 100

12. Learning and teaching resources

1. مصطفى, أحمد حسن الشيخ إدريس, عبدالحليم, آلاء خالد أحمد, عبدالرحمن, إنعام عبدالرحمن حامد, ... & موسى عيسى محمد. (2017). المعادلات التفاضلية العادية من الرتبة الأولى وبعض طرق حلها وتطبيقاتها	Required textbooks (methodology if any)

(Doctoral dissertation, جامعة السودان للعلوم و التكنولوجيا).	
6. عباس, & عمر قاسم علي. (2016). المعادلات التفاضلية العادية من الرتبة الثانية ذات المعاملات الثابتة و المتغيرة (Doctoral dissertation, جامعة البطانة كلية الدراسات العليا).	Main References (Sources)
1.Hussain, E. A., & Abdul–Abbass, Y. M. (2018). Solving Differential Equation by Modified Genetic Algorithms. Journal of University of Babylon for Pure and Applied Sciences, 26(10), 241-233. 2. Eljaneid, N. H. E. (2004). Differntial Equations on Manifolds (Doctoral dissertation, جامعة النيلين).	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Course Description Form

1. Course Name:
Linear algebra .....
2. Course Code:
3. Semester / Year:
Third Semester/ Second year
4. Description Preparation Date:
2025/9/15
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
7. Course administrator's name (mention all, if more than one name)

Name: Dr. Haneen Adel Alashoor
Email: haneen.adil.a@tu.edu.iq

8. Course Objectives

Course Objectives	
	• This course aims to equip students with the knowledge of vector space requirements for addition and multiplication over a field of real and integer numbers. • To understand the condition of subspace. • To satisfy the base conditions and then find the angle and distance between vectors. • To use Cram Schmidt's method to transform vectors into orthogonal standard base vectors. • To understand the condition of linear transformation • To find eigenvalues and eigenvectors.

9. Teaching and Learning Strategies

Strategy	Lectures received Advance Probabilities theoretical material and practical at the same time and by four hours per week

10. Course Structure

	Hours	Required Learning Outcomes			Evaluation
First	4	Vector space	Vector space and their conditions	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Second	4	subspace	Subspace: linear independence and dependence	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Third	4	Dimension and common ground	Dimension and common ground for vectors	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Fourth	4	Cauchy-Schwartz	Dot product,	Paper lecture,	Daily and

		inequality	Cauchy-Schwartz inequality and perpendicularity	display screen, whiteboard and pen	monthly exams and homework
Fifth	4	Angles between vectors	How to find Angles between vectors	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Sixth	4	distance between vectors	How to calculate the distance between vectors	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Seventh		First monthly exam			
Eighth		Cram-Schmidt's method	Cram-Schmidt's method	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Ninth	4	Linear transformations	Condition for a Linear transformations	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Tenth	4	Eigenvalues	Finding Eigenvalues	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Eleventh	4	eigenvectors	Finding Eigenvectos	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Twelfth	4	Game theory	Game theory	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Thirteenth	4	General review	General review	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Fourteenth	Second monthly exam				
Fifteenth	Final term exam				

11. course Evaluation
Distributing the score out of 100 according to the tasks assigned to the student such as daily

etc..... preparation, daily oral, monthly, or written exams, reports

12.Learning and Teaching Resoures	
Required textbooks (curricular Books,if any	
Main references (sources)	
Recommended Books and references (scientific journais, reports…)	
Electronic References ,Websites	

Course Description Form

1. Course Name:
Differential equations
2. Course Code:
3. Semester / Year:
fifth Semester/ third year
4. Description Preparation Date:
2025/9/15
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Haneen Adel Alashoor Email: haneen.adil.a@tu.edu.iq

8. Course Objectives

Course Objectives	1. The student will differentiate between ordinary and partial differential equations and master the laws of integration 2. Distinguish between first-order differential equations (separation of variables, homogeneous or non-homogeneous, linear or non-linear) with the method of solving each of them 3. Master the methods of analysis to be able to solve the general solution, as well as find the specific solution through exponential functions, trigonometric functions, and polynomial functions 4. Know the steps of matrices and the method of deriving them

9. Teaching and Learning Strategies

Strategy	Lectures received Advance Probabilities theoretical material and practical at the same time and by four hours per week.

10. Course Structure

	Hours	Required Learning Outcomes			Evaluation method
First	4	**The student should be able to distinguish between ordinary and partial differential equations and find .the rank and degree**	**The difference between ordinary and partial differential equations and the order and degree of the equation**	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Second	4	**Learn the basic**	**First order differential**	Paper lecture,	Daily and

		concepts of separation of variables and control of integration .methods	**equations (separation of variables method)**	display screen, whiteboard and pen	monthly exams and homework
Third	4	**The student should be able to distinguish between the two methods, as well as the previous method, and how to convert non-homogeneous equations into homogeneous .equations**	**First-order differential equations (homogeneous and non-homogeneous equations method)**	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Fourth	4	**The student should be able to distinguish between the two methods, as well as with the previous method, and how to convert non-linear equations (Bernoulli) .into linear equations**	**First order differential equations, linear differential equations and nonlinear equations (Bernoulli equation)**	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Fifth	4	**Learn the basic concepts of analysis methods to control the general solution and memorize the hypotheses of the .specific solution**	**General solution and specific solution of differential equations**	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Sixth	4	**Learn the basic concepts of scientific paragraph**	**Linear equations from higher order to first order with numerical equations**	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Seventh	4	First month exam			
Eighth		**Learn the basic concepts of scientific paragraph**	**General solution of a homogeneous equation (the usual method) for the specific solution of a homogeneous equation**	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Ninth	4	**Learn the basic concepts of scientific paragraph**	**Numerical differentiation**	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Tenth	4	**Learn the basic concepts of scientific paragraph**	**Numerical integration**	Paper lecture, display screen,	Daily and monthly exams and

				whiteboard and pen	homework
Eleventh	4	**Learn the basic concepts of scientific paragraph**	**Numerical differentiation Newton's formulas for numerical differentiation**	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Twelfth	4	**Learn the basic concepts of scientific paragraph**	**Simpson base**	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Thirteenth	4	**Learn the basic concepts of scientific paragraph**	**Solving Ordinary Differential Equations, Runge-Kutta Method**	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Fourteenth		Second month exam			
Fifteenth		Final course exam			

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 Resoures	
Required textbooks (curricular Books,if any	.....
Main references (sources)	
Recommended Books and references (scientific journais, reports…)	
Electronic References ,Websites	

Course Description Form

1. Course Name:
Curricula and textbooks
2. Course Code:
The second stage
3. Semester / Year:
Course system For the academic year 2025-2026, first semester

4. Description Preparation Date:

1 / 9 / 2026

5. Available Attendance Forms:

In-person classroom lectures

6. Number of Credit Hours (Total) / Number of Units (Total)

45 hours

7. Course administrator's name (mention all, if more than one name)

Name: Abdullah Mohammed Ahmed
Email: abdullah.moh@tu.edu.iq

8. Course Objectives

Course Objectives	To provide students with knowledge and a deep understanding of specific concepts, as well as the skills necessary to apply them in various situations. To develop students' critical thinking and problem-solving abilities, which are essential skills for academic, professional, and personal success. To strive towards building an integrated and coherent educational system across different courses, ensuring a comprehensive and enriching learning experience for students. To foster a culture of continuous improvement through the analysis of field data and feedback, enabling informed decisions that enhance the quality of the educational process. To establish clear indicators for measuring learning outcomes, contributing to an accurate and objective assessment of student progress and achievement.

9. Teaching and Learning Strategies

Strategy	1- Method of giving lectures 2- Discussion method 3- Reports and research 4- Wall flyers

10. Course Structure

	Hours	Required Learning Outcomes			Evaluation method

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
the first	3		Form. And what do we mean by systematic approach?	Lecture and discussion	Class performance
the second	3		The traditional concept of curriculum and the modern concept of curriculum	Lecture and discussion	Class performance
The third	3		Characteristics of the modern curriculum and contemporary trends in the concept of curriculum	Lecture and discussion	Class performance
The Fourth	3		Objectives. What do we mean by educational objectives and their importance?	Lecture and discussion	Class performance
The Fifth	3		What types of curricula are there?	Lecture and discussion	Class performance
The Sixth	3		Separate curricula?	Lecture and discussion	Class performance
The Seventh	3		Related curricula?	Lecture and discussion	Class performance
Eighth	3		Integrated curricula?	Lecture and discussion	Class performance
Ninth	3		Activity-based approach (advantages and disadvantages)	Lecture and discussion	Class performance
tenth	3		Project introduction. Advantages and disadvantages	Lecture and discussion	Class performance
eleventh	3		The pivotal approach: advantages and disadvantages	Lecture and discussion	Class performance
twelfth	3		What do we mean by a textbook, what are its characteristics and importance?	Lecture and discussion	Class performance
thirteenth	3		What are the foundations for building a curriculum?	Lecture and discussion	Class performance
fourteenth	3		What are the old and modern methods used in developing school curricula?	Lecture and discussion	Class performance
fifteenth	3		What are the justifications for	Lecture and discussion	Class performance

			developing school curricula?		

11. course Evaluation
First month exam out of 13 / Second month exam out of 13 / Daily participation and attendance out of 14 / / From these, we calculate the coursework grade out of 40 / Final exam out of 60 / Final grade out of 100

12.Learning and Teaching Resoures	
Required textbooks (curricular Books,if any	Curricula: Their Elements and Principles of Implementation (Dr. Salah Abdel Hamid Mustafa)
Main references (sources)	Curricula (Dr. Samir Younis Salah)
Recommended Books and references (scientific journais, reports…)	Lectures for the curriculum material published on Iraqi university websites
Electronic References ,Websites	

Course Description Form

1. Course Name:
Curricula and textbooks
2. Course Code:
.....The third stage
3. Semester / Year:
Course system For the academic year 2025-2026, first semester .....
4. Description Preparation Date:
1 / 1 / 2026
5. Available Attendance Forms:
In-person classroom lectures
6. Number of Credit Hours (Total) / Number of Units (Total)
45 hours
7. Course administrator's name (mention all, if more than one name)
Name: Abdullah Mohammed Ahmed Email: abdullah.moh@tu.edu.iq
8. Course Objectives

Course Objectives	To provide students with knowledge and a deep understanding of specific concepts, as well as the skills necessary to apply them in various situations.

	To develop students' critical thinking and problem-solving abilities, which are essential skills for academic, professional, and personal success. To strive towards building an integrated and coherent educational system across different courses, ensuring a comprehensive and enriching learning experience for students. To foster a culture of continuous improvement through the analysis of field data and feedback, enabling informed decisions that enhance the quality of the educational process. To establish clear indicators for measuring learning outcomes, contributing to an accurate and objective assessment of student progress and achievement.

9. Teaching and Learning Strategies

Strategy	1- Method of giving lectures 2- Discussion method 3- Reports and research 4- Wall flyers

10. Course Structure

	Hours	Required Learning Outcomes			Evaluation method

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
the first	3		Form. And what do we mean by systematic approach?	Lecture and discussion	Class performance
the second	3		The traditional concept of curriculum and the modern concept of curriculum	Lecture and discussion	Class performance
The third	3		Characteristics of the modern curriculum and contemporary trends in the concept of	Lecture and discussion	Class performance

			curriculum		
The Fourth	3		Objectives. What do we mean by educational objectives and their importance?	Lecture and discussion	Class performance
The Fifth	3		What types of curricula are there?	Lecture and discussion	Class performance
The Sixth	3		Separate curricula?	Lecture and discussion	Class performance
The Seventh	3		Related curricula?	Lecture and discussion	Class performance
Eighth	3		Integrated curricula?	Lecture and discussion	Class performance
Ninth	3		Activity-based approach (advantages and disadvantages)	Lecture and discussion	Class performance
tenth	3		Project introduction. Advantages and disadvantages	Lecture and discussion	Class performance
eleventh	3		The pivotal approach: advantages and disadvantages	Lecture and discussion	Class performance
twelfth	3		What do we mean by a textbook, what are its characteristics and importance?	Lecture and discussion	Class performance
thirteenth	3		What are the foundations for building a curriculum?	Lecture and discussion	Class performance
fourteenth	3		What are the old and modern methods used in developing school curricula?	Lecture and discussion	Class performance
fifteenth	3		What are the justifications for developing school curricula?	Lecture and discussion	Class performance

11. course Evaluation

First month exam out of 13 / Second month exam out of 13 / Daily participation and attendance out of 14 / / From these, we calculate the coursework grade out of 40 / Final exam out of 60 / Final grade out of 100

12.Learning and Teaching Resoures

Required textbooks (curricular Books,if any	Curricula: Their Elements and Principles of Implementation (Dr. Salah Abdel Hamid Mustafa)
Main references (sources)	Curricula (Dr. Samir Younis Salah)
Recommended Books and references (scientific journais, reports…)	Lectures for the curriculum material published on Iraqi university websites
Electronic References ,Websites	

Course Description Form

1. Course Name:
2. Course Code:
3. Semester / Year:
Course system
4. Description Preparation Date:
5. Available Attendance Forms:
6. Number of Credit Hours (Total) / Number of Units (Total)
7. Course administrator's name (mention all, if more than one name)
Name: Email:

8. Course Objectives	
Course Objectives	....

9. Teaching and Learning Strategies	
Strategy	1- Method of giving lectures 2- Discussion method 3- Reports and research 4- Wall flyers

10. Course Structure

	Hours	Required Learning Outcomes			Evaluation method

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method

11. course Evaluation

12.Learning and Teaching Resoures

Required textbooks (curricular Books,if any	
Main references (sources)	
Recommended Books and references (scientific journais, reports…)	
Electronic References ,Websites	

Course Description Form

1. Course Name:
Topology
2. Course Code:
Topology
3. Semester / Year:
Seventh Semester/ Fourth year
4. Description Preparation Date:
2025/9/15
5. Available Attendance Forms:
Weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Haneen Adel Alashoor Email: haneen.adil.a@tu.edu.iq

8. Course Objectives

Course Objectives	..... • Defining real numbers and restricted sets, distinguishing between. • open and closed sets, and defining topological space and its types

9. Teaching and Learning Strategies

Strategy	Lectures received topology lectures for four hours a week

10. Course Structure

	Hours	Required Learning Outcomes			Evaluation method
First	4	Introduction and review of the Real numbers and their properties.	Real numbers	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework

Second	4	The bounded sets	The bounded sets	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Third	4	Absolute value	Absolute value	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Fourth	4	Real numbers as a field	Real numbers as a field	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Fifth	4	Axiomatic perfect.	Axiomatic perfect	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Sixth	4	Real number topology	Real number topology	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Seventh		First month exam			
Eighth	4	Point dialogue	Point dialogue	Paper lecture, display screen,whiteboard and pen	Daily and monthly exams and homework
Ninth	4	Union and intersection of open and closed groups	Operations on the sets	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Tenth	4	Topology- Types of Topology	Topology	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Eleventh	4	Metric Space and Group Covering	Metric Space	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Twelfth	4	Sequences, real number sequences	The Sequences	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Thirteenth	4	Algebra of sequences	Algebra of sequences	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework

Fourteenth		Second month exam			
Fifteenth		Final exam			

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 Resoures	
Required textbooks (curricular Books,if any	
Main references (sources)	
Recommended Books and references (scientific journais, reports…)	
Electronic References ,Websites	

Course description template

:Course Name .1
Complex analysis
:Course code .2
:Term/Year .3
Course system
:Date this description was prepared .4
2025/9/1
:Available forms of attendance .5
person classroom lectures-In
:Total number of study hours .6
units 3.5 :(hours / Number of units (total 56
(Name of the course coordinator (if there is more than one, mention it .7
drayadlohebe@tu.edu.iq :Email Hamad Khalaf Iyad .Dr :Name
Course Objectives .8 **Understanding the basic concepts in complex analysis, such as complex numbers and .1 .complex functions** **Using different mathematical laws to analyze complex functions such as differentiation .5** **unctions and exploring possible solutions. Enhancing analytical thinking Solving complex f .6 .skills through solving complex problems** **Understanding the properties of functions such as continuity, differentiation, and .7 integration in the complex domain**

ent teaching methods, including the lecture Using differ -7 **solving -method, the discussion method , the problem .method, cooperative learning, and others**	strategy

Course Structure .10

Evaluation Method	Learning method	Required learning outcomes	Unit or topic name	Hours	Week
Daily mexa	The lecture and explanation of the	Learn the relationship between complex numbers and the	complex numbers	4	e firstth

	topic on the board	set of real numbers, the difference between them, and how to add, subtract, multiply, and divide real .numbers			
Questions and requests for solutions	Lecture and discussion	Learn the basic concepts of the scientific paragraph	Complex numbers as a field	4	the second
Exam on the board	Explanation and writing of the lecture	Learn the basic for ceptscon finding the values of unknowns, as well as understand De Moivre's theorem and its .implications	Finding constants and some theorems for solving complex functions	4	the third
Daily test	The lecture was explained and written in detail on .the board	the laws of Learn metric space and onship their relati to real numbers	Complex numbers as a metric space	4	Fourth
Giving homework questions and asking for solutions	The lecture was explained and written tail on in de .the board	the laws of Learn metric space and their relationship to real numbers	Complex numbers as a space metric	4	Fifth
Daily test	Lecture and discussion	Learn the basic concepts of the scientific paragraph	Analytical functions		Sixth
			First month exam	4	Seventh
Student participation on the board	The lecture was explained and written in detail on .the board	Learn the basic concepts of the scientific paragraph	Harmonic functions and nic harmo conjugates	4	Eighth
Giving homework questions and asking	The lecture was explained and written in detail on .the board	Learn the basic concepts of the scientific aphparagr	derivation The of the doctrine	4	Ninth

for solutions					
Student participation on oardthe b	Lecture and discussion	Learn the basic concepts of the scientific paragraph	numerical integration	4	tenth
Student participation on the board	Lecture and discussion	Learn the basic concepts of the scientific paragraph	Some numerical integrations	4	eleventh
Giving homework s question and asking for solutions	Explanation and writing of the lecture	Learn the concepts of continuity and .purpose	Continuity and goals	4	twelfth
Giving homework questions and asking for solutions	Explanation and writing of the lecture	Learn the basic concepts of the scientific paragraph	Cauchy and Riemann equations	4	thirteenth
Daily test	The lecture was explained and written in detail on .the board	Learn the basic concepts of the scientific paragraph	Cauchy and Riemann s and equation some applications	4	fourteenth
			Second month exam	4	fifteenth

Course Evaluation .11
e second monthly exam is out The first monthly exam is out of (15), th of (15), attendance, daily quizzes, participation, and assignments are .out of 10... The total grade is calculated out of 40 .The final exam is written and out of 60 points The final grade is 100
urcesLearning and teaching reso .12

Required textbooks (methodology, if applicable)	**Ikhlas Elias Abdulaziz, Prof. Dr. Enas Azzou, and Asst. Prof. -Younis Al Taghreed Hamdoun Shukr. (2023) Divergent Thinking Strategies and Their Impact on Obtaining a Fourth ics. Grade Certificate in Mathemat Journal of Basic Sciences, 10 (17), 344-323** **Surface, R. Riemann. .7 Arbarello , E.; :Authors Cornalba , M.; Griffiths, PA; :Sourceand Harris, J. Geometry of Algebraic Curves, I. New York: Springer Volume and -Verlag , 1985. 2018-10-Page: ... 14** **Abramowitz, M., & Stegun , I. A. 1 (2021). Vapnik-Chervonenkis Dimension.**

Course Description Form

1. Course name:
Integration
2. Course code :
3. Chapter/Year:
Course system
4. Date this description was prepared:
2026 /9 /15
5. Available attendance forms:
In-person classroom lectures
6. Number of study hours (total):
52hours / Number of units (total): 3.5 units
7. Name of the course administrator (if more than one name is mentioned)
Name: M.M. Ahmed Taha Ahmed **Email** :ahmed.t.a.bes@tu.edu.iq
8. Course Objectives **1.Learn the basic concepts of integration and its types, definite and indefinite** **2 .Learn how to integrate different functions and their relationship to continuity** **3 .Learn about the application of definite integration in various other sciences, and how to benefit from it in solving problems in other sciences** **4. There are many problems in applied sciences such as ordinary and partial differential equations, and to solve them we use integrations to reach a result**

Strategy	**8- Using different teaching methods, including lectures, discussion, problem-solving, cooperative learning, and others.**

10. Course structure

The week	Watches	Name of the unit or topic	Required learning outcomes	Learning method	Evaluation method
First	4	Integration Rules	ndefinite integration Reverse differentiation (derivative) Knowing the basic theory of integration	Lecture and explanation on the topic on the	

				board	
Second	4	Integration of Exponential and Logarithmic Functions	Integration of exponential and logarithmic functions and various examples	Lecture and discussion	Questions and answers
Third	4	Integration of Trigonometric Functions	The student should memorize the laws of integration of trigonometric functions with solving questions and controlling the integration rules for angle integration	Explain and write the lecture	Daily exam
Fourth	4	Partition Method	The student should memorize the law of integration by parts	Explain and write the lecture in detail on the .board	Student participation on the board
Fifth	4	Integration Method by Substitution	Knowing the integration of trigonometric functions with trigonometric substitutions	Explain the topic on the board	Exam on the board
Sixth	4	First Month Exam			
Seventh	4	Integration by Partial Fractions	To control the methods of analysis and how to distribute brackets and unify denominators	Explain and write the lecture	Homework Questions and answers
Eighth	4	Integration Methods (Other Substitutions)	To control the basic concepts that include the topic	Explain and write the lecture in detail on the board.	Student participation on the board
Ninth	4	Definite Integration	Definite integration with an integration	Explain and	Give homewor

			period and substitution of the larger number minus the smaller number	write the lecture in detail on the board.	k questions and ask for answers
Tenth	4	Area Bound by a Curve	To equate the function to zero and use the analysis steps to find the value of the variable	Lecture and discussio n	Student participat ion on the board
Eleventh	4	Area Bound by a Curve	To equate the function to zero and use the analysis steps to find the value of the variable and then determine whether the values of the variable belong to the function or not	Explain and write the lecture	Give homewor k questions and ask for answers
Twelfth	4	Area Bound by Two Curves	To equate the functions and find a function through the two functions and solve the same steps of the area specified by the curve	Explain and write the lecture in detail on the .board	Daily exam
Thirteent h	4	Second Month Exam			

11. Course Evaluation	
First-month exam out of (15) Second-month exam out of (15) Attendance, daily exam, participation, and assignments out of 10 ..... We extract from them the effort score out of 40 Final written exam out of 60 The final score is 100	
12. Learning and teaching resources	
1. علي محمد صادق وابتسام كمال الدين " مبادئ التحليل العددي " جامعة بغداد 1985	Required textbooks (methodology if any)
.8	Main References (Sources)

1 Burden, Numerical Analysis", 1985 .2 Froberg. C. F., " Introduction to Numerical Analysis" London, 1969. 3. Hildebrand. F. B, " Introduction to Numerical Analysis" New York, 1974	Recommended supporting books and references (scientific journals, reports...)
	Electronic references, websites

Course Description Form

1. Course Name:
Geometry
2. Course Code:
Geometry
3. Semester / Year:
fourth Semester/ Second year
4. Description Preparation Date:
2026/2/1
5. Available Attendance Forms:
Weekly .....
6. Number of Credit Hours (Total) / Number of Units (Total)
7. Course administrator's name (mention all, if more than one name)
Name: Dr. Haneen Adel Alashoor Email: haneen.adil.a@tu.edu.iq
8. Course Objectives

Course Objectives	1- Axiomatic system, Yunk and Fano system, properties of the Axiomatic system. 2- The geometry of the concept of Euclid, the parallel hypothesis, some attempts to prove the parallel hypothesis 3- Ptolemy's Attempt, Omar Khayyam's Proof, Nasr al-Din al-Tusi's Proof, Proclus' Attempt, Ether al-Din al-Abhari's Proof, Wallace's Proof, Helaby System and Its Definition. 4- Evolution of non-euclidean geometry (istomic geometry, elliptic geometry) 5- Comparison of Geometry (Euclidean and Non-Euclidean)

9. Teaching and Learning Strategies

Strategy	The student learns how to differentiate between axiomatic systems, the importance of their existence, how to use axioms and theorems in proof, and then distinguish between Euclidean and non-Euclidean axiomatic systems. Geometry lectures are given in 3 theoretical hours each week.

10. Course Structure

	Hours	**Required Learning Outcomes**			**Evaluation method**
First	3	The emergence of Euclidean geometry	Euclidean geometry	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Second	3	The axiomatic system, the projective plane.	The axiomatic system	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Third	3	Harmonious plane..	Harmonious plane.	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Fourth	3	Yunk system	Yunk system	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Fifth	3	Fano system	Fano system	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Sixth	3	Properties of axiom order, property of consistency	consistency	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Seventh		First month exam			
Eighth	3	Independence property	Independence property	Paper lecture, display screen, w Paper lecture, display	Daily and monthly exams and homework

				screen, whiteboard and pen hiteboard and pen	
Ninth	3	The geometry of Euclid's concept, the parallelism hypothesis, some attempts to prove the parallelism hypothesis.	The geometry of Euclid's	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Tenth	3	Ptolemy's Attempt, Omar Khayyam's Proof, Nasr al-Din al-Tusi's Proof, Proclus' Attempt, Ether al-Din al-Abhari's Proof, Wallace's Proof	Some attempts to prove the fifth axiom	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Eleventh	3	The Hellbrian System Definition, and its components.	The Hellbrian System	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Twelfth	3	The emergence of non-euclidean geometry (istomic geometry and elliptic geometry).	The non-euclidean geometry	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Thirteenth	3	Comparison of geometries (Euclidean and non-Euclidean).	Comparison of geometries	Paper lecture, display screen, whiteboard and pen	Daily and monthly exams and homework
Fourteenth		Second month exam			
Fifteenth		Final exam			

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 Resoures
Required textbooks (curricular Books,if any

Main references (sources)	
Recommended Books and references (scientific journais, reports…)	
Electronic References ,Websites	

Course description template

1. Measurement and Evaluation :Course Name	
2. code Course	
3. **2026-2025 semester Second Third grade** Year /Semester	
4. 2026/2/1 : description was prepared this Date	
5. (in person and electronic) forms of attendance Available	
6. **units 3 /hours 45** : Total study hours/total units	
7. ore than one, please if there is m) Name of the course coordinator .(mention it	
:Email .A -Al Saber Taha Yassin .Dr :Namesapr87@tu.edu.iq	
8. objectives Course	
Course objectives	**for Defining the basic concepts - -measurement -test) students .(evaluation** **to the students Introducing - s of good characteristic**

	. assessment **Types of students Definition of - tests and the advantages of each test** **.And its drawbacks** **How to formulate behavioral goa** .

9. Teaching and learning strategies

strategy	. (exchanging ideas) Using scientific discussions - . oom exercises for the participation of all studentsClassr - . Group study to involve all students in classroom activity -

10. Course structure

Week	Hours	Required learning outcomes	Unit or topic name	Learning method	Evaluation Method
the first	2	The first g with meetin , students the getting to know and , them the giving them course .syllabus	The first meeting with , students the getting to know and , them the giving them .course syllabus	Dialogue	Problem solving
the second	2	can students That Introduction to toryhis Measurement and Evaluation	A brief history of Measurement and Evaluation	discussion	Questions and Answers
the third	2	To be able to define the test	Test definition	discussion	Questions and Answers
Fourth	2	Understanding the concept of	he concept of T measurement	discussion	Questions and

		measurement	and its characteristics		Answers
Fifth	2	To develop a general of understanding ,testing measurement , evaluation, and the relationship between them	The concept of testing, measurement, evaluation, and relationship the between them	discussion	Questions and Answers
Sixth	2	Understanding the importance of measurement and evaluation in the educational process	The importance of measurement and evaluation in the educational process	discussion	Questions and wersAns
Seventh	2	Understanding the relationship between assessment and curriculum	The relationship between assessment and curriculum	discussion	Questions and Answers
The eighth	2	Differentiating between types of calendars	Types of calendars	discussion	stions Que and Answers
The ninth	2	The ability to formulate behavioral goals and demonstrate their importance .in assessment	Formulating behavioral objectives and their importance in assessment	discussion	paper test
The tenth	2	Working according to Bloom's axonomy ofT Educational Objectives	Bloom's Taxonomy of Educational Objectives	discussion	Questions and Answers

The eleventh ten	2	Understanding oral exams	oral exams	discussion	Questions and Answers
second th ten	2	Written tests comprehension	tsWritten tes	discussion	Questions and Answers
third the ten	2	Identifying the advantages and disadvantages of objective testing	Objective tests	discussion	Questions and Answers
Fourth ten	2	Students should apply the specifications table to sample .questions	ifications Spec table	discussion	Questions and Answers
Fifth ten	2	The student should calculate the difficulty, ease, and discrimination .indices	Ease, difficulty, and distinction	discussion	paper test

11. Course evaluation

marks represent the final exam 60 / ortmarks represent the student's eff 40

12. Learning and teaching resources

(methodology, if applicable) Required textbooks	Measurement and Evaluation for University Students , Abdul Hussein Razouki
(Main references (sources	Principles of Educational rement and Evaluation / Measu Ajeeli, Fahim -Sabah Hussein Al Turaihi, Hussein Rabie -Hussein A Hammadi
books and Recommended supporting (…references (scientific journals, reports	----------

references , websites	----------

Course Description Form

Mathematical thinking :Course name .1
:Course code .2
Semester/Year: Course System .3
2025/17/9 :Date of preparation of this description .4
person classroom lectures-Available forms of attendance: in .5
: hours: 30 hours, 2 study units Number of .6
(Name of the course supervisor (if more than one name is mentioned .7
:Email Asst. Prof. Dr. Loay Musa Rawi :Name**loaytaref@tu.edu.iq**
Course objectives .8 **ng and its Introducing students to the concept of mathematical thinki -1 .importance to the educational process** **Focus on developing sound mathematical thinking and helping students to -2 .remove superficiality in thinking** **Objectives of mathematical thinking in the primary stage -3** **ing mathematical thinkingDefinition of methods for develop -4** **Developing children's thinking -5** **Mathematical thinking development programs -6**

Using different teaching methods, including lectures and .discussion	Strategy

Course Structure .10

Evaluation method	Learning method	ired Requ learning outcomes	Name of the unit or topic	Watches	The week
Classroom performance	The lecture and discussion	Mathematical thinking	The concept of thinking	2	the first

Classroom performance	The lectured an discussion	Mathematical thinking	The Holy Quran and Mathematical Thinking	2	the second
Classroom performance	The lecture and discussion	Mathematical thinking	Theories explaining thinking styles and strategies	2	the third
srooClasm performance	The lecture and discussion	Mathematical thinking	Thinking in psychology	2	Fourth
Classroom performance	The lecture and discussion	Mathematical thinking	Levels of thinking	2	Fifth
Classroom performance	The lecture and discussion	Mathematical thinking	Stages of teaching thinking	2	Sixth
Classroom performance	The lecture and discussion	Mathematical thinking	hing Foundations of teac thinking	2	Seventh
Classroom performance	The lecture and discussion	Mathematical thinking	Types of thinking	2	The eighth
Classroom performance	The lecture and discussion	maticaMathel thinking	Aspects of mathematical thinking and its applications	2	Ninth
Classroom performance	The lecture and discussion	Mathematical thinking	General -Midterm Exam Review	2	tenth
Classroom performance	The lecture and discussion	Mathematicakingl thin	Areas of motivation for mathematical thinking	2	atheistic ten
Classroom performance	The lecture and discussion	Mathematical thinking	Methods of developing mathematical thinking	2	twelfth
Classroom performance	The lecture and discussion	Mathematicagl thinkin	Developing thinking skills in children	2	the third ten
Classroom performance	The lecture and discussion	Mathematical thinking	Factors that help develop mathematical thinking	2	Fourth ten
Classroom	The lecture and	Mathematical thinking	General review	2	Fifth ten

performance	**siondiscus**				

Course Evaluation .11	
The first month exam is (15) The second month exam is (15) Attendance, daily exam, participation and assignments are 10... We extract from them the effort score is 40 Final written exam of 60 .ade is 100The final gr	
Learning and teaching resources .12	
Absi, Muhammad Mustafa -Al -1 Games and thinking in :((2009) Masirah, -mathematics, Dar Al .Amman **Kubaisi, Abdul Wahid -Al -2 Hamid and Mudrikah Saleh Abdullah (2018): Mind and ing Maps in Teaching Think Mathematics, Arab Community .Library, Amman**	(Main References (Sources

13. **Psychology of Teaching Classroom Thinking :** Title Course	
14. : code Course	
15. **2026-2025 semester Second (Second grade)** Year /Semester	
16. **2026/2/1** description was prepared Date this	
17.**person / Online class-In :** formats Available attendance	
18.**units 4 /hours 60** : Total study hours/total units	
19. if there is more than one, please mention) Name of the course coordinator .(it	
:Email .A -Al Saber Taha Yassin .Dr :Namesapr87@tu.edu.iq	
20. objectives Course	
Course objectives	**Defining the concept of educational psychology and students' acquisition of organizational skills** **Logical.** **Employing educational psychology lications inconcepts in practical app** **Preserving the human race** **A study of the most important educationa psychological processes and their .relationship to the educational process**

	Psychology

21. Teaching and learning strategies

strategy	**solving-Dialogue, discussion, and problem**

22. Course structure

Week	Hours	Required learning outcomes	Unit or topic name	Learning method	Evaluation Method
the firs	3	**Define learning and teaching .precisely**	**The concept of learnin and education; the concept of upbringing**	**lecture a**	**and Question rAnswe Homework**
the second	3	**He describes the classroom as psychological –a cognitive environment and applies effective classroom .management techniques It defines the criteria for a good teacher**	**The classroom as a psychological and cognitive environment classroom managemer and environmental control ; criteria for a good teacher**	**discussion**	**Daily test**
the thir	3	**understand the importance of To science Educational Psychology/Characteristics Interpret the classroom as a .perceptual approach–cognitive classroom learning is Effective facilitated Bruner's discovery learning is**	**The concept of the classroom as a cogniti and perceptual approa to facilitating classroo learning: Bruner's moc (discovery learning).**	**a lecture**	**Question and Answer Homework**

		applied			
Fourth	3	Gagné's learning model explains Mastery learning is applied	's model (learning for mastery)	discussion	and a question Answer Homework
Fifth	3	Ausubel explains meaningful learning	Ausubel's model (meaningful learning)	a lecture	Daily test
thSix	3	motivation Understanding Its definition and functions and its strategies	Pannet's model (projec based learning) and blended (face-to-face) learning	discussion	Question and Answer Homework
Seventl	3	based learning is -Project .deffectively implemente It distinguishes between blended face learning-to-and face	The importance of the online classroom	a lecture	Daily test
The eighth	3	It explains the importance of the online classroom	The role of e-learning management in education	discussion	d Question an Answer Homework
ninth T	3	He designs effective electronic testsand applies various .electronic grading methods	Electronic tests and methods of grading th	a lecture	Daily test
tenth T	3	It explains the importance of .thinking about learning	Learning to think	discussion	Question and Answer Homework
The elevent ten	3	thinking Understanding Its importance, definition and dimensions	The importance of thinking	a lecture	Daily test

the second ten	3	It distinguishes between different thinking styles	thinking patterns	discussion	Question and Answer Homework
third ten	3	Kolb's :Understanding Kolb's mod .learning model is explained	Kolb model	a lecture	Daily test
Fourth ten	3	about the applications Learn Educational theories of thinking	A conceptual summary of the thinking process	discussion	Question and Answer Homework
Fifth ten	3	Midterm exam	Practical applications thinking learning mode	exam Midtern course	aily testD

23. Course evaluation

marks represent the final exam 60 / marks represent the student's effort 40

24. Learning and teaching resources

(Required textbooks (methodology, if applicable	nothing
(Main references (sources	thinking related to Sources
ommended supporting books and references (scientific Rec (…journals, reports	is an ",Thinking" ,psychology textbook Th approved and comprehensive resource that . includes all the subject's vocabulary
Electronic references, websites	nothing

Course name: Research Methods .1
:Course code .2
:Semester/Year .3

Date of preparation of this description: 9/17/2024 .4

person classroom lectures-in : Available forms of attendance .5

umber of units (total): 3Number of study hours (total): 45 / N .6

(Name of the course supervisor (if more than one name is mentioned .7

:Asst. Prof. Dr. Loay Musa Rawi Emailloaytaref@tu.edu.iq

Course objectives .8

:to The Research Methods course aims to enable the learner **1) scientific research skills Recognizes** **2) the solution of a research problem that serves It concludes .the society** **3) . of scientific research Understand the concept** **4) educational situations and their relationship about learns . scientific research to**	Subject objectives

hing and learning strategiesTeac .9

Method of giving lectures **-1** Discussion method -2	Strategy

Course Structure .10

Evaluation method	Learning method	Name of the unit or topic	Required learning outcomes	Watches	The week
Extracurricular homework and exercises	The lecture	Science and scientific research	Understanding the knowledge stages of acquisition	3	the first
Extracurricular homework and exercises	The lecture	?What is science	Understand the most important goals of science and the characteristics of research	3	the second
Extracurricular homework and exercises	The lecture	Educational research and its steps	Understanding research hypotheses and variables	3	the third
Extracurricular homework and exercises	The lecture	Ethical Considerations in ational ResearchEduc	Understanding the Ethical Side of Scientific Research	3	Fourth
Extracurricular homework	The lecture	Research classification	Identifying the types of research and their	3	Fifth

and exercises			characteristics		
xtracurriculEar homework and exercises	The lecture	Descriptive research		3	Sixth
Extracurricular homework and exercises	The lecture	Experimental research		3	Seventh
Extracurricular homework sand exercise	The lecture	Research problem and hypotheses	Understand the sources of the problem	3	The eighth
Extracurricular homework and exercises	The lecture	Review of literature related to the research problem	Understanding study subjects and sampling methods	3	Ninth
culExtracurriar homework and exercises	The lecture	Data Collection Tools	questionnaire, interview, observation	3	tenth
Extracurricular homework and exercises	The lecture	Preparing the research report	How to prepare the report	3	eleventh
Extracurricular homework and exercises	The lecture	Summary of a master's or hesis by studentsdoctoral t	Understanding How to Critique and Summarize a Master's Thesis	3	twelfth

Course Evaluation .11

Extracurricular assignments of 10 + an exam of 10 for each month are added together to .get an effort score of 40

Learning and teaching resources .12

Fundamentals of educational research	xtbooks (methodology Required te (if any
Educational Research Policies	(Main References (Sources
Scientific Research Methods in Education & Psychology (	Recommended supporting books and references (scientific journals, (...reports
://faculty.uobasrah.edu.iq/uploads/publications/1663492371.docx	Electronic references, websites

Course name .1	
Number theory	
Course code .2	
Number theory	
Semester/Year .3	
Chapter Two/First	
Date this description was prepared .4	
17/9/2025	
Available forms of attendance .5	
(In person (weekly	
(Number of study hours (total) / Number of units (total .6	
(Name of the course supervisor (if more than one name is mentioned .7	
:Email Louay Musa Rawi .Name: M.M loaytaref@tu.edu.iq	
Course objectives .8	
• The student learns about the ancient number systems and .natural numbers • .The student learns about mathematical induction • The student will learn about integers, the properties of ordering and the analysis of numbers into ,integers and prime numbers .prime factors • The student will learn about divisibility algorithms, greatest .common divisor, and least common multiple • .Knowing the basic theory of arithmetic • ,Learn about special numbers (Pythagorean, extra, incomplete (perfect, amicable	Subject objectives
Teaching and learning strategies .9	
for of numbers theory Receive lectures on the theoretical subject In the week .hours three	Strategy

Course Structure .10

Evaluation method	ng Learni method	Name of the unit or topic	Required learning outcomes	Watches	The week
Daily, monthly exams, homework	Paper lecture Display screen Blackboard and pen	Old numerical systems	Old numerical systems	3	the first
Daily,	Paper lecture	Natural	Properties of	3	the second

monthly exams, homework	Display screen ckboard Bla and pen	numbers	natural numbers		
Daily, monthly exams, homework	Paper lecture Display screen Blackboard and pen	Correct settings	Integers and properties of ordering integers	3	the third
Daily, monthly exams, homework	Paper lecture Display screen Blackboard and pen	Prime mbersnu	Prime numbers and factoring .numbers	3	Fourth
Daily, monthly exams, homework	Paper lecture Display screen Blackboard and pen	Mathematical induction	Mathematical induction	3	Fifth
Daily, monthly exams, homework	Paper lecture Display screen Blackboard and pen	Mathematical induction	Proof using mathematical uctionind	3	Sixth
exam First month					Seventh
Daily, monthly xams, e homework	Paper lecture Display screen Blackboard and pen	division algorithm	Divisibility algorithms	3	The eighth
Daily, monthly exams, homework	Paper lecture Display screen Blackboard and pen	The greatest common .denominator	The greatest common .denominator	3	Ninth
Daily, monthly exams, homework	Paper lecture Display screen board Black and pen	least common multiple	least common multiple	3	tenth
Daily, monthly exams, homework	Paper lecture Display screen Blackboard and pen	Basics of preparation	Base numbers and divisibility	3	eleventh
Daily, monthly exams, homework	Paper lecture Display screen Blackboard and pen	The basic of theory .arithmetic	Knowing the basic theory .of arithmetic	4	twelfth
Daily, monthly exams, homework	Paper lecture Display screen Blackboard and pen	Special settings	Learn about special numbers excess,) incomplete, perfect, (amicable	4	thirteenth
Second month exam					fourteenth
End of term exam					fifteenth

Course Evaluation .11	
:Students are evaluated during the semester according to the following criteria • ance and First month exam of 15, second month exam of 15, daily exam and attend participation of 10 • Annual quest of 40 • Final exam of 60 • Final score out of 100	
Learning and teaching resources .12	
• Introduction to Number Theory Authored by: Dosari-Faleh bin Imran bin Mohammed Al	Required Textbooks
Adnan , ture and number theoryNumber struc Mohammed Awad , Bassam Yousef Awda And Amman: Dar Al Furqan For publication and distribution	Main References
• Kenneth H.Rosen , Elementary number theory and its applications, 6th Edition, Addison-Wesley publishing company. New York, 2010 • Gareth A. Jones, Elementary Number Theory, Springer, 1998	Recommended supporting books and references
nothing	Electronic references, websites

Course Description Form

1. Course Name:
Integration
2. Course Code:
3. Semester / Year
Course system
4. Description Preparation Date:
2026/9/17
5. Available Attendance Forms:
weekly
6. Number of Credit Hours (Total) / Number of Units (Total)
56 hours and 3 units
7. Course administrator's name (mention all, if more than one name)
Email: Alaa.hu.khalaf@tu.edu.iq:Name: Alaa Hussien Khalaf
8- Course Objectives

Course Objectives	• Learn the basic concepts of integration and its types, definite and indefinite • Learn how to integrate different functions and their relationship to continuity • Learn about the application of definite integration in various other sciences, and how to benefit from it in solving problems in other sciences • There are many problems in applied sciences such as ordinary and partial differential equations, and to solve them we use integrations to reach a result
9- Teaching and Leering Strategies	
Strategy	Using different teaching methods, including lectures, discussion, problem-solving, cooperative learning, and others.

The week	Watches	Name of the unit or topic	Required learning outcomes	Learning method	Evaluation method
First	4	Integration Rules	ndefinite integration Reverse differentiation (derivative) Knowing the basic theory of integration	Lecture and explanation of the topic on the board	
Second	4	Integration of Exponential and Logarithmic Functions	Integration of exponential and logarithmic functions and various examples	Lecture and discussion	Questions and answers
Third	4	Integration of Trigonometric Functions	The student should memorize the laws of integration of trigonometric functions with solving questions and controlling the integration rules for angle integration	Explain and write the lecture	Daily exam
Fourth	4	Partition Method	The student should memorize the law of integration by parts	Explain and write the lecture in detail on the .board	Student participation on the board
Fifth	4	Integration Method by Substitution	Knowing the integration of trigonometric functions with trigonometric substitutions	Explain the topic on the board	Exam on the board
Sixth	4	First Month Exam			
Seventh	4	Integration by Partial Fractions	To control the methods of analysis and how to distribute brackets and unify denominators	Explain and write the lecture	Homework Questions and answers
Eighth	4	Integration Methods (Other Substitutions)	To control the basic concepts that include the topic	Explain and write the lecture in detail on the board.	Student participation on the board
Ninth	4	Definite Integration	Definite integration with an integration period and substitution of the larger number minus the smaller number	Explain and write the lecture in detail on the .board	Give homework questions and ask for answers
Tenth	4	Area Bound by a Curve	To equate the function to zero and use the analysis steps to find the	Lecture and discussion	Student participation on the

			value of the variable		board
Eleventh	4	Area Bound by a Curve	To equate the function to zero and use the analysis steps to find the value of the variable and then determine whether the values of the variable belong to the function or not	Explain and write the lecture	Give homework questions and ask for answers
Twelfth	4	Area Bound by Two Curves	To equate the functions and find a function through the two functions and solve the same steps of the area specified by the curve	Explain and write the lecture in detail on the .board	Daily exam
Thirteenth	4	Examples and Exercises			
fourteenth	4	Second Month Exam			

11. course Evaluation

First: First monthly exam (in-person) – 15 marks
Second: Second monthly exam (in-person) – 15 marks
Third: Daily quizzes, participation, and assignments – 10 marks
Fourth: Coursework (annual assessment) – 40 marks
Fifth: Final written exam – 60 marks
Sixth: Total grade – (40 + 60 = 100)

12.Learning and Teaching Resoures

Required textbooks (methodology if any)	Purcell, E. J., Calculus with Analytic Geometry, translated by Ali Aziz Ali and others, University of Mosul, Volumes I & II, Second Edition, 1983. Sabri Radif Al-Ani and others, Differential and Integral Calculus, Baghdad, 1981. Sabri Radif Al-Ani and others, Advanced Differential and Integral Calculus, Baghdad, 1981.
Main References (Sources)	Ali Aziz Ali, Abdul-Razzaq Ali Al-Hassoun, and Adel Zainal Hussein, Higher Mathematics, Ministry of Higher Education and Scientific Research, 1980. Ali Aziz Ali, Abdul-Razzaq Ali Al-Hassoun, and Adel Zainal Hussein, Principles of Mathematics: Differential and Integral Calculus, Ministry of Higher Education and Scientific Research, 1986. Ramadan Mohammed Juhima and Dr. Ahmed Abdul-Ali Habb Al-Reeh, Differential and Integral Calculus, Volumes I & II, Third Edition, 2001.
Recommended supporting books and references (scientific journals, reports...)	Faleh Imran Al-Dousari, Differential and Integral Calculus, Volumes I & II, 2007. Nouri Farhan Al-Miyahi, Introduction to Mathematical Analysis, Al-Qadisiyah Printing Press, First Edition, 2010.
Electronic references, websites	